Colorado

CMAS (All Content Areas, including CSLA)
CoAlt Science and Social Studies

Interpretive Guide to Assessment Reports

A Guide for Parents and Educators

2017

1.0 General Information for Parents and Educators

1.1 Purpose of This Guide

This guide provides information on the individual student reports, school reports, and district reports provided for the Colorado Measures or Academic Success (CMAS) and Colorado Alternate (CoAlt) assessment results. Section 2.0 outlines and explains elements of the individual student report and may be shared with parents to help them understand their students' test results. Sections 3.0 through 9.0 outline and explain elements of the school and district reports.

Please note that the sample reports included in this guide are for illustration purposes only. They are provided to show the basic layout of the reports and the information they provide. Sample reports do not include actual data from any administration.

1.2 Background

1.2.1 Colorado Measures of Academic Success (CMAS)

The Colorado Measures of Academic Success (CMAS) are Colorado's standards-based assessments designed to measure the Colorado Academic Standards (CAS) in the content areas of English language arts*, mathematics, science, and social studies. The purpose of the CMAS assessments is to indicate the degree to which students have mastered the expectations of the CAS in each content area at the end of the tested grade level. CMAS results are intended to provide one measure of a student's academic progress relative to the CAS. Aggregated scores may be used by districts and schools to monitor their programs' effectiveness by comparing performance from year to year.

CMAS science and social studies assessments were first administered across Colorado in 2013-2014, and CMAS mathematics and English language arts assessments were first administered in 2014-2015. The following table includes the content areas and grade levels that were assessed across Colorado in spring 2017.

Content Area	Grades
English Language Arts	3-9
Spanish Language Arts*	3 and 4
Mathematics	3-9
Science	5, 8 and 11
Social Studies	4 and 7

*As a requirement of Colorado School Law C.R.S. §22-7-1006.3 (4) (a) and (b), Spanish-speaking students in grades 3 and 4 who meet established eligibility criteria may take the Colorado Spanish language arts (CSLA) assessment in place of the English language arts assessment.

CMAS Mathematics and English Language Arts

Available in online and paper format, CMAS mathematics and English language arts assessments were developed in collaboration with a consortium of states known as the Partnership for Assessment of Readiness for College and Careers (PARCC). Mathematics and English language arts reports will be grouped together throughout this guide because reports for both content areas were developed with the consortium.

Colorado Spanish Language Arts (CSLA)

Available in paper format, CSLA assessments are designed for students with a home language of Spanish who are enrolled in bilingual programs in grades 3 and 4. The CSLA assessments serve as accommodated versions of the CMAS English language arts assessments. They are parallel and comparable to CMAS English language arts in test design, item type, scoring and reporting. Therefore, separate CSLA reports will not be included throughout this guide (please refer to the English language arts reporting information and examples).

CMAS Science and Social Studies

Available in online and paper format, CMAS science and social studies assessments were developed by Colorado educators, the Colorado Department of Education, and testing contractor, Pearson. Science and social studies reports will be grouped together throughout this guide because reports for both content areas were developed specifically by Colorado.

1.2.2 Colorado Alternate (CoAlt)

The Colorado Alternate (CoAlt) is the standards-based assessment designed specifically for students with the most significant cognitive disabilities who, even with accommodations, are unable to participate in CMAS. CoAlt assesses the performance expectations of the Extended Evidence Outcomes (EEOs) of the CAS and students must meet participation requirements to take the assessments. CoAlt assessments are administered in a one-on-one setting between teachers and students. Teachers use CoAlt scoring rubrics to evaluate student responses before submitting performance results. For each CMAS assessment there is a corresponding CoAlt assessment, however, this guide only includes the CoAlt science and social studies assessments. The CoAlt mathematics and English language arts assessments were developed by the Dynamic Learning Maps (DLM) consortium and reports for those assessments are not included in this guide.

1.3 Confidentiality of Reporting Results

The results of individual student performance on all Colorado assessments are confidential and may be released only in accordance with the Family Educational Rights and Privacy Act of 1974 (20 U.S.C. Section 1232g). When possible, aggregated student performance data representing 16 or more students is made available to the public. Additional data suppression rules are also applied to aggregated reports to protect student privacy. Aggregated reports do not contain the names of individual students or teachers.

2.0 A Parent and Educator Guide to Understanding the Colorado Measures of Academic Success (CMAS) Student Performance Report

2.1 Program Overview

CMAS is Colorado's standards-based assessment designed to measure the Colorado Academic Standards (CAS). The CAS contain the concepts and skills students need to learn in order to be successful in the current grade and to make academic progress from year to year.

In spring 2017, CMAS mathematics and English language arts* assessments were given to students in grades 3 through 9, CMAS science assessments were given in grades 5, 8, and 11, and CMAS social studies assessments were given in grades 4 and 7 (social studies assessments are administered on a sampling basis to one-third of the elementary and middle schools each year). The purpose of CMAS is to indicate the degree to which students have mastered the CAS in the assessed content areas at the end of the tested grade level. CMAS results are intended to provide one measure of a student's academic progress relative to the CAS. An individual student performance report is created for each student who takes a CMAS assessment so that parents can understand their student's command over the Colorado Academic Standards in the assessed grade level and content area.

This section of the guide explains the elements of the CMAS individual student performance reports. CMAS mathematics and English language arts* reports are grouped together because reports for both content areas were developed in collaboration with the Partnership for Assessment of Readiness for College and Careers (PARCC) consortium. CMAS science and social studies reports are grouped together because reports for both content areas were developed specifically for Colorado.

*As a requirement of Colorado School Law C.R.S. §22-7-1006.3 (4) (a) and (b), Spanish-speaking students in grades 3 and 4 who meet established eligibility criteria may take the Colorado Spanish language arts (CSLA) assessment in place of the English language arts assessment. CSLA assessments are parallel and comparable to the CMAS English language arts assessments in test design, item type, scoring and reporting. Therefore, separate CSLA reports and descriptions are not included in this guide (please refer to the English language arts reporting information and examples).

2.2 Performance Levels and Types of Scores on the Student Reports

To understand each part of the individual student performance reports, it is important to become familiar with the types of assessment scores included on the reports. Student performance on the Colorado assessments is described at varying levels on the individual student reports using scale scores, performance levels, subclaim performance indicators, and percentile ranking. State, district, and school average results are included in relevant sections of the report to help parents understand how their student's performance compares to that of other students. In some instances, a dash (–) will appear in place of average results for a school and/or district. This indicates that there are too few students (less than 16) to maintain student privacy, and therefore, results are not reported.

2.2.1 Scale Scores

A scale score is a numerical value that summarizes student performance. When the points a student earns on an assessment are placed on a common scale, the student's score becomes a scale score. Scale scores adjust for slight differences in difficulty on versions of the assessment that can vary slightly from student to student within a year (referred to as forms of the assessment) or between school years (referred to as administrations). Scale scores allow for comparisons of assessment scores, within a particular grade and subject area, across administrations. Not all students respond to the same set of test questions (referred to as items), so each student's raw score (actual points earned on test items) is adjusted for the slight differences in difficulty among the various administrations of the test. The resulting scale score allows for an accurate comparison across test forms and administration years within a grade and content area. As an example, a student who receives a score of 700 on one form of the 7th grade mathematics assessment is expected to score a 700 on any form of the assessment. Scale scores maintain their meaning and can be compared across years. A student who scored 650 on the 8th grade science assessment in 2017 demonstrated the same level of mastery of concepts and skills as an 8th grade student who scored 650 on the science test in 2016. The student's overall scale score and level of mastery of concepts and skills would be comparable to a student who took the same assessment the previous year or the following year. Scale scores cannot be used to compare student performance across grades (e.g., grade 4 to grade 7) or subject areas (e.g., science to mathematics).

Mathematics, English language arts, and CSLA scale scores for the overall test range from 650 to 850. English language arts and CSLA reports also provide separate scale scores for both Reading and Writing. Reading scale scores range from 10 to 90 and Writing scale scores range from 10 to 60.

CMAS science and social studies scale scores range from 300 to 900. Science and social studies scale scores are reported for the overall test, content standards and Scientific Inquiry/Nature of Science (referred to as Reporting Categories), and item type.

CoAlt Science and social studies scale scores are reported for the overall test and they range from 0 to 250.

2.2.2 Performance Levels

Scale scores are used to determine a student's performance level for the overall assessment. Performance levels describe the concepts and skills that students are expected to demonstrate at each of the levels, and they include a range of scores at the overall assessment level (i.e., English language arts, mathematics, science, or social studies). Descriptors for each grade level and content area are included in **Appendix B** of this document.

CMAS Performance Levels

There are five cross-grade and content area performance levels for the CMAS mathematics, English language arts, and CSLA assessments. There are four cross-grade and content area performance levels for the CMAS science and social studies assessments.

CMAS Performance Levels	
CMAS Mathematics, ELA, and CSLA	**CMAS Science and Social Studies**
Level 5: Exceeded Expectations*	**Level 4:** Exceeded Expectations*
Level 4: Met Expectations*	**Level 3:** Met Expectations*
Level 3: Approached Expectations	**Level 2:** Approached Expectations
Level 2: Partially Met Expectations	**Level 1:** Partially Met Expectations
Level 1: Did Not Yet Meet Expectations	

*Students in the top two performance levels met or exceeded the expectations of the Colorado Academic Standards and are considered on track to being college and career ready in the content areas of language arts, mathematics, science, or social studies. Students in the remaining performance levels may need academic support to successfully engage in further studies in the content area.

CoAlt Performance Levels

The CoAlt science and social studies assessments include four performance levels.

CoAlt Performance Levels
Science and Social Studies
Advanced*
At Target*
Approaching Target
Emerging

*The top two performance levels indicate that with the appropriate supports, the student is prepared for further study in the content area.

2.2.3 Percentile Ranking

A percentile ranking is included on all CMAS individual student performance reports. The percentile ranking shows how well the student performed in comparison to other students in the state. For example, a student in the 75th percentile performed better than 75 percent of students in the state.

2.2.4 Additional Performance Indicators

In addition to scale scores, performance levels, and percentile rankings, individual student performance reports include other indicators to help parents and educators understand their student's performance. These performance indicators are described below for each assessment.

CMAS Mathematics, ELA, and CSLA

CMAS mathematics, ELA, and CSLA student reports include subclaim performance graphics that indicate how the student performed relative to the overall performance of students who met or nearly met expectations for the content area. Subclaim performance on the assessments is reported using categories rather than scale scores or performance levels:

- Met or Exceeded Expectations – represented by an up arrow
- Approached Expectations – represented by a bidirectional arrow
- Did Not Yet Meet or Partially Met Expectations – represented by a down arrow

CMAS Science and Social Studies

CMAS science and social studies reports include percent correct indicators for Prepared Graduate Competencies (PGCs) and Grade Level Expectations (GLEs)* in elementary and middle school and for PGCs in high school. Percent correct refers to the number of points earned out of the total number of points possible within a reporting category. The percent correct indicator can only be used to compare performance of the individual student to the average district and average state performance on the specific set of items being considered. Some groups of items may be more difficult than other sets of items, so unlike the scale score, the percent correct indicator cannot be compared across groups of items or across school years.

*PGCs and GLEs are described more fully in **Appendix C**.

CoAlt Science and Social Studies

CoAlt science and social studies reports include the percent of points earned. The percent of points earned refers to the number of points a student earned out of the total number of points possible within a reporting category. The percent of points earned indicator can only be used to compare performance of the individual student to the average state performance on the specific set of items being considered. Some groups of items may be more difficult than other sets of items; so unlike the scale score, the percent of points earned indicator cannot be compared across groups of items or across school years. Percent of points earned are provided at the standard level. For social studies, the standards are history, geography, economics, and civics. For science, the standards are physical science, life science, and earth systems science.

2.3 Description of Individual Student Performance Reports for CMAS Mathematics, ELA, and CSLA

Sample CMAS grade 7 English language arts and grade 4 mathematics individual student performance reports are displayed at the end of this section on pages 10-13. Each page of the sample report is included individually. The sample report provides the same type of information that is included on all of the mathematics, English language arts, and CLSA reports. The information below describes each part of the report. To learn more about each part of the individual student performance report, match the white letters in gray circles from the sample report to the information included with the corresponding letters on the following pages.

2.3.1 General Information

Refer to Page 1 of the individual student performance report.

A. Identification Information

Individual student performance reports list the student's name, state student ID, grade level when assessed, district name, and school name.

B. Description of Report

The description of the report provides the assessed grade level/course, content area (mathematics, English language arts, Colorado Spanish language arts), and assessment year. It also provides a general overview of the assessment and score report.

C. How to Use the Report

This section provides guidance for how parents can use the report to start a discussion with their student's teacher(s). It is important for parents and educators to have regular check-ins to ensure students are learning the necessary skills to stay on track. Parents can use the information in the report to understand their student's strengths and needs and to work with educators to identify resources to support his or her education.

2.3.2 Overall Assessment Scores

Refer to Page 1 of the individual student performance report.

D. Overall Scale Score and Performance Level

The student's overall scale score (the number between 650 and 850), performance level (Exceeded Expectations, Met Expectations, Approached Expectations, Partially Met Expectations, Did Not Yet Meet Expectations), and percentile ranking are provided. For each content area, students receive an overall scale score and, based on that score, are placed in one of five performance levels, with Level 5 indicating the student exceeded expectations and Level 1 indicating the student did not yet meet expectations (see **Appendix A** for more information on scale scores and **Appendix B** for more information on performance levels). The percentile ranking shows how well the student performed in comparison to other students in the state. For example, a student in the 52nd percentile performed better than 52 percent of students in the state.

E. Graphical Representation of Overall Performance: Overall Scale Score and Performance Level
This graphic provides an illustration of the five performance levels and where the student's overall scale score is positioned along the performance scale. The student's score is indicated by the black triangle positioned along the range of overall scale scores that define each performance level. The arrows above the scale score represent the probable range, which is based on the standard error of measurement and indicates the range of scores the student would likely receive if the assessment was taken multiple times. The probable range of scores differs across forms and across level of performance within forms. The ranges of overall scale scores are indicated underneath the graphic. The scale score needed to reach Performance Level 2 is 700, for Performance Level 3 it is 725, and for Performance Level 4 it is 750 for all grade levels/courses in mathematics, English language arts, and CSLA. The scale score needed to reach Performance Level 5 varies. Refer to **Appendix A** for the full list of scale score ranges for each performance level.

F. Average of School, District, State, and Cross-State
The report includes the average scale scores of students taking the same test in the student's school, district, state, and throughout the states administering the same assessment. These score averages can be used to see how the student's score compares to other students taking these tests.

Note: CSLA assessment reports do not include cross-state averages.

G. Percentage of Students at Each Performance Level
This graphic shows the percentage of students within Colorado who performed at each of the five performance levels and gives a sense of how the student's performance compares to other students' performance in Colorado.

2.3.3 Performance by Sub-Reporting Category

Refer to Page 2 of the individual student performance report.

Note: Sub-performance reporting categories are not included for mathematics. For this reason, there are no markers for H through I on the sample mathematics student reports.

H. Sub-Reporting Category
English language arts and CSLA reports include reading and writing scores. These reporting categories are indicated by a bold heading.

I. Sub-Reporting Category Scale Score
English language arts and CSLA student reports include the student's scale score in the categories of reading and writing (refer to Section 2.2.1). The sum of the sub-reporting category scale scores will not equal the overall scale score because reading and writing scores are on a different scale than the overall scale score. For reference, this section includes the range of possible scale scores for each reporting category (i.e., 10–90 for reading and 10–60 for writing).

For reading, the Level 4 performance standard is set to a scale score of 50. For writing, the Level 4 performance standard is set to a scale score of 35. Thus, students who scored 50 in reading or 35 in writing are considered to have met expectations within the respective sub-reporting category. Higher scores indicate that the student exceeded expectations while lower scores indicate that the student has not yet fully met expectations. School, district, state, and cross-state average reading and writing scale scores are also included.

2.3.4 Performance by Subclaim Category

Refer to Page 2 of the individual student performance report.

J. Subclaim Category and Performance Indicators

Students demonstrate specific skill sets (subclaims) on the assessments that are identified within each reporting category for English language arts and CSLA (e.g., Literary Text within Reading and Writing Expression within Writing) and mathematics (e.g., Expressing Mathematical Reasoning). Each subclaim category includes the header identifying the subclaim, an explanatory icon representing the student's performance, and an explanation of whether the student has met the expectations of the subclaim. Subclaim performance on the assessments is reported using categories rather than scale scores or performance levels.

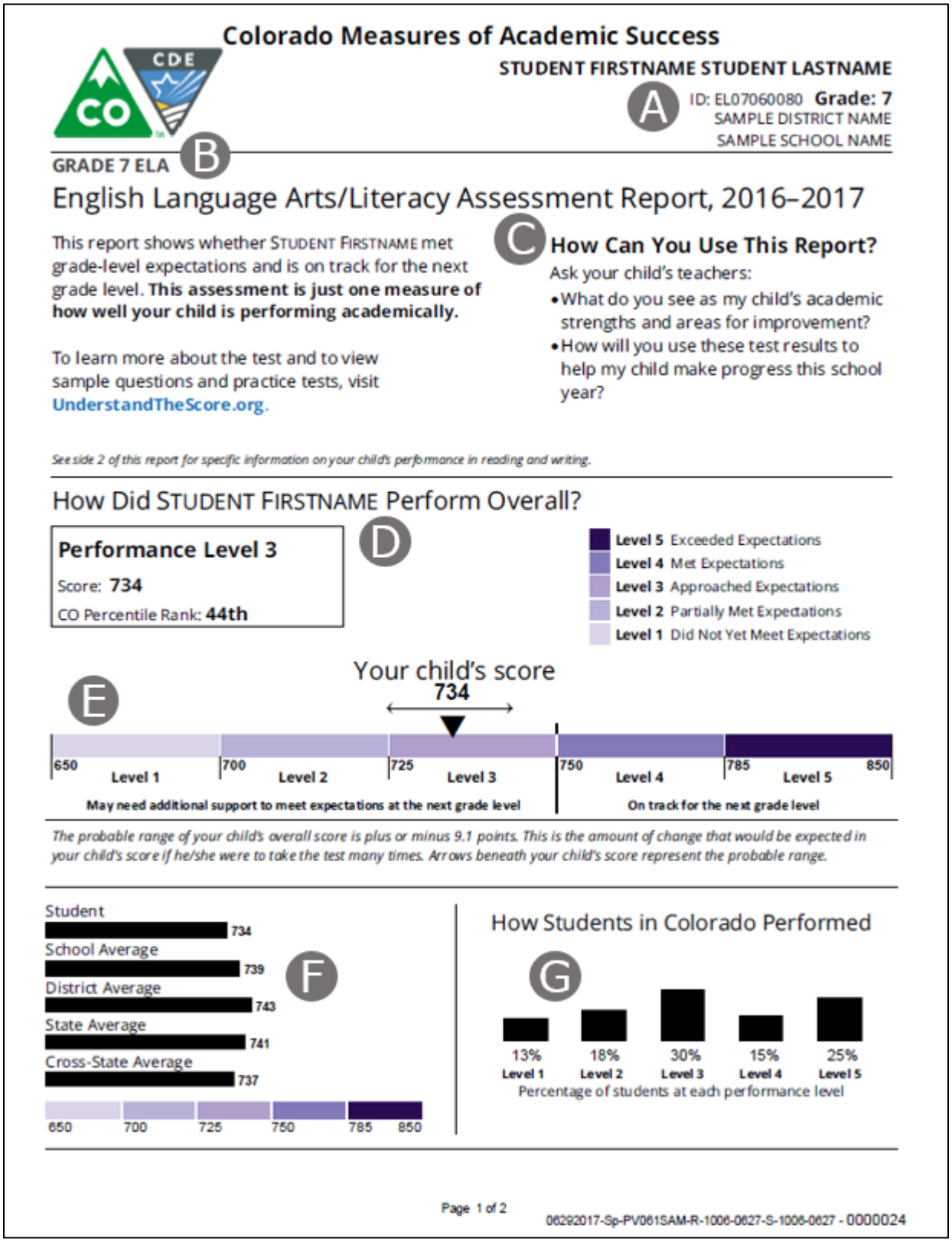
K. Description of Subclaim Performance Indicator Graphics

Student performance for each subclaim is marked with a subclaim performance indicator.

- **An up arrow** for the specified subclaim indicates that the student "Met or Exceeded Expectations," meaning that the student's subclaim performance reflects a level of proficiency consistent with Performance Level 4 or 5. Students in this subclaim category are likely academically well prepared to engage successfully in further studies in the subclaim content area and may need instructional enrichment.
- **A bidirectional arrow** for the specified subclaim indicates that the student "Approached Expectations," meaning that the student's subclaim performance reflects a level of proficiency consistent with Performance Level 3. Students in this subclaim category likely need academic support to engage successfully in further studies in the subclaim content area.
- **A down arrow** for the specified subclaim indicates that the student "Did Not Yet Meet or Partially Met Expectations," meaning that the student's subclaim performance reflects a level of proficiency consistent with Performance Level 1 or 2. Students in this subclaim category are likely not academically well prepared to engage successfully in further studies in the subclaim content area. Such students likely need instructional interventions to increase achievement in the subclaim content area.

2.4 Sample Individual Student Performance Report – CMAS ELA and CSLA

Page 1



Colorado Measures of Academic Success

STUDENT FIRSTNAME STUDENT LASTNAME

A ID: EL07060080 **Grade: 7**
SAMPLE DISTRICT NAME
SAMPLE SCHOOL NAME

GRADE 7 ELA B

English Language Arts/Literacy Assessment Report, 2016–2017

This report shows whether STUDENT FIRSTNAME met grade-level expectations and is on track for the next grade level. **This assessment is just one measure of how well your child is performing academically.**

To learn more about the test and to view sample questions and practice tests, visit UnderstandTheScore.org.

C **How Can You Use This Report?**

Ask your child's teachers:

- What do you see as my child's academic strengths and areas for improvement?
- How will you use these test results to help my child make progress this school year?

See side 2 of this report for specific information on your child's performance in reading and writing.

How Did STUDENT FIRSTNAME Perform Overall?

Performance Level 3
Score: **734**
CO Percentile Rank: **44th**

D

Level 5 Exceeded Expectations
Level 4 Met Expectations
Level 3 Approached Expectations
Level 2 Partially Met Expectations
Level 1 Did Not Yet Meet Expectations

E

Your child's score 734

650 Level 1 | 700 Level 2 | 725 Level 3 | 750 Level 4 | 785 Level 5 | 850

May need additional support to meet expectations at the next grade level

On track for the next grade level

The probable range of your child's overall score is plus or minus 9.1 points. This is the amount of change that would be expected in your child's score if he/she were to take the test many times. Arrows beneath your child's score represent the probable range.

F

Student 734
School Average 739
District Average 743
State Average 741
Cross-State Average 737

650 700 725 750 785 850

How Students in Colorado Performed

G

13% Level 1 | 18% Level 2 | 30% Level 3 | 15% Level 4 | 25% Level 5

Percentage of students at each performance level

Page 1 of 2

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Sample Individual Student Performance Report – CMAS ELA and CSLA

Page 2

STUDENT FIRSTNAME STUDENT LASTNAME

How Did Your Child Perform in Reading and Writing?

READING

H

Your child's score: 10

10 — 50 — 90

Met expectations

I

School Average: 32

District Average: 36

State Average: 37

Cross-State Average: 32

WRITING

Your child's score: 45

10 — 35 — 60

Met expectations

School Average: 39

District Average: 43

State Average: 46

Cross-State Average: 35

LITERARY TEXT

J

Your child performed about the same as students who **did not yet meet or partially met expectations.** Students meet expectations by showing they can read and analyze fiction, drama, and poetry.

INFORMATIONAL TEXT

Your child performed about the same as students who **did not yet meet or partially met expectations.** Students meet expectations by showing they can read and analyze nonfiction, history, science, and the arts.

VOCABULARY

Your child performed about the same as students who **did not yet meet or partially met expectations.** Students meet expectations by showing they can use context to determine what words and phrases mean.

WRITING EXPRESSION

Your child performed about the same as students who **met or exceeded expectations.** Students meet expectations by showing they can compose well-developed writing, using details from what they have read.

KNOWLEDGE AND USE OF LANGUAGE CONVENTIONS

Your child performed about the same as students who **met or exceeded expectations.** Students meet expectations by showing they can compose writing using rules of standard English.

K

LEGEND

Your child performed about the same as students who:

- Met or Exceeded Expectations
- Approached Expectations
- Did Not Yet Meet or Partially Met Expectations

This score report provides information about your child's performance on the Colorado Measures of Academic Success (CMAS) English language arts/literacy test.

- Your child's performance is represented by a scale score and a performance level so that you can see your child's achievement of the grade-level or course-level Colorado Academic Standards at the end of the year.
- School, district, and state information is provided so that you can compare your child's performance to the performance of others.
- Page 2 of the report provides a breakdown of your child's performance on specific skill sets so you can see where your child is excelling or may need improvement. Arrows are included that compare your child's performance to the performance of other students.

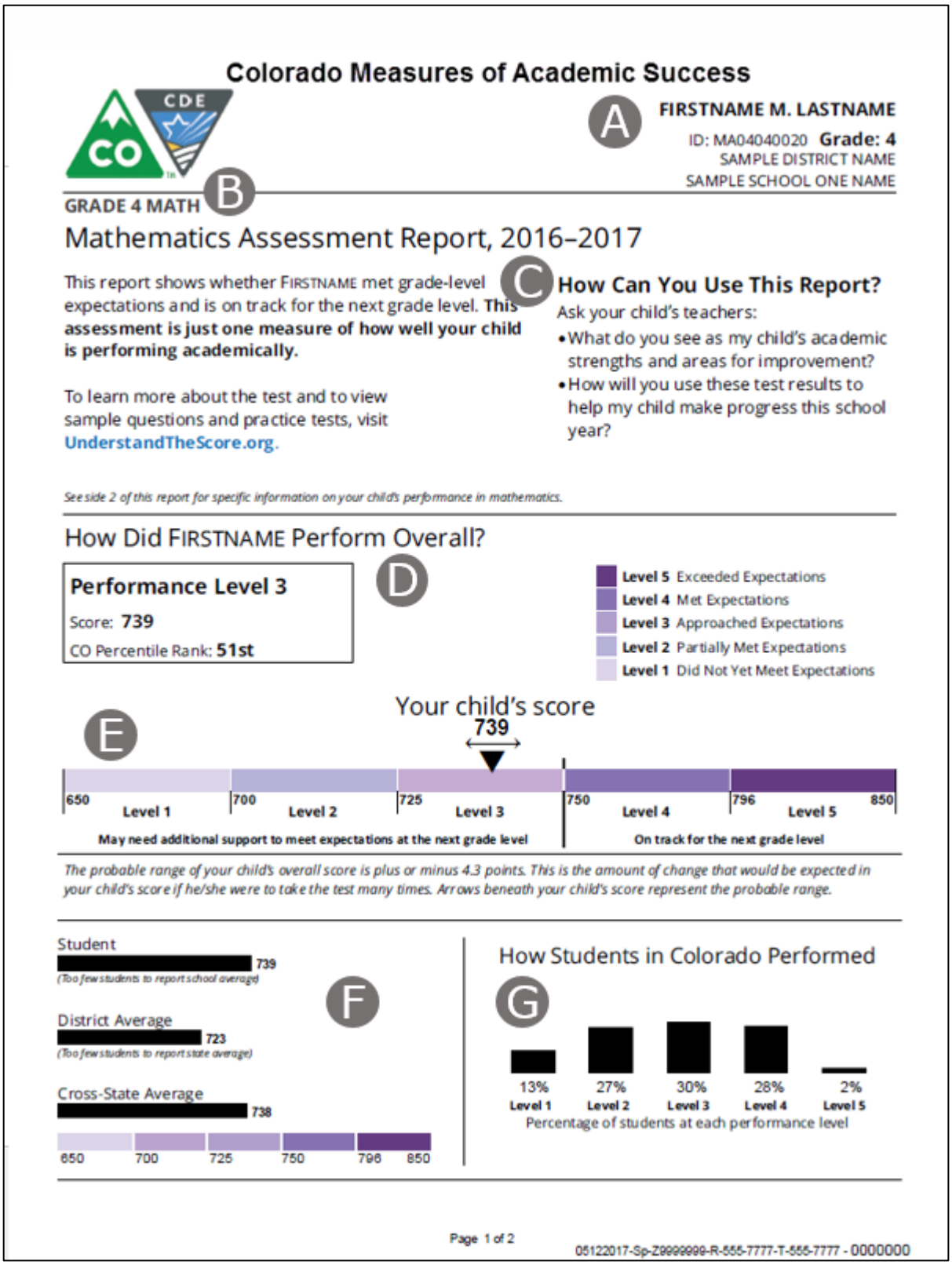
The Colorado Measures of Academic Success, or CMAS, is a series of state tests administered to students in the content areas of English language arts, math, science, and social studies. English language arts and math tests are developed in collaboration with the Partnership for Assessment of Readiness for College and Careers (PARCC) and are administered to students at the end of grades three through nine. These tests are aligned to the Colorado Academic Standards, which set high expectations for all students in Colorado to help ensure readiness for college or careers after high school graduation.

This test was designed to measure complex skills, like critical-thinking and problem solving – skills needed for the jobs of the 21st Century. While the CMAS tests are just one measure of student achievement, they are the only common measuring tool for students across Colorado. They allow parents and teachers to see how well their students are doing compared to other students in their school, their district, and across the state.

Page 2 of 2

2.5 Sample Individual Student Performance Report – CMAS Mathematics

Page 1



Colorado Measures of Academic Success

A

FIRSTNAME M. LASTNAME
ID: MA04040020 **Grade: 4**
SAMPLE DISTRICT NAME
SAMPLE SCHOOL ONE NAME

B

GRADE 4 MATH

Mathematics Assessment Report, 2016–2017

This report shows whether FIRSTNAME met grade-level expectations and is on track for the next grade level. **This assessment is just one measure of how well your child is performing academically.**

To learn more about the test and to view sample questions and practice tests, visit UnderstandTheScore.org.

C

How Can You Use This Report?

Ask your child's teachers:

- What do you see as my child's academic strengths and areas for improvement?
- How will you use these test results to help my child make progress this school year?

See side 2 of this report for specific information on your child's performance in mathematics.

How Did FIRSTNAME Perform Overall?

Performance Level 3
Score: **739**
CO Percentile Rank: **51st**

D

Level 5 Exceeded Expectations
Level 4 Met Expectations
Level 3 Approached Expectations
Level 2 Partially Met Expectations
Level 1 Did Not Yet Meet Expectations

E

Your child's score
739

650 **Level 1** 700 **Level 2** 725 **Level 3** 750 **Level 4** 796 **Level 5** 850

May need additional support to meet expectations at the next grade level

On track for the next grade level

The probable range of your child's overall score is plus or minus 4.3 points. This is the amount of change that would be expected in your child's score if he/she were to take the test many times. Arrows beneath your child's score represent the probable range.

Student
739
(Too few students to report school average)

District Average
723
(Too few students to report state average)

Cross-State Average
738

650 700 725 750 796 850

F

How Students in Colorado Performed

G

13% **Level 1** 27% **Level 2** 30% **Level 3** 28% **Level 4** 2% **Level 5**

Percentage of students at each performance level

Page 1 of 2

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Sample Individual Student Performance Report – CMAS Mathematics

Page 2

FIRSTNAME M. LASTNAME

How Did Your Child Perform in Areas of Mathematics?

MAJOR CONTENT

J

Your child performed about the same as students who **met or exceeded expectations.** Students meet expectations by solving problems involving addition, subtraction, multiplication and division, place value, fraction comparisons, and addition and subtraction of fractions with same denominators.

EXPRESSING MATHEMATICAL REASONING

Your child performed about the same as students who **approached expectations.** Students meet expectations by creating and justifying logical mathematical solutions and analyzing and correcting the reasoning of others.

ADDITIONAL & SUPPORTING CONTENT

Your child performed about the same as students who **approached expectations.** Students meet expectations by solving problems involving number and shape patterns, simple measurement conversions, angle measurements, geometric shapes classification, and representations of data.

MODELING & APPLICATION

Your child performed about the same as students who **did not yet meet or partially met expectations.** Students meet expectations by solving real-world problems, representing and solving problems with symbols, reasoning quantitatively, and strategically using appropriate tools.

K

LEGEND

Your child performed about the same as students who:

- Met or Exceeded Expectations
- Approached Expectations
- Did Not Yet Meet or Partially Met Expectations

This score report provides information about your child's performance on the Colorado Measures of Academic Success (CMAS) mathematics test.

- Your child's performance is represented by a scale score and a performance level so that you can see your child's achievement of the grade-level or course-level Colorado Academic Standards at the end of the year.
- School, district, and state information is provided so that you can compare your child's performance to the performance of others.
- Page 2 of the report provides a breakdown of your child's performance on specific skill sets so you can see where your child is excelling or may need improvement. Arrows are included that compare your child's performance to the performance of other students.

The Colorado Measures of Academic Success, or CMAS, is a series of state tests administered to students in the content areas of English language arts, math, science, and social studies. English language arts and math tests are developed in collaboration with the Partnership for Assessment of Readiness for College and Careers (PARCC) and are administered to students at the end of grades three through nine. These tests are aligned to the Colorado Academic Standards, which set high expectations for all students in Colorado to help ensure readiness for college or careers after high school graduation.

This test was designed to measure complex skills, like critical-thinking and problem solving – skills needed for the jobs of the 21st Century. While the CMAS tests are just one measure of student achievement, they are the only common measuring tool for students across Colorado. They allow parents and teachers to see how well their students are doing compared to other students in their school, their district, and across the state.

Page 2 of 2

2.6 Description of Individual Student Performance Report – CMAS Science and Social Studies

A sample grade 5 Student Performance Report is displayed at the end of this section on pages 18-21. Each page of the sample report is included individually. The sample report includes the same type of information that is included on all of the science and social studies reports. The information below describes each part of the report. To learn more about each part of the Student Performance Report, match the white letters in gray circles from the sample report to the information included with the corresponding letters on the following pages.

2.6.1 General Information

Refer to Page 1 of the Student Performance Report.

A. Identification Information
The top of the Student Performance Report lists the student's name, state assigned student identification number (SASID), birthdate, school, and district.

B. Test Date
The season and year the student took the assessment is indicated.

C. Subject Area
The subject area of the student's assessment is identified (either science or social studies).

D. Grade Level
The grade level of the student's assessment is indicated.

2.6.2 Overall Assessment Scores

Refer to Page 1 of the Student Performance Report

E. Explanation of Overall Performance
A brief explanation of the overall assessment results is given to help understand the information provided in the box below the explanation.

F. The Student's Overall Scale Score, Performance Level, and Percentile Ranking
The student's overall scale score (the number between 300 and 900), performance level (Exceeded Expectations, Met Expectations, Approached Expectations, Partially Met Expectations), and percentile ranking are provided. The scale score and performance level included in this part of the report represent the student's overall performance on the assessment in the content area (science or social studies). The percentile ranking shows how well the student performed in comparison to other students in the state. For example, a student in the 75th percentile performed better than 75 percent of students in the state. Grade level and content area specific performance level descriptors providing the concepts and skills students are typically able to demonstrate at each level are found on the last page of the report.

G. Graphical Representation of Overall Performance: Scale Score and Performance Level by Student, School, District, and State

The student's scale score is indicated by a large diamond on the graph. The arrows to the left and right of the diamond indicate the range of scores the student would likely receive if the assessment was taken multipletimes.

The average scale scores at the school, district, and state levels are identified to the left of the graph and are indicated by smaller diamonds on the graph. The location of the diamonds can be compared to see how the student performed in comparison to the average student in their school, district, or the state. If the student's score diamond is to the right of the school, district, or state average diamond, then the student performed better than that group's average. If the student's diamond is to the left of the school, district, or state diamond, then on average, that group performed better than the student.

The dotted lines on the graph show the lowest scores needed to achieve Approached Expectations, Met Expectations, and Exceeded Expectations performance levels. The scale scores representing each of those scores are indicated on the bottom of the graph.

2.6.3 Subscale Performance

Refer to Page 1 of the Student Performance Report.

H. Explanation of Subscale Performance

In this part of the report, the student's performance is presented by individual reporting categories. Information to help understand the graphical representation in this section is included.

I. Reporting Category Descriptions

Reporting categories include the standards for social studies (history, geography, economics, and civics) and for science (physical science, life science, and earth systems science). Science also includes Scientific Investigation and the Nature of Science as a reporting category. Descriptions of the reporting categories from the CAS are included in this section of the report.

J. Subscale Scores

Subscale scores indicate how the student performed in each reporting category. Like the overall science and social studies scale scores, subscale scores range from 300 to 900 and can be compared across school years. Average subscale scores are also provided for the student's school and district.

K. Graphical Representation of Subscale Performance by Student, School, and District

The graphical representation of subscale performance shows how the student performed in each reporting category. The student's performance is represented by a large diamond on the graph. The arrows around the student's diamond show the range of scores that the student would likely receive if the assessment was taken multiple times.

The graphical representation also shows how the student performed in comparison to other students in the student's school or district. Smaller diamonds represent performance of students in the school and district. If the student's score diamond is to the right of the school or district average diamond, the student's subscale score was higher than the school or district average scale score. If the student's diamond is to the left, then the student's subscale score was lower than the school or district average.

The shaded areas of the graph represent the performance of about 70% of students in the state. If the student's score diamond is to the right of the shaded area, the student's performance is considered relatively strong in that area in comparison to other students in the state. If the student's score diamond is to the left of the shaded area, the student's performance is considered relatively weak in that area in comparison to other students in the state. These categories are based on the state performance for the current year and can change from year to year.

2.6.4 Performance by Prepared Graduate Competencies (PGCs) and Grade Level Expectations (GLEs)

Refer to Page 2 of the Student Performance Report.

L. Explanation

PGCs and GLEs are important parts of the CAS. PGCs represent the concepts and skills students need to master in order to be college and career ready by the time of graduation. GLEs are grade-specific expectations that indicate that students are making progress toward the PGCs. This section of the report describes performance with percent correct for PGCs and GLEs at the elementary and middle school levels and for PGCs at the high school level.

M. Graph Key

The graph key includes the explanatory text for the bars in the Percent Correct graph: student's performance, district average, and state average.

N. Standard, PGC, and GLE

Descriptions of the PGCs and GLEs that were included on the assessment are listed under each standard. **Note:** The high school report does not include GLE-level information.

O. Points Possible

This number shows the total points possible for each PGC and GLE on the assessment. **Note:** Information is not reported at the GLE level on the high school report.

P. Graphical Representation of Percent Correct

The graph shows the percentage of items that were answered correctly out of the total number of items for each PGC and GLE. When looking at the shaded bars in the graph, the student's performance can be compared to the average district and state performance. Keep in mind that there are relatively few points associated with each PGC or GLE. A student's bar can look much longer or much shorter based on a single correct or incorrect item response. Remember that percent correct score information cannot be compared across PGCs, GLEs, or years. **Note:** Information is not reported at the GLE level on the high school report. On elementary and middle school reports, the graph for the PGCs is blank when a PGC has only one associated GLE.

2.6.5 Performance by Item Type

Refer to Page 3 of the Student Performance Report.

CMAS assessments include selected-response and constructed-response items. Selected-response items require students to choose the correct answer(s) from provided options. Sometimes these are referred to as multiple choice and multiple select items. In the CMAS computer-based assessments, these can also include technology-enhanced items referred to as drag-and-drop and hot spot. Constructed-response items require students to develop their own answers to questions.

Q. Selected-Response Scale Score

The student's scale score for selected-response items is shown. The student's scale score can be compared to the average scale scores for selected-response items for the student's school, district, and the state. The student's school and district can compare next year's groups of students to this year's students by looking at selected-response scale scores. This information can be used to support school and district program and instructional improvement decisions.

R. Constructed-Response Scale Score

The student's scale score for constructed-response items is shown. The student's scale score can be compared to the average scale scores for constructed-response items for student's school, district, and the state. The student's school and district can look at next year's groups of students and compare them to this year on the constructed-response scale score. This information can be used to support school and district program and instructional improvement decisions.

S. Graphical Representation of Selected-Response and Constructed-Response Scale Scores

A graphical representation of the student's scale score is provided. The large diamond on the graph represents the student's scale score. The arrows around the student's score diamond show the range of scores that the student would likely receive if the assessment was taken multiple times. The smaller diamonds represent the average scale scores of the student's school, district, and the state. If the student's score diamond is to the right of the school, district, or state average diamond, then the student performed better than that group's average. If the student's diamond is to the left of the school, district, or state diamond, then that group performed better than the student on average.

2.6.6 Performance Level Descriptions

Refer to Page 4 of the Student Performance Report.

T. Performance Level Descriptions (PLDs)

Specific grade level and content area descriptions have been developed for each of the four performance levels:

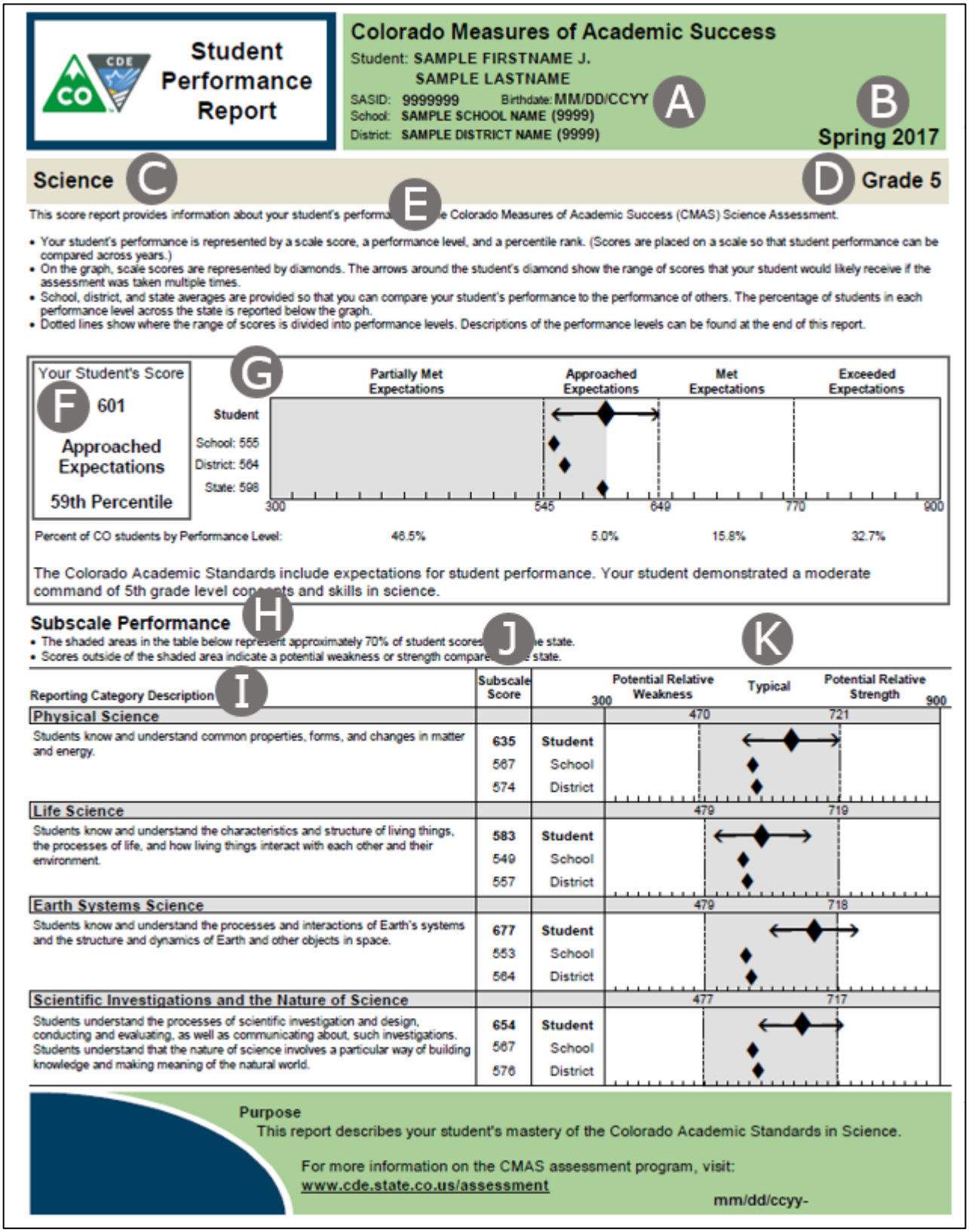
- Exceeded Expectations
- Met Expectations
- Approached Expectations
- Partially Met Expectations

The student's report will reflect the PLDs specific to the assessed grade and content area. These PLDs discuss the specific concepts and skills students in each performance level typically demonstrate for the student's assessed grade level and content area. PLDs are included in **Appendix B** of this document.

Elementary and middle school students in the top two performance levels, Exceeded Expectations and Met Expectations, are considered on track to being college and career ready in science or social studies; high school students in the top two performance levels are considered ready.

2.7 Sample Individual Student Performance Report – CMAS Science and Social Studies

Page 1



Student Performance Report

Colorado Measures of Academic Success

Student: SAMPLE FIRSTNAME J.
SAMPLE LASTNAME
SASID: 9999999 Birthdate: MM/DD/CCYY
School: SAMPLE SCHOOL NAME (9999)
District: SAMPLE DISTRICT NAME (9999)

A B

Spring 2017

Science C D Grade 5

This score report provides information about your student's performa E e Colorado Measures of Academic Success (CMAS) Science Assessment.

- Your student's performance is represented by a scale score, a performance level, and a percentile rank. (Scores are placed on a scale so that student performance can be compared across years.)
- On the graph, scale scores are represented by diamonds. The arrows around the student's diamond show the range of scores that your student would likely receive if the assessment was taken multiple times.
- School, district, and state averages are provided so that you can compare your student's performance to the performance of others. The percentage of students in each performance level across the state is reported below the graph.
- Dotted lines show where the range of scores is divided into performance levels. Descriptions of the performance levels can be found at the end of this report.

Your Student's Score
F 601
Approached Expectations
59th Percentile

G

Percent of CO students by Performance Level: 46.5% 5.0% 15.8% 32.7%

The Colorado Academic Standards include expectations for student performance. Your student demonstrated a moderate command of 5th grade level co nts and skills in science.

Subscale Performance

H J K

- The shaded areas in the table below represent approximately 70% of student scores e state.
- Scores outside of the shaded area indicate a potential weakness or strength compare e state.

Reporting Category Description I	Subscale Score		Potential Relative Weakness 300	Typical	Potential Relative Strength 900
Physical Science			470		721
Students know and understand common properties, forms, and changes in matter and energy.	635	Student			
	567	School			
	574	District			
Life Science			479		719
Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.	583	Student			
	549	School			
	557	District			
Earth Systems Science			479		718
Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.	677	Student			
	553	School			
	564	District			
Scientific Investigations and the Nature of Science			477		717
Students understand the processes of scientific investigation and design, conducting and evaluating, as well as communicating about, such investigations. Students understand that the nature of science involves a particular way of building knowledge and making meaning of the natural world.	654	Student			
	567	School			
	576	District			

Purpose
This report describes your student's mastery of the Colorado Academic Standards in Science.

For more information on the CMAS assessment program, visit:
www.cde.state.co.us/assessment

mm/dd/ccyy-

Colorado Measures of Academic Success

Science (L)

Performance by Prepared Graduate Competencies (PGCs) and Grade Level Expectations (GLEs)

- Within each standard, PGCs are identified. PGCs represent the concepts and skills that students need to master in order to be college and career ready.
- GLEs are grade-specific expectations that indicate a student is making progress toward the PGCs.
- The figure below shows the percentage of items that your student answered correctly for each GLE represented in the grade. If there is more than one GLE for a PGC, the percentage of items your student answered correctly by PGC is also provided.

(M) Student's performance; District average; State average

Standard, PGC, and GLE (N)	Points Possible (O)	Percent Correct* (P) 0% 25% 50% 75% 100%
Physical Science		
PGC 1: Apply an understanding of atomic and molecular structure to explain the properties of matter, and predict outcomes of chemical and nuclear reactions		
GLE 1: Mixtures of matter can be separated regardless of how they were created; all weight and mass of the mixture are the same as the sum of weight and mass of its parts	20	100%
Life Science		
PGC 1: Analyze how various organisms grow, develop, and differentiate during their lifetimes based on an interplay between genetics and their environment		
GLE 1: All organisms have structures and systems with separate functions	13	100%
PGC 2: Analyze the relationship between structure and function in living systems at a variety of organizational levels, and recognize living systems' dependence on natural selection		
GLE 2: Human body systems have basic structures, functions, and needs	17	100%
Earth Systems Science		
PGC 1: Describe how humans are dependent on the diversity of resources provided by Earth and Sun		
GLE 1: Earth and sun provide a diversity of renewable and nonrenewable resources	10	100%
PGC 2: Evaluate evidence that Earth's geosphere, atmosphere, hydrosphere, and biosphere interact as a complex system	20	100%
GLE 2: Earth's surface changes constantly through a variety of processes and forces	10	100%
GLE 3: Weather conditions change because of the uneven heating of Earth's surface by the Sun's energy. Weather changes are measured by differences in temperature, air pressure, wind, and water in the atmosphere and type of precipitation	10	100%

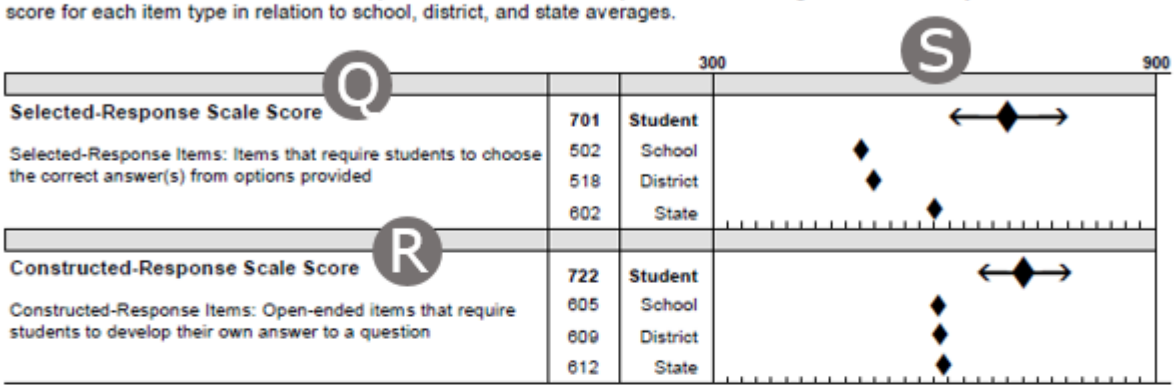
*Percent correct scores cannot be compared across years because individual items change from year to year. They also cannot be compared across GLEs and PGCs because the number of items and the difficulty of items may not be the same.

SAMPLE FIRSTNAME SAMPLE LASTNAME

Grade 5

Performance by Item Type

CMAS assessments include selected-response and constructed-response items. The figure below shows your student's scale score for each item type in relation to school, district, and state averages.



Science Performance Level Descriptions

Students demonstrate mastery of science concepts and 21st century skills aligned to the Colorado Academic Standards at various performance levels. The performance level descriptors are organized in a manner that assumes students demonstrating higher levels of command have mastered the concepts and skills within the lower levels. For example, a student at moderate command also masters the concepts and skills of limited command.

Students who Exceeded Expectations demonstrated distinguished command of the Colorado Academic Standards and can typically

- evaluate and provide feedback on scientific evidence and reasoning about the separation of mixtures and how separation affects the total weight/mass;
- develop hypotheses about why similarities and differences exist between the body systems and parts of humans, plants, and animals;
- evaluate scientific claims about natural resources, in terms of reasonability and validity; and
- assess and provide feedback, through reasoning based on evidence, on scientific explanations about weather and factors that change Earth's surface.

Students who Met Expectations demonstrated strong command of the Colorado Academic Standards and can typically

- explain why certain procedures that are used to separate simple mixtures work and discuss any unexpected results;
- evaluate evidence and models of the structure and functions of human, plant, and animal organs and organ systems;
- investigate and generate evidence that human systems are interdependent;
- analyze and interpret data to explore concerns associated with natural resources; and
- formulate testable questions and scientific explanations around weather and factors that change Earth's surface.

Students who Approached Expectations demonstrated moderate command of the Colorado Academic Standards and can typically

- discuss how the mass/weight of a mixture is a sum of its parts and design a procedure to separate simple mixtures based on physical properties;
- create models of human, plant, and animal organ systems, and compare and contrast similarities and differences between the organisms;
- explore and describe the origins and usage of natural resources in Colorado; and
- interpret data about Earth, including weather and changes to Earth's surface.

Students who Partially Met Expectations demonstrated limited command of the Colorado Academic Standards and can typically

- select appropriate tools and follow procedures to separate simple mixtures;
- identify how humans, plants, and animals address basic survival needs;
- identify the functions of human body systems;
- distinguish between renewable and nonrenewable resources; and
- use appropriate tools and resources to gather data regarding weather conditions and Earth processes.

For more information about the standards included in this assessment, please visit the Colorado Department of Education's website at
www.cde.state.co.us/standardsandinstruction

2.8 Description of Individual Student Performance Report – CoAlt Science and Social Studies

A Student Performance Report is created for each student who takes a CoAlt assessment. This section of the guide explains the elements of the Student Performance Report. A sample CoAlt Student Performance Report is displayed at the end of this section on pages 25-26.

2.8.1 General Information

Refer to Page 1 of the Student Performance Report.

A. Identification Information
The top of the Student Performance Report lists the student's name, state assigned student identification number (SASID), birthdate, school, and district.

B. Test Date
The season and year the student took the assessment is indicated.

C. Subject Area
The subject area of the student's assessment is identified (either science or social studies).

D. Grade Level
The grade level of the student's assessment is indicated.

2.8.2 Overall Assessment Scores

Refer to Page 1 of the Student Performance Report

E. Explanation of Overall Performance
A brief explanation of the overall assessment results is given to help understand the information provided in the box below the explanation.

F. The Student's Overall Scale Score and Performance Level
The student's overall scale score (the number between 0 and 250) and performance level (Emerging, Approaching Target, At Target, or Advanced) are provided. An inconclusive designation is given to students who did not respond to any items on the assessment. The scale score and performance level included in this part of the report represent the student's overall performance on the assessment in the content area (science or social studies). Grade level and content area-specific performance level descriptors providing the concepts and skills students are typically able to demonstrate at each level may be found on Page 2 of the report.

G. Graphical Representation of Overall Performance: Scale Score and Performance Level by Student and State

The student's scale score is indicated by a large diamond on the graph. The arrows to the left and right of the diamond indicate the range of scores the student would likely receive if the assessment was taken multipletimes.

The average scale score at the state level is identified to the left of the graph and is indicated by a smaller diamond on the graph. The location of the diamonds can be comparted to see how the student performed in comparison to the average student at the state level. If the student's score diamond is to the right of the state average diamond, then the student performed better than the state average. If the student's diamond is to the left of the state diamond, then on average, the state performed better than the student.

The dotted lines on the graph show the lowest scores needed to achieve Approaching Target, At Target, and Advanced performance levels. The scale scores representing each of those scores are indicated on the bottom of the graph.

2.8.3 Content Standard Performance

Refer to Page 1 of the Student Performance Report.

H. Content Standard Descriptions

This section of the report provides descriptions for social studies standards (history, geography, economics, and civics) and for science standards (physical science, life science, and earth systems science).

I. Points Earned

Points earned indicates how many points the student earned for each content standard.

J. Points Possible

Points possible indicates the total number of points possible for each content standard.

K. Graphical Representation of Content Standard Performance by Student and State

The graphical representation of content standard performance shows how the student performed in each standard. The student's performance is represented by a bar graph. The average percent of points earned for each content standard at the state level is identified by a second bar graph. The bar graphs show the student's percent of points earned as compared to the state average percent of points earned. If the student's bar ends to the right of the state average bar, then the student's percent of points earned was higher than the state average. If the student's bar ends to the left of the state average bar, then the student's percent of points earned was lower than the state average.

L. Graph Key

The graph key indicates the student's percent of points earned and the state average percent of points earned.

2.8.4 Performance Level Descriptions

Refer to Page 2 of the Student Performance Report

M. Performance Level Descriptions

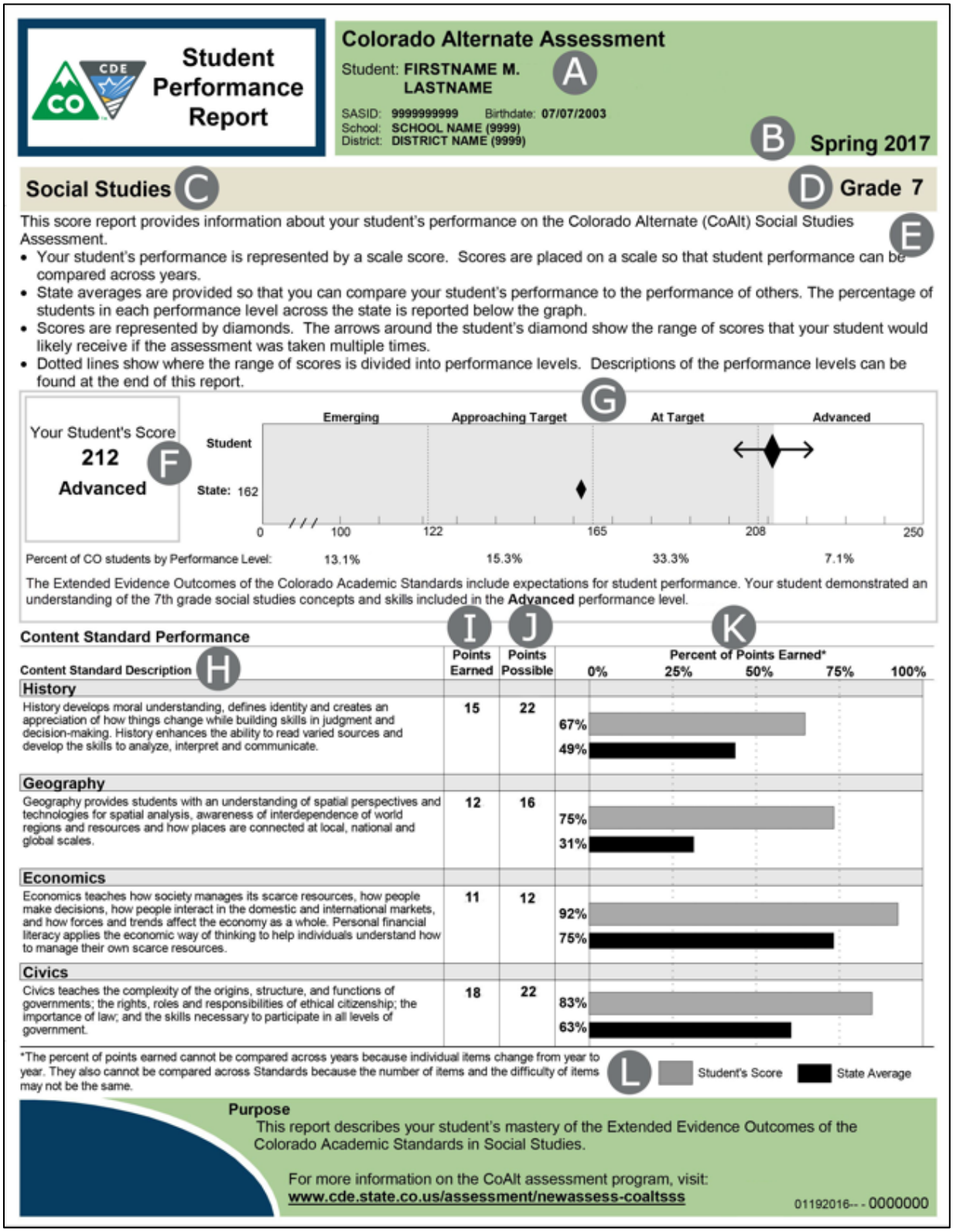
Specific grade level and content area descriptions are available for each of the four CoAlt performance levels:

- Advanced
- At Target
- Approaching Target
- Emerging

The student's report will reflect the performance level descriptions specific to the assessed grade level and content area. These performance level descriptions discuss the specific concepts and skills that students in each performance level typically demonstrate in the assessed grade level and content area. Performance level descriptions for each grade level and content area are located in **Appendix B**.

2.9 Sample Individual Student Performance Report – CoAlt Science and Social Studies

Page 1



Student Performance Report

Colorado Alternate Assessment

Student: **FIRSTNAME M. LASTNAME** (A)

SASID: 9999999999 Birthdate: 07/07/2003
School: SCHOOL NAME (9999)
District: DISTRICT NAME (9999)

(B) Spring 2017

Social Studies (C) (D) **Grade 7**

This score report provides information about your student's performance on the Colorado Alternate (CoAlt) Social Studies Assessment. (E)

- Your student's performance is represented by a scale score. Scores are placed on a scale so that student performance can be compared across years.
- State averages are provided so that you can compare your student's performance to the performance of others. The percentage of students in each performance level across the state is reported below the graph.
- Scores are represented by diamonds. The arrows around the student's diamond show the range of scores that your student would likely receive if the assessment was taken multiple times.
- Dotted lines show where the range of scores is divided into performance levels. Descriptions of the performance levels can be found at the end of this report.

Your Student's Score (F)
212
Advanced

(G)

	Emerging	Approaching Target	At Target	Advanced
Student			◆	
State: 162		◆		
	0 100	122	165	208 250
Percent of CO students by Performance Level:	13.1%	15.3%	33.3%	7.1%

The Extended Evidence Outcomes of the Colorado Academic Standards include expectations for student performance. Your student demonstrated an understanding of the 7th grade social studies concepts and skills included in the **Advanced** performance level.

Content Standard Performance

Content Standard Description (H)	Points Earned (I)	Points Possible (J)	Percent of Points Earned* (K) 0% 25% 50% 75% 100%
History			
History develops moral understanding, defines identity and creates an appreciation of how things change while building skills in judgment and decision-making. History enhances the ability to read varied sources and develop the skills to analyze, interpret and communicate.	15	22	67% / 49%
Geography			
Geography provides students with an understanding of spatial perspectives and technologies for spatial analysis, awareness of interdependence of world regions and resources and how places are connected at local, national and global scales.	12	16	75% / 31%
Economics			
Economics teaches how society manages its scarce resources, how people make decisions, how people interact in the domestic and international markets, and how forces and trends affect the economy as a whole. Personal financial literacy applies the economic way of thinking to help individuals understand how to manage their own scarce resources.	11	12	92% / 75%
Civics			
Civics teaches the complexity of the origins, structure, and functions of governments; the rights, roles and responsibilities of ethical citizenship; the importance of law; and the skills necessary to participate in all levels of government.	18	22	83% / 63%

*The percent of points earned cannot be compared across years because individual items change from year to year. They also cannot be compared across Standards because the number of items and the difficulty of items may not be the same.

(L) Student's Score / State Average

Purpose

This report describes your student's mastery of the Extended Evidence Outcomes of the Colorado Academic Standards in Social Studies.

For more information on the CoAlt assessment program, visit:
www.cde.state.co.us/assessment/newassess-coaltsss

01192016-- - 0000000

Social Studies Performance Level Descriptions M

Students demonstrate social studies concepts and skills aligned to the Grade Level Expectations and Extended Evidence Outcomes contained in the Colorado Academic Standards.

With appropriate support, Advanced students can typically:

- Identify historical eras, groups (e.g., miners, settlers and farmers), ideas, and themes in Colorado history
- Identify the cause and effect of growth in Colorado during various key events in U.S. history
- Integrate historical knowledge with geographical skills
- Recognize that particular dwellings, tools, and modes of transportation are specific to certain geographic areas and cultures in Colorado's history
- Identify regions and activities of Colorado based on specific physical features and label a map
- Identify choice and opportunity cost and compare the difference between the two
- Identify a specific perspective on an issue
- Identify the origins and structures of government

With appropriate support, At Target students can typically:

- Sequence Colorado historical events
- Identify the locations of specific activities or events in Colorado's history
- Identify specific factors that affected the growth of Colorado
- Match tools, modes of transportation, and products to natural resources or locations in Colorado
- Label a map using given map symbols
- Identify ways in which Colorado communities and markets were (and are) connected
- Identify the approximate value of goods
- Identify the functions of different levels of government
- Identify how people respond to positive and negative consequences

With appropriate support, Approaching Target students can typically:

- Match historical Colorado cultures with related artifacts, modes of transportation, and resources
- Match physical, natural, and geographic features on a map to their appropriate symbols
- Identify types of goods, services and resources native to Colorado
- Recognize that items vary in their value
- Recognize that there are different levels of governance

With appropraite support, Emerging students can typically:

- Identify artifacts (e.g., tools, housing, modes of transportation and clothing) related to Colorado history
- Identify features on a map of Colorado
- Recognize that items have value
- Recognize emergency situations and appropriate responses that affect members of the Colorado community
- Recognize that there are laws and rules

An Inconclusive designation is given to students who did not respond to any items on the assessment.

For more information about the standards included in this assessment, please visit the Colorado Department of Education's website at
www.cde.state.co.us/coextendedeo

3.0 Understanding the Colorado School and District Reports

3.1 Purpose and Use of Colorado Assessment Results

The primary purpose of CMAS and CoAlt is to provide high-quality assessments that align to the Colorado Academic Standards (CAS). Assessment results are a helpful tool in evaluating educational programs and student progress. These reports:

- Summarize and report on the status and progress of student achievement
- Describe student performance relative to meeting standards
- Gauge school, district, and state year-to-year progress
- Support improvement planning (e.g., prioritize professional learning and resource decisions, advise program alignment with academic standards, reflect on the effectiveness of school initiatives)

Standardized assessments are a valuable tool for evaluating programs. However, any assessment can provide only one part of the picture. CMAS and CoAlt assessment results are not able to identify, let alone measure, every factor that contributes to the success or failure of a program. Assessment results can be most helpful if considered as one component of an evaluation system.

3.2 School and District Reports

In addition to individual Student Performance Reports, schools and districts receive the following reports:

School and District Reports	
All content areas	Performance Level Summaries, Content Standards Rosters, District School Rosters (district level only)
CMAS Science and Social Studies	Item Analysis Reports
CMAS Mathematics, ELA, and CSLA	Evidence Statement Analysis, Student Rosters (school level only), District Summary of Schools Rosters (district level only)

These reports summarize how students in the school or district performed and are described later in this section. School and district reports are not for public distribution and are only to be viewed by individuals authorized to access student level data.

Note: Sample reports included in this guide are for illustration purposes only. They are provided to show the basic layout and information on the reports. Sample reports do not include actual data from any administration.

3.2.1 Types of Scores on the Colorado School and District Reports

To understand each part of the Colorado assessment school and district reports, it is important to become familiar with the types of assessment scores that are included on the report. At varying levels, student performance is described by scale scores, performance levels, subclaim performance indicators, and percent correct. Cross-state (mathematics and ELA only), state, district, and school level information is provided in relevant sections of the reports so that performance at these levels can be compared. A dash (–) appears on the report when there are too few students in a school or district to maintain student privacy, therefore, results are not reported. Information about appropriate comparisons of scores appears in Section 3.3.

3.2.2 Scale Score

A scale score is a numerical value that summarizes student performance. Not all students respond to the same set of test questions (referred to as items), so raw scores cannot be directly compared. When the points a student earns on an assessment are placed on a common scale, the student's score becomes a scale score. Scale scores adjust for slight differences in difficulty of different forms within and between school years. Scale scores allow for comparisons of assessment scores, within a particular grade and subject area, across administrations. As an example, a student who received a score of 700 on one form of the 7th grade mathematics assessment is expected to score a 700 on any form of the assessment. Scale scores maintain their meaning and can be compared across years. A student who scores 650 on the 8th grade science assessment in 2017 demonstrated the same level of mastery of concepts and skills as an 8th grade science student who scored 650 in 2016. The student's overall scale score and level of mastery of concepts and skills would be comparable to a student who took the same assessment the previous year or the following year. Scale scores cannot be used to compare student performance across grades (e.g., grade 4 to grade 7) or subject areas (e.g., science to mathematics).

Mathematics, English language arts, and CSLA scale scores for the overall test range from 650 to 850. English language arts and CSLA reports also provide separate scale scores for both Reading and Writing. Reading scale scores range from 10 to 90 and Writing scale scores range from 10 to 60.

CMAS science and social studies scale scores range from 300 to 900. Science and social studies scale scores are reported for the overall test, content standards and Scientific Inquiry/Nature of Science (referred to as Reporting Categories), and item type.

CoAlt science and social studies scale scores are reported for the overall test and range from 0 to 250.

3.2.3 Performance Level

Scale scores are used to determine a student's performance level for the overall assessment. Performance levels describe the concepts and skills that students are expected to demonstrate at each of the levels, and they include a range of scores at the overall assessment level (i.e., mathematics, English language arts, science, or social studies). Scale score ranges for each grade level and content area are included in **Appendix A**. Performance level descriptors for each grade level and content area are included in **Appendix B** of this document.

CMAS Performance Levels

There are five cross-grade and content area performance levels for the CMAS mathematics, English language arts, and CSLA assessments. There are four cross-grade and content area performance levels for the CMAS science and social studies assessments.

CMAS Performance Levels	
CMAS Mathematics, ELA, and CSLA	**CMAS Science and Social Studies**
Level 5: Exceeded Expectations*	**Level 4:** Exceeded Expectations*
Level 4: Met Expectations*	**Level 3:** Met Expectations*
Level 3: Approached Expectations	**Level 2:** Approached Expectations
Level 2: Partially Met Expectations	**Level 1:** Partially Met Expectations
Level 1: Did Not Yet Meet Expectations	

*Students in the top two performance levels met or exceeded the expectations of the Colorado Academic Standards and are considered on track to being college and career ready in the content areas of mathematics, language arts, science, or social studies. Students in the remaining performance levels may need academic support to successfully engage in further studies in the content area.

CoAlt Performance Levels

The CoAlt science and social studies assessments include four cross-grade performance levels.

CoAlt Performance Levels
Science and Social Studies
Advanced*
At Target*
Approaching Target
Emerging

*The top two performance levels indicate that with the appropriate supports, the student is prepared for further study in the content area.

Performance level descriptors for each grade level and content area are included in **Appendix B** of this document.

3.2.4 Additional Performance Indicators

In addition to scale scores, performance levels, and percentile rankings, individual student performance reports include other indicators to help understand student performance. These performance indicators are described below for each assessment.

CMAS Mathematics, ELA, and CSLA

CMAS mathematics, ELA, and CSLA student reports include subclaim performance graphics that indicate how the student performed relative to the overall performance of students who met or nearly met expectations for the content area.

Subclaim performance on the assessments is reported using categories rather than scale scores or performance levels:

- Met or Exceeded Expectations – represented by an up arrow
- Approached Expectations – represented by a bidirectional arrow
- Did Not Yet Meet or Partially Met Expectations – represented by a down arrow

CMAS Science and Social Studies

CMAS science and social studies reports include percent correct indicators for Prepared Graduate Competencies (PGCs) and Grade Level Expectations (GLEs)* in elementary and middle school and for PGCs in high school. Percent correct refers to the number of points earned out of the total number of points possible within a reporting category. The percent correct indicator can only be used to compare performance of the individual student to the average district and average state performance on the specific set of items being considered. Some groups of items may be more difficult than other sets of items, so unlike the scale score, the percent correct indicator cannot be compared across groups of items or across school years.

*PGCs and GLEs are described in **Appendix C**.

CoAlt Science and Social Studies

CoAlt science and social studies reports include the percent of points earned. The percent of points earned refers to the number of points a student earned out of the total number of points possible within a reporting category. The percent of points earned indicator can only be used to compare performance of the individual student to the average state performance on the specific set of items being considered. Some groups of items may be more difficult than other sets of items; so unlike the scale score, the percent of points earned indicator cannot be compared across groups of items or across school years. The percent of points earned is provided at the standard level. For social studies, the standards are history, geography, economics, and civics. For science, the standards are physical science, life science, and earth systems science.

3.3 Appropriate Score Comparisons and Uses

The types of comparisons that can be made differ by the scores being compared. Some scores (e.g., performance levels and scale scores) allow for cross year comparisons, while some (e.g., percent correct) do not. In addition, the reliability of the comparisons or conclusions made vary depending on the size of the group (i.e., number of points contributing to a particular score or the number of students included in a comparison group). In general, the larger the group, the more reliable the comparison or conclusions made will be. The smaller the group, the less reliable the comparison or conclusions made will be. High-stakes decisions should not be based on scores of small groups of students or on scores with a low number of points contributing to them. The following table provides some of the comparisons that can and cannot be made by particular types of scores.

Score Comparisons

	Compare an individual student's performance to a target group's performance (e.g., student to school, district, or state) within the same year	Compare a group's performance to another group's performance (e.g., one school to another school, a district to the state, students of one race/ethnicity group to students in another race/ethnicity group) within the same year	Compare an individual student's performance to a target group's performance (e.g., school, district, or state) across years	Compare a group's performance to the same group's performance across years	Compare to other scores of the same type in a different subject or grade
Performance Levels	YES	YES	YES	YES	NO (These are content and grade specific.)
Scale Scores	YES	YES	YES	YES	NO (These are content and grade specific.)
Percent Correct	YES	YES	NO (These are specific to the year of the assessment.)	NO (These are specific to the year of the assessment.)	NO (These are specific to the PGC/GLE.)
Relative Strengths and Weaknesses (Subscale Reporting Categories)*	YES	YES	NO (These are specific to the year of the assessment.)	NO (These are specific to the year of the assessment.)	NO (These are specific to the reporting category.)

* Potential relative strengths or weaknesses provide information about a student's performance in the reporting category compared to all students in the state. The potential relative strengths and weaknesses are based on the state average performance. They are not based on the standards and should not be interpreted in the same way as the overall performance levels.

Some assessment scores can be used to compare the performance of different demographic or program groups. All CMAS scores can be analyzed within the same grade and subject area for any single administration to determine which demographic or program group had the highest average scale score, the lowest percentage achieving Exceeded Expectations, the highest percentage achieving Approached Expectations, etc.

Other scores can be used to help evaluate the academic performance of demographic or program groups. For example, aggregations of reporting category data can help districts and schools identify areas of potential academic weakness for a group of students. This same methodology can be applied to an entire school or district.

In addition, all assessment scores can be compared to district and statewide performance within the same subject area for any administration.

4.0 Student Roster Report

4.1 Description of Student Roster Report – CMAS Mathematics, ELA, and CSLA

Comparing student performance on Colorado assessments to a variety of reference points can be valuable. The first four rows on the Student Roster Report contain cross-state (mathematics and ELA only), state, district, and school averages. By reviewing each column on the report, student scores can quickly be compared to the averages. Sample Student Roster Reports are displayed at the end of this section on pages 35-36.

Note: The District School Roster provides this information for each school within a district.

4.1.1 General Information

A. Identification Information
Student Roster Reports list the grade level or course assessed, school name, district name, and state.

B. Assessment Information
The report heading provides the assessed content area (mathematics, English language arts, or CSLA), grade level/course, and assessment year.

C. Roster of Students
The first column of the Student Roster Report lists all the students in the school at the specified grade level/course who took the assessment for the specified content area. The first four rows include the cross-state (mathematics and ELA only), state, district, and school averages.

D. Grade Level
For course-based assessments (e.g., Algebra, Geometry, Integrated Mathematics), the grade level of the student at the time of the assessment is listed in the second column of the report.

4.1.2 Overall Assessment Scores

E. Overall Scale Score and Performance Level
This column of the report provides the student's overall scale score and color-coded performance level. Students receive a numerical score and, based on that score, are placed in one of five performance levels, with Level 5 indicating the student exceeded expectations and Level 1 indicating the student did not yet met expectations. Performance levels are indicated by the color highlighting behind the number (see **Appendix A** for more information on scale scores and **Appendix B** for more information on performance levels). Refer to F for the color key. The first four rows contain cross-state (mathematics and ELA only), state, district, and school averages.

F. Description of Performance Level Graphics
This graphic provides a colored illustration of the five performance levels. This provides a quick color-coded view of the related performance level for each student's scale score.

4.1.3 Performance by Reporting Category

Note: For mathematics, reporting categories are not included. For this reason, there are no markers for G and H on the sample Mathematics Student Roster Report.

G. Reporting Category

For English language arts and CSLA, there are two reporting categories, Reading and Writing, indicated by a bold heading.

H. Performance by Reporting Category Scale Score

For English language arts and CSLA, student performance for each reporting category is provided as a scale score on a different scale from the overall scale score. Reading scale scores range from 10 to 90 and Writing scale scores range from 10 to 60. Because the scales are different, the sum of the scale scores for each reporting category will not equal the overall scale score.

4.1.4 Performance by Subclaim Category

I. Subclaim Category

Within each reporting category for English language arts and CSLA are specific skill sets (subclaims) students demonstrate on the assessment. Subclaims are also provided for mathematics but are not listed under reporting categories as they are for English language arts and CSLA. Each subclaim category includes the header identifying the subclaim; cross-state (mathematics and ELA only), state, district, and school averages; and an explanatory icon (subclaim performance indicator) representing the student's performance.

J. Subclaim Performance Indicators

A student's subclaim indicator represents how well the student performed on the items measuring that subclaim. As with overall and reporting category scale scores a measure of student proficiency for each subclaim is estimated on a common, underlying measurement scale. Performance in the Level 1–2 range of that scale is categorized as "Did Not Yet Meet or Partially Met Expectations," performance in the Level 3 range is categorized as "Approached Expectations," and performance in the Level 4–5 range is categorized as "Met or Exceeded Expectations."

Subclaim performance is reported using categories rather than scale scores or performance levels.

- Met or Exceeded Expectations – represented by an up arrow
- Approached Expectations – represented by a bidirectional arrow
- Did Not Yet Meet or Partially Met Expectations – represented by a down arrow

Cross-state (mathematics and ELA only), state, district, and school subclaim performance in the first four rows is reported by the percentage (both graphically and numerically) of students who did not yet meet or partially met, approached, or met or exceeded expectations. The numerical values appearing below the graph indicate the percentage of students performing at the Did Not Yet Meet or Partially Met Expectations, Approached Expectations, and Met or Exceeded Expectations levels from left to right, respectively. Due to rounding, percentages may not total 100%.

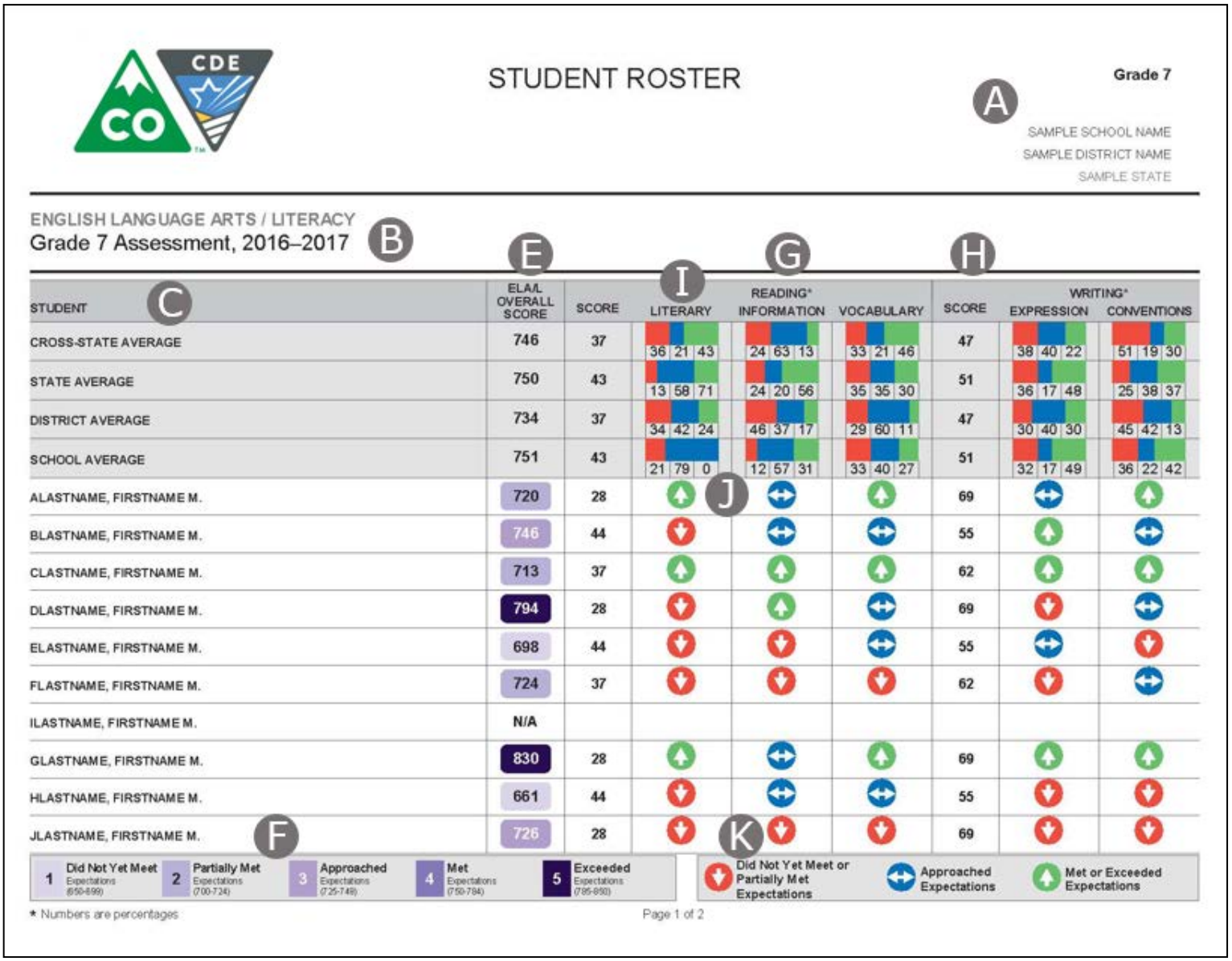
Note: In most cases, numbers will NOT appear centered under each color.

K. Description of Subclaim Performance Indicator Graphics

Student performance for each subclaim is marked with a subclaim performance indicator.

- An up arrow for the specified subclaim indicates that the student "Met or Exceeded Expectations," meaning that the student's subclaim performance reflects a level of proficiency consistent with Performance Level 4 or 5. Students in this subclaim category are likely academically well prepared to engage successfully in further studies in the subclaim content area and may need instructional enrichment.
- A bidirectional arrow for the specified subclaim indicates that the student "Approached Expectations," meaning that the student's subclaim performance reflects a level of proficiency consistent with Performance Level 3. Students in this subclaim category likely need academic support to engage successfully in further studies in the subclaim content area.
- A down arrow for the specified subclaim indicates that the student "Did Not Yet Meet or Partially Met Expectations," meaning that the student's subclaim performance reflects a level of proficiency consistent with Performance Level 1 or 2. Students in this subclaim category are likely not academically well prepared to engage successfully in further studies in the subclaim content area. Such students likely need instructional interventions to increase achievement in the subclaim content area.

4.2 Sample Student Roster Report – CMAS English Language Arts and CSLA



STUDENT ROSTER

Grade 7

A

SAMPLE SCHOOL NAME
SAMPLE DISTRICT NAME
SAMPLE STATE

ENGLISH LANGUAGE ARTS / LITERACY
Grade 7 Assessment, 2016–2017 B

STUDENT C	ELA/L OVERALL SCORE E	SCORE	READING* I LITERARY	READING* G INFORMATION	READING* VOCABULARY	SCORE H	WRITING* EXPRESSION	WRITING* CONVENTIONS
CROSS-STATE AVERAGE	746	37	36 21 43	24 63 13	33 21 46	47	38 40 22	51 19 30
STATE AVERAGE	750	43	13 58 71	24 20 56	35 35 30	51	36 17 48	25 38 37
DISTRICT AVERAGE	734	37	34 42 24	46 37 17	29 60 11	47	30 40 30	45 42 13
SCHOOL AVERAGE	751	43	21 79 0	12 57 31	33 40 27	51	32 17 49	36 22 42
ALASTNAME, FIRSTNAME M.	720	28	↑ J	↔	↑	69	↔	↑
BLASTNAME, FIRSTNAME M.	746	44	↓	↔	↔	55	↑	↔
CLASTNAME, FIRSTNAME M.	713	37	↑	↑	↑	62	↑	↑
DLASTNAME, FIRSTNAME M.	794	28	↓	↑	↔	69	↓	↔
ELASTNAME, FIRSTNAME M.	698	44	↓	↓	↔	55	↔	↓
FLASTNAME, FIRSTNAME M.	724	37	↓	↓	↓	62	↓	↔
ILASTNAME, FIRSTNAME M.	N/A							
GLASTNAME, FIRSTNAME M.	830	28	↑	↔	↑	69	↑	↑
HLASTNAME, FIRSTNAME M.	661	44	↓	↔	↔	55	↓	↓
JLASTNAME, FIRSTNAME M.	726	28	↓	↓ K	↓	69	↓	↓

F

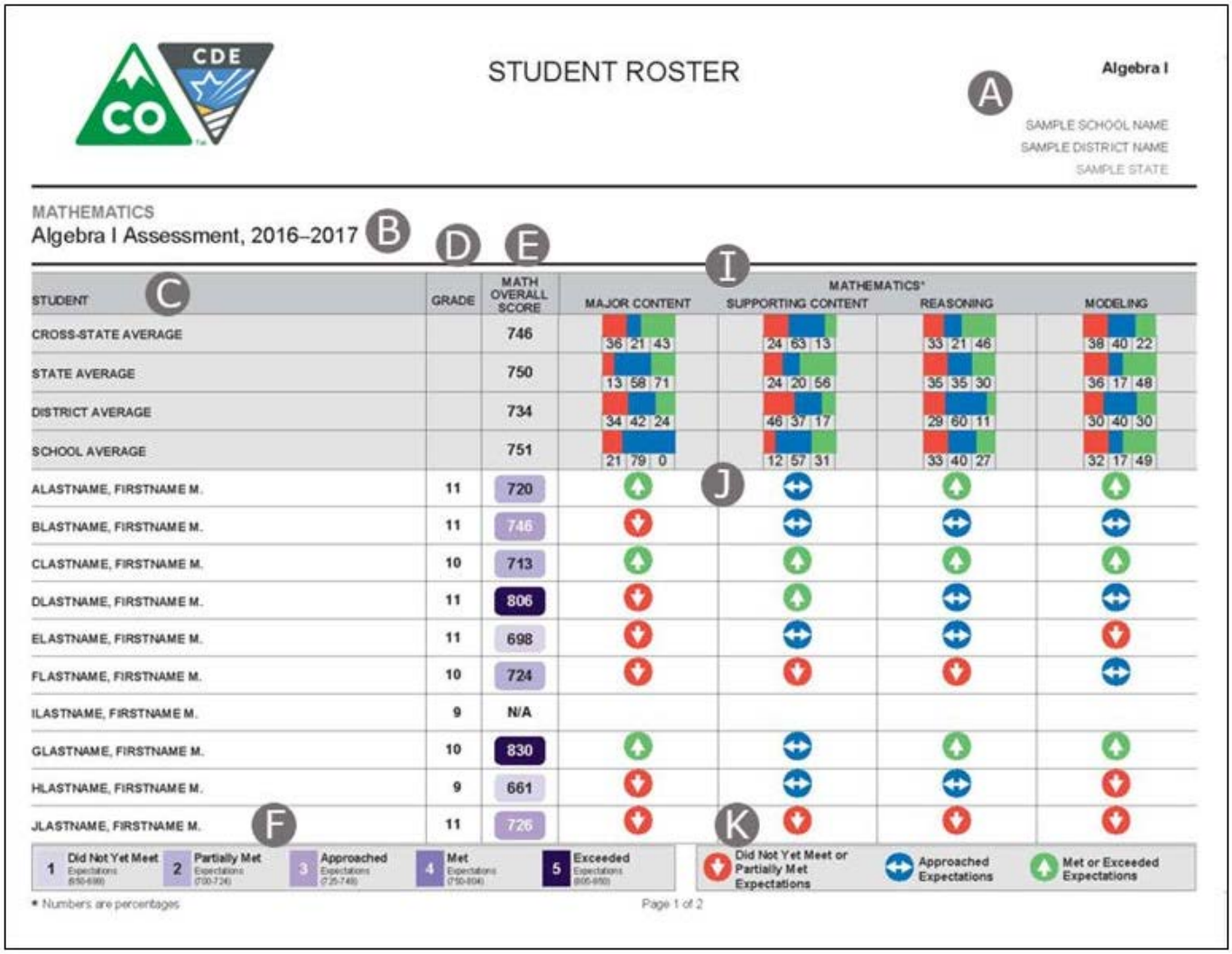
1 Did Not Yet Meet Expectations (650-699) | 2 Partially Met Expectations (700-724) | 3 Approached Expectations (725-749) | 4 Met Expectations (750-784) | 5 Exceeded Expectations (785-850)

↓ Did Not Yet Meet or Partially Met Expectations | ↔ Approached Expectations | ↑ Met or Exceeded Expectations

* Numbers are percentages

Page 1 of 2

4.3 Sample Student Roster Report – CMAS Mathematics



STUDENT ROSTER

A — Algebra I

SAMPLE SCHOOL NAME
SAMPLE DISTRICT NAME
SAMPLE STATE

MATHEMATICS
Algebra I Assessment, 2016–2017 B D E

I — MATHEMATICS*

C STUDENT	GRADE	MATH OVERALL SCORE	MAJOR CONTENT	SUPPORTING CONTENT	REASONING	MODELING
CROSS-STATE AVERAGE		746	36 21 43	24 63 13	33 21 46	38 40 22
STATE AVERAGE		750	13 58 71	24 20 56	35 35 30	36 17 48
DISTRICT AVERAGE		734	34 42 24	46 37 17	29 60 11	30 40 30
SCHOOL AVERAGE		751	21 79 0	12 57 31	33 40 27	32 17 49
ALASTNAME, FIRSTNAME M.	11	720	↑	↔	↑	↑
BLASTNAME, FIRSTNAME M.	11	746	↓	↔	↔	↔
CLASTNAME, FIRSTNAME M.	10	713	↑	↑	↑	↑
DLASTNAME, FIRSTNAME M.	11	806	↓	↑	↔	↔
ELASTNAME, FIRSTNAME M.	11	698	↓	↔	↔	↓
FLASTNAME, FIRSTNAME M.	10	724	↓	↓	↓	↔
ILASTNAME, FIRSTNAME M.	9	N/A				
GLASTNAME, FIRSTNAME M.	10	830	↑	↔	↑	↑
HLASTNAME, FIRSTNAME M.	9	661	↓	↔	↔	↓
JLASTNAME, FIRSTNAME M.	11	726	↓	↓	↓	↓

J — ↓ Did Not Yet Meet or Partially Met Expectations; ↔ Approached Expectations; ↑ Met or Exceeded Expectations

F — 1 Did Not Yet Meet Expectations (650-699); 2 Partially Met Expectations (700-724); 3 Approached Expectations (725-749); 4 Met Expectations (750-804); 5 Exceeded Expectations (805-850)

K

* Numbers are percentages

Page 1 of 2

5.0 District Summary of Schools Report

5.1 Description of District Summary of Schools Report – CMAS Mathematics, ELA, and CSLA

Comparing performance on the Colorado assessments across many levels can be valuable. Using the District Summary of Schools Report, school data can quickly be compared to the district, state, and cross-state (mathematics and ELA only) averages by reviewing the average overall scale score column. Sample District Summary of Schools Reports are displayed at the end of this section on pages 39-40.

5.1.1 General Information

A. Identification Information
District Summary of Schools Reports list the grade level/course, district name, and state.

B. Assessment Information
The report heading provides the assessed content area (mathematics, English language arts, or CSLA), grade level/course, and assessment year.

C. Number of Students
The first three rows contain the number of students included in reporting at the cross-state (mathematics and ELA only), state, and district levels. Subsequent rows contain the number of students included in reporting at each school within the district.

5.1.2 Overall Assessment Scores

D. Percentage of Students at Each Performance Level
The first column of the report shows the distribution of students achieving each performance level— indicated both graphically and numerically. Each colored section of the graph represents a performance level, beginning with Level 1 on the left through Level 5 on the right. The numerical values appearing below the graph indicate the percentage of students in Performance Levels 1 through 5, left to right respectively. Due to rounding, percentages may not total 100%. The name of the school is listed in each row above the graph.

Note: In most cases, numbers will NOT appear centered under each color.

E. Description of Performance Level Graphics
This graphic provides a colored illustration of the five performance levels. This provides a quick color-coded view of the percentage of students in each performance level.

F. Average Overall Scale Score
This column of the report provides the average overall scale score (refer to Section 3.2.2) for all students assessed at the school for the specified assessment on the report. The first three rows contain cross-state (mathematics and ELA only), state, and district averages.

5.1.3 Performance by Reporting Category

Note: For mathematics, reporting categories are not included. For this reason, there are no markers for G and H on the sample Mathematics District Summary of Schools Report.

G. Reporting Category

For English language arts and CSLA, there are two reporting categories, Reading and Writing, indicated by a bold heading.

H. Performance by Reporting Category Scale Score

For English language arts and CSLA, student performance for each reporting category is provided as a scale score (refer to Section 3.2.2) on a different scale from the overall scale score. For this reason, the sum of the average scale scores for each reporting category will not equal the average overall scale score. The first three rows contain cross-state (ELA only), state, and district averages. The remaining rows contain the school averages.

The "AVG SCORE" column provides the average student scale score for that reporting category.

5.1.4 Performance by Subclaim Category

I. Subclaim Category

Within each reporting category for English language arts and CSLA are specific skill sets (subclaims) students demonstrate on the assessment. Subclaims are also provided for mathematics but are not listed under reporting categories as they are for English language arts and CSLA. Each subclaim category includes the column header identifying the subclaim, as well as cross-state (mathematics and ELA only), state, district, and school percentages.

J. Subclaim Performance Indicators

On District Summary of Schools Reports, subclaim performance for cross-state, the state, district, and schools is reported by the percentage (both graphically and numerically) of students who did not yet meet or partially met, approached, or met or exceeded expectations. The numerical values appearing below the graph indicate the percentage of students performing at the Did Not Yet Meet or Partially Met Expectations, Approached Expectations, and Met or Exceeded Expectations levels from left to right, respectively. Due to rounding, percentages may not total 100%.

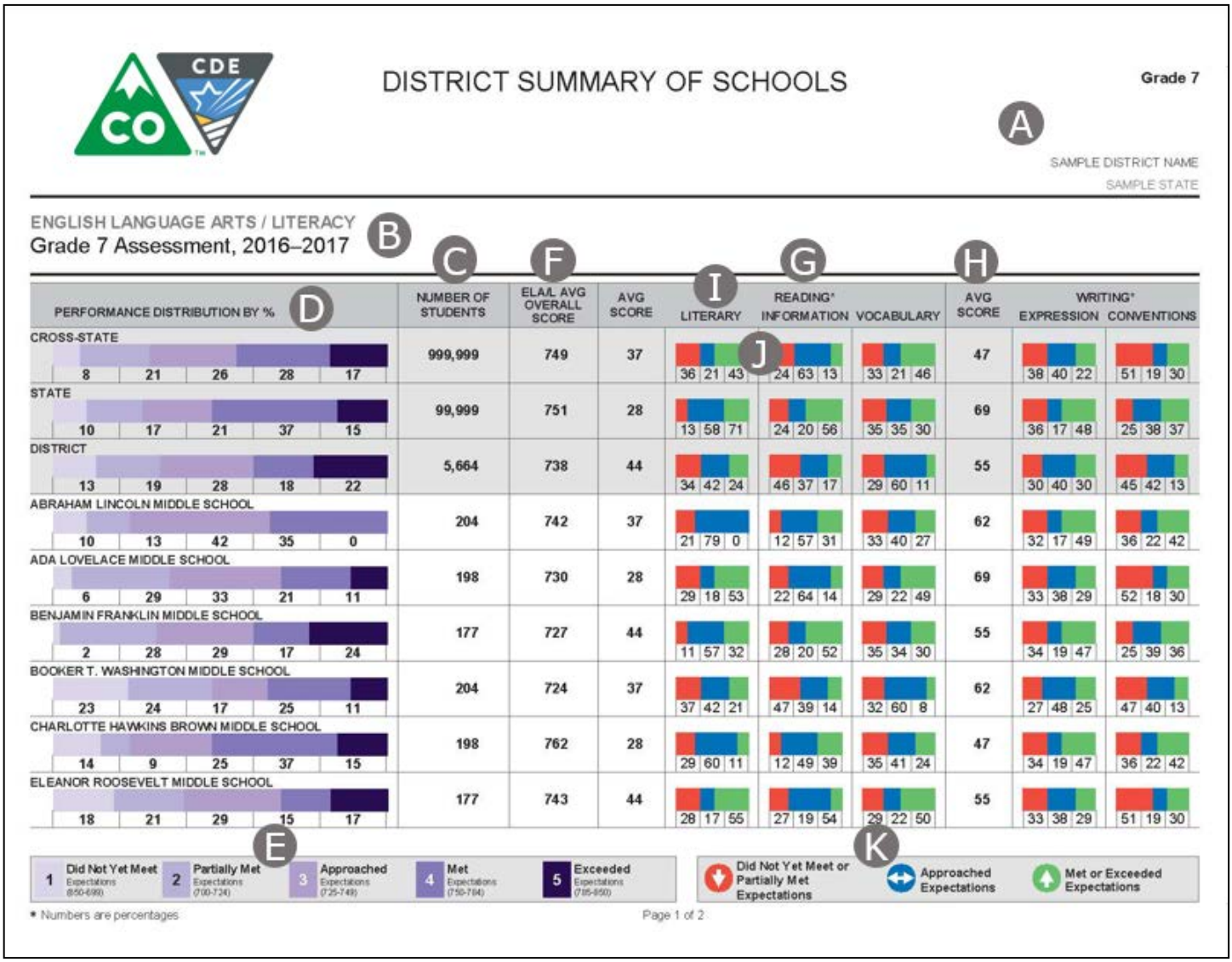
Note: In most cases, numbers will NOT appear centered under each color.

K. Description of Subclaim Performance Indicator Graphics

Student performance for each subclaim is illustrated with an explanatory icon. For District Summary of Schools Reports, only the colors of the icons are used in the graphical representation under each subclaim.

- The green (right) section of the graph for the specified subclaim indicates the percentage of students in the category "Met or Exceeded Expectations," which reflects a level of proficiency consistent with Performance Level 4 or 5. Students in this subclaim category are likely academically well prepared to engage successfully in further studies in the subclaim content area.
- The blue (middle) section of the graph for the specified subclaim indicates the percentage of students in the category of "Approached Expectations," which reflects a level of proficiency consistent with Performance Level 3. Students in this category likely need academic support to engage successfully in further studies in the subclaim content area.
- The red (left) section of the graph for the specified subclaim indicates the percentage of students in the category of "Did Not Yet Meet or Partially Met Expectations," which reflects a level of proficiency consistent with Performance Level 1 or 2. Students in this subclaim category will likely need instructional interventions to engage successfully in further studies in the subclaim content area.

5.2 Sample of District Summary of Schools Report – CMAS English Language Arts and CSLA



DISTRICT SUMMARY OF SCHOOLS

Grade 7

A

SAMPLE DISTRICT NAME
SAMPLE STATE

ENGLISH LANGUAGE ARTS / LITERACY
Grade 7 Assessment, 2016–2017

B C F I G H J D

PERFORMANCE DISTRIBUTION BY %	NUMBER OF STUDENTS	ELA/L AVG OVERALL SCORE	AVG SCORE	READING* LITERARY	READING* INFORMATION	READING* VOCABULARY	AVG SCORE	WRITING* EXPRESSION	WRITING* CONVENTIONS
CROSS-STATE 8 21 26 28 17	999,999	749	37	36 21 43	24 63 13	33 21 46	47	38 40 22	51 19 30
STATE 10 17 21 37 15	99,999	751	28	13 58 71	24 20 56	35 35 30	69	36 17 48	25 38 37
DISTRICT 13 19 28 18 22	5,664	738	44	34 42 24	46 37 17	29 60 11	55	30 40 30	45 42 13
ABRAHAM LINCOLN MIDDLE SCHOOL 10 13 42 35 0	204	742	37	21 79 0	12 57 31	33 40 27	62	32 17 49	36 22 42
ADA LOVELACE MIDDLE SCHOOL 6 29 33 21 11	198	730	28	29 18 53	22 64 14	29 22 49	69	33 38 29	52 18 30
BENJAMIN FRANKLIN MIDDLE SCHOOL 2 28 29 17 24	177	727	44	11 57 32	28 20 52	35 34 30	55	34 19 47	25 39 36
BOOKER T. WASHINGTON MIDDLE SCHOOL 23 24 17 25 11	204	724	37	37 42 21	47 39 14	32 60 8	62	27 48 25	47 40 13
CHARLOTTE HAWKINS BROWN MIDDLE SCHOOL 14 9 25 37 15	198	762	28	29 60 11	12 49 39	35 41 24	47	34 19 47	36 22 42
ELEANOR ROOSEVELT MIDDLE SCHOOL 18 21 29 15 17	177	743	44	28 17 55	27 19 54	29 22 50	55	33 38 29	51 19 30

E

1 Did Not Yet Meet Expectations (650-699) | 2 Partially Met Expectations (700-724) | 3 Approached Expectations (725-749) | 4 Met Expectations (750-784) | 5 Exceeded Expectations (785-850)

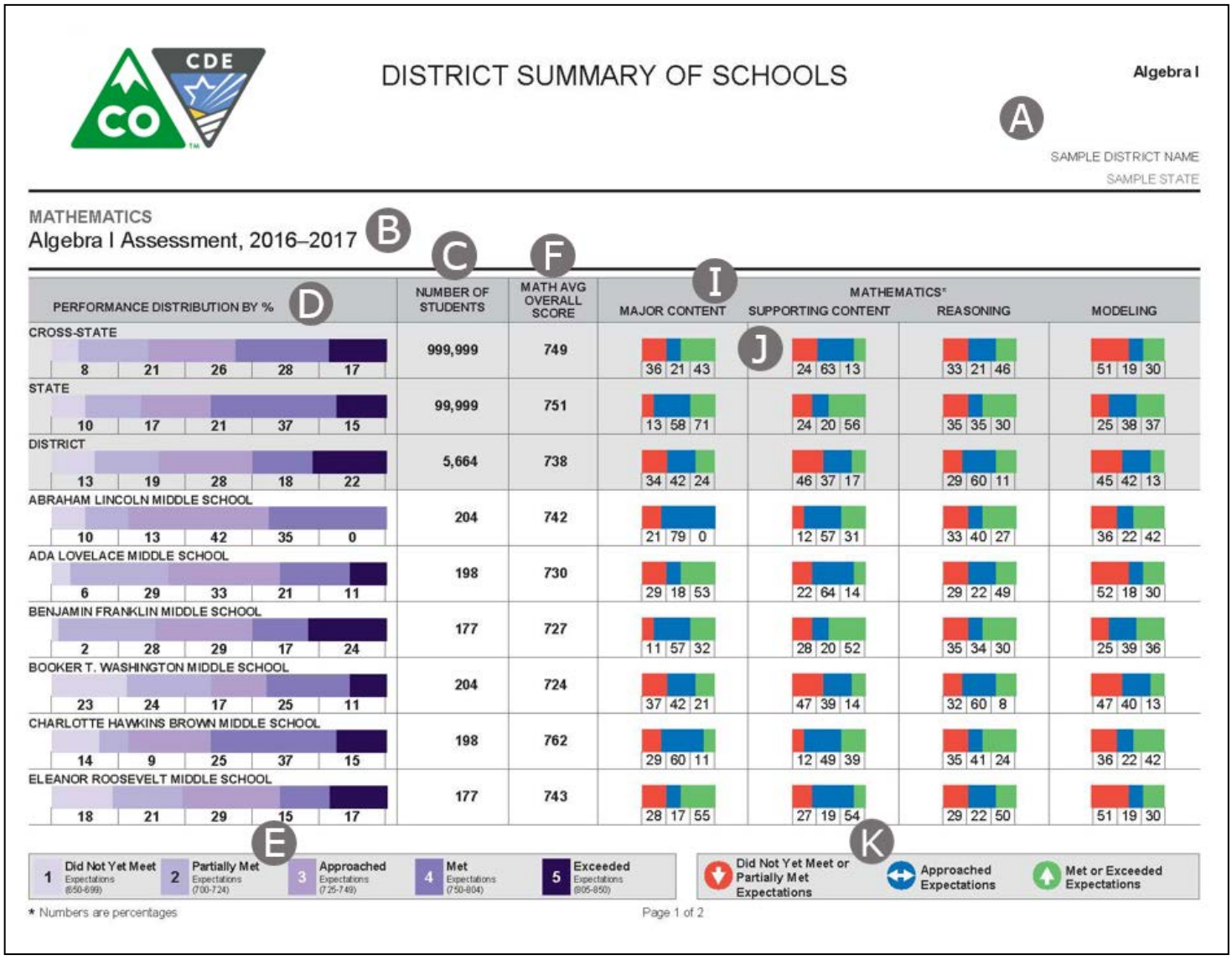
K

Did Not Yet Meet or Partially Met Expectations | Approached Expectations | Met or Exceeded Expectations

* Numbers are percentages

Page 1 of 2

5.3 Sample of District Summary of Schools Report – CMAS Mathematics



DISTRICT SUMMARY OF SCHOOLS

Algebra I

A

SAMPLE DISTRICT NAME

SAMPLE STATE

MATHEMATICS

Algebra I Assessment, 2016–2017 B

PERFORMANCE DISTRIBUTION BY % D	NUMBER OF STUDENTS C	MATH AVG OVERALL SCORE F	MATHEMATICS* I MAJOR CONTENT	SUPPORTING CONTENT J	REASONING	MODELING
CROSS-STATE 8 21 26 28 17	999,999	749	36 21 43	24 63 13	33 21 46	51 19 30
STATE 10 17 21 37 15	99,999	751	13 58 71	24 20 56	35 35 30	25 38 37
DISTRICT 13 19 28 18 22	5,664	738	34 42 24	46 37 17	29 60 11	45 42 13
ABRAHAM LINCOLN MIDDLE SCHOOL 10 13 42 35 0	204	742	21 79 0	12 57 31	33 40 27	36 22 42
ADA LOVELACE MIDDLE SCHOOL 6 29 33 21 11	198	730	29 18 53	22 64 14	29 22 49	52 18 30
BENJAMIN FRANKLIN MIDDLE SCHOOL 2 28 29 17 24	177	727	11 57 32	28 20 52	35 34 30	25 39 36
BOOKER T. WASHINGTON MIDDLE SCHOOL 23 24 17 25 11	204	724	37 42 21	47 39 14	32 60 8	47 40 13
CHARLOTTE HAWKINS BROWN MIDDLE SCHOOL 14 9 25 37 15	198	762	29 60 11	12 49 39	35 41 24	36 22 42
ELEANOR ROOSEVELT MIDDLE SCHOOL 18 21 29 15 17	177	743	28 17 55	27 19 54	29 22 50	51 19 30

E

1 Did Not Yet Meet Expectations (650-699) | 2 Partially Met Expectations (700-724) | 3 Approached Expectations (725-749) | 4 Met Expectations (750-804) | 5 Exceeded Expectations (805-850)

K

Did Not Yet Meet or Partially Met Expectations | Approached Expectations | Met or Exceeded Expectations

* Numbers are percentages

Page 1 of 2

6.0 Performance Level Summary Report

6.1 Description of Performance Level Summary Report – All Assessments

The Performance Level Summary Report is available for each grade assessed at each school or district. It contains aggregated performance level information across the school, district, state, and cross-state (mathematics and ELA only). It also contains disaggregated performance level data by student demographic and program categories and subgroups for either the school or the district. Pages 43-45 include Page 1 of sample reports.

6.1.1 General Information

A. Identification Information
The report identifies the names and codes of the school and district.

B. Test Date
The administration season and year is indicated.

C. Content/Subject Area
The content/subject area of the report is identified (mathematics, ELA, CSLA, science, or social studies).

D. Grade Level
The grade level of the assessment is indicated.

6.1.2 Performance Level Distribution Data

E. Demographic and Program Categories and Subgroups
Demographic and program categories with subgroups are listed on the left side of the table. Results for students for whom no demographic or program information was coded are included in the "Not Indicated" subgroups.

F. Number of Valid Scores
Reportable or valid scores are those records that have met attemptedness, are non-voided records, and are without suppression codes that have excluded them from aggregations (e.g., expelled and home schooled students or when a misadministration or irregularity occurred during testing). The number of valid scores does not include students with no score.

G. Average Scale Score
The average scale score is displayed for cross-state (mathematics and ELA only), state, district, school, and each demographic or program subgroup. The average does not include students with no scores.

H. Performance Level Results
The number and percentage of students who achieved Did Not Yet Meet Expectations (mathematics, ELA, and CSLA only), Partially Met Expectations, Approached Expectations, Met Expectations, and Exceeded Expectations, as well as aggregated (combined) Met and Exceeded Expectations, are displayed for each demographic or program subgroup.

I. No Scores Reported

This is the number of students registered to take the assessment who did not receive scores. They are not included in the denominator for the Performance Level percentages.

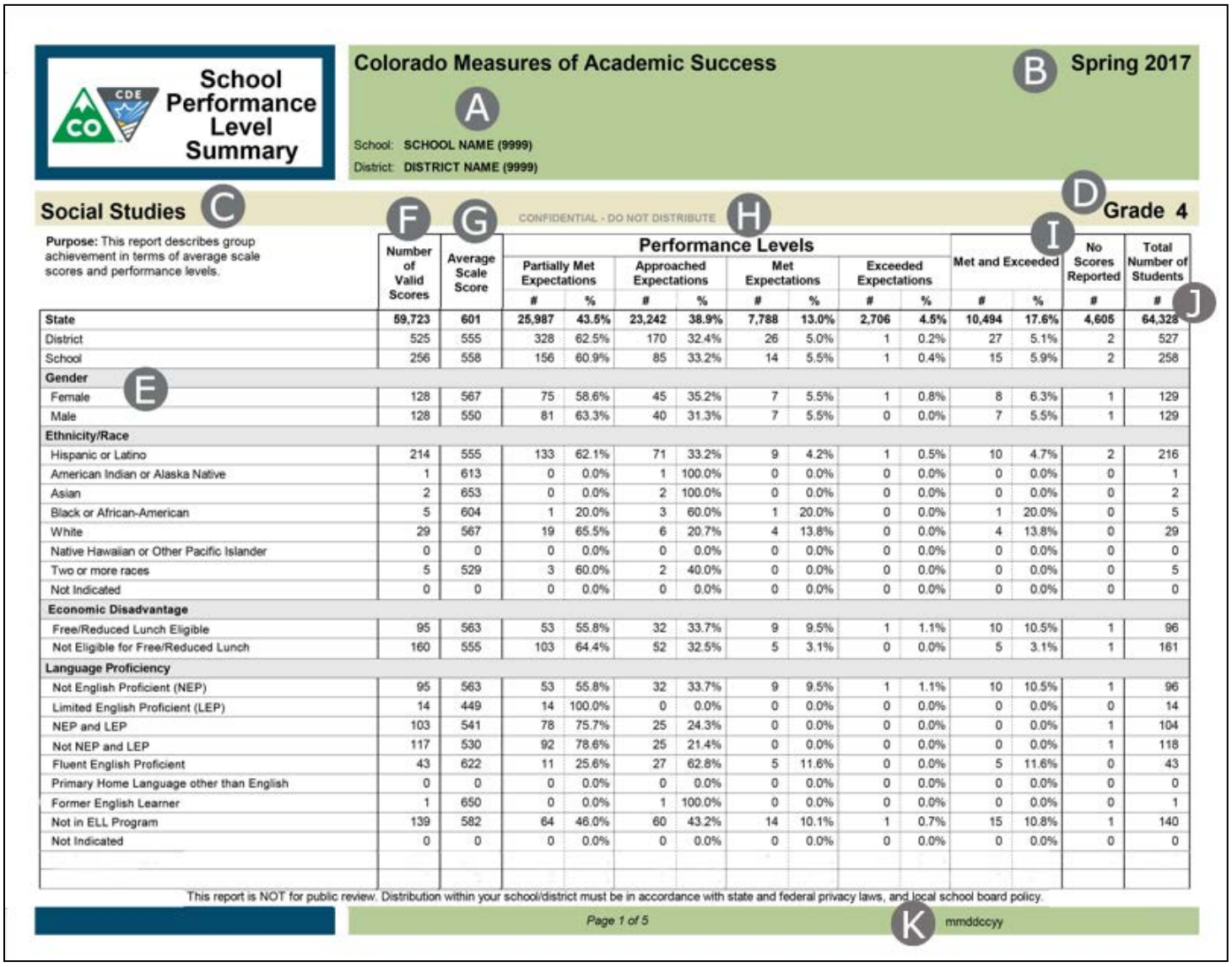
J. Total Number of Students

This is the number of students registered to take the assessment.

K. Process Number

The process number found in the bottom-right corner of the report is a unique number, per administration, that is assigned to the report by the testing contractor.

6.2 Sample Performance Level Summary Report – CMAS Science and Social Studies



School Performance Level Summary

Colorado Measures of Academic Success (B) **Spring 2017**

(A)
School: SCHOOL NAME (9999)
District: DISTRICT NAME (9999)

Social Studies (C) (D) **Grade 4**

CONFIDENTIAL - DO NOT DISTRIBUTE (H)

Purpose: This report describes group achievement in terms of average scale scores and performance levels.

	(F) Number of Valid Scores	(G) Average Scale Score	Performance Levels: Partially Met Expectations #	Partially Met Expectations %	Approached Expectations #	Approached Expectations %	Met Expectations #	Met Expectations %	Exceeded Expectations #	Exceeded Expectations %	(I) Met and Exceeded #	Met and Exceeded %	No Scores Reported	Total Number of Students (J)
State	**59,723**	**601**	**25,987**	**43.5%**	**23,242**	**38.9%**	**7,788**	**13.0%**	**2,706**	**4.5%**	**10,494**	**17.6%**	**4,605**	**64,328**
District	525	555	328	62.5%	170	32.4%	26	5.0%	1	0.2%	27	5.1%	2	527
School	256	558	156	60.9%	85	33.2%	14	5.5%	1	0.4%	15	5.9%	2	258
Gender (E)														
Female	128	567	75	58.6%	45	35.2%	7	5.5%	1	0.8%	8	6.3%	1	129
Male	128	550	81	63.3%	40	31.3%	7	5.5%	0	0.0%	7	5.5%	1	129
Ethnicity/Race														
Hispanic or Latino	214	555	133	62.1%	71	33.2%	9	4.2%	1	0.5%	10	4.7%	2	216
American Indian or Alaska Native	1	613	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	1
Asian	2	653	0	0.0%	2	100.0%	0	0.0%	0	0.0%	0	0.0%	0	2
Black or African-American	5	604	1	20.0%	3	60.0%	1	20.0%	0	0.0%	1	20.0%	0	5
White	29	567	19	65.5%	6	20.7%	4	13.8%	0	0.0%	4	13.8%	0	29
Native Hawaiian or Other Pacific Islander	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0
Two or more races	5	529	3	60.0%	2	40.0%	0	0.0%	0	0.0%	0	0.0%	0	5
Not Indicated	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0
Economic Disadvantage														
Free/Reduced Lunch Eligible	95	563	53	55.8%	32	33.7%	9	9.5%	1	1.1%	10	10.5%	1	96
Not Eligible for Free/Reduced Lunch	160	555	103	64.4%	52	32.5%	5	3.1%	0	0.0%	5	3.1%	1	161
Language Proficiency														
Not English Proficient (NEP)	95	563	53	55.8%	32	33.7%	9	9.5%	1	1.1%	10	10.5%	1	96
Limited English Proficient (LEP)	14	449	14	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	14
NEP and LEP	103	541	78	75.7%	25	24.3%	0	0.0%	0	0.0%	0	0.0%	1	104
Not NEP and LEP	117	530	92	78.6%	25	21.4%	0	0.0%	0	0.0%	0	0.0%	1	118
Fluent English Proficient	43	622	11	25.6%	27	62.8%	5	11.6%	0	0.0%	5	11.6%	0	43
Primary Home Language other than English	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0
Former English Learner	1	650	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	1
Not in ELL Program	139	582	64	46.0%	60	43.2%	14	10.1%	1	0.7%	15	10.8%	1	140
Not Indicated	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0

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Page 1 of 5 (K) mmddccyy

6.3 Sample Performance Level Summary Report – CMAS English Language Arts and CSLA

Colorado Measures of Academic Success

DISTRICT PERFORMANCE LEVEL SUMMARY

B Spring 2017

CONFIDENTIAL - DO NOT DISTRIBUTE

D Grade 3

A SAMPLE SCHOOL NAME
SAMPLE DISTRICT NAME

COLORADO SPANISH LANGUAGE ARTS **C**

Grade 3 Assessment

H

Purpose: This report describes group achievement in terms of average scale scores and performance levels.

E

	F Number of Valid Scores	**G** Average Scale Score	Performance Levels: Level 1 Did Not Yet Meet Expectations		Level 2 Partially Met Expectations		Level 3 Approached Expectations		Level 4 Met Expectations		Level 5 Exceeded Expectations		≥ Level 4 Met or Exceeded Expectations		**I** No Scores Reported	**J** Total Number of Students
			#	%	#	%	#	%	#	%	#	%	#	%	#	#
Cross-State	54	760	2	3.7%	7	13.0%	18	33.3%	17	31.5%	10	18.5%	27	50.0%	N/A	N/A
State	**38**	**760**	**0**	**0.0%**	**7**	**18.4%**	**13**	**34.2%**	**10**	**26.3%**	**8**	**21.1%**	**18**	**47.4%**	**2**	**40**
District	38	760	0	0.0%	7	18.4%	13	34.2%	10	26.3%	8	21.1%	18	47.4%	1	39
Gender																
Female	13	774	0	0.0%	2	15.4%	3	23.1%	4	30.8%	4	30.8%	8	61.5%	0	13
Male	25	753	0	0.0%	5	20.0%	10	40.0%	6	24.0%	4	16.0%	10	40.0%	1	26
Ethnicity/Race																
Hispanic or Latino	9	767	0	0.0%	3	33.3%	1	11.1%	2	22.2%	3	33.3%	5	55.6%	0	9
American Indian or Alaska Native	2	783	0	0.0%	0	0.0%	0	0.0%	1	50.0%	1	50.0%	2	100.0%	0	2
Asian	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0
Black or African-American	2	805	0	0.0%	0	0.0%	0	0.0%	1	50.0%	1	50.0%	2	100.0%	0	2
Native Hawaiian or Other Pacific Islander	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0
White	13	759	0	0.0%	2	15.4%	5	38.5%	4	30.8%	2	15.4%	6	46.2%	1	14
Two or more races	11	746	0	0.0%	2	18.2%	6	54.5%	2	18.2%	1	9.1%	3	27.3%	0	11
Not Indicated	1	739	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	1
Economic Disadvantage																
Free/Reduced Lunch Eligible	5	783	0	0.0%	0	0.0%	2	40.0%	1	20.0%	2	40.0%	3	60.0%	0	5
Not Eligible for Free/Reduced Lunch	33	757	0	0.0%	7	21.2%	11	33.3%	9	27.3%	6	18.2%	15	45.5%	1	34

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Page 1 of 7

K mmddyyyy-Batch-1234-5678-1234567

6.4 Sample Performance Level Summary Report – CMAS Mathematics

Colorado Measures of Academic Success

DISTRICT PERFORMANCE LEVEL SUMMARY

D Grade 5

CONFIDENTIAL - DO NOT DISTRIBUTE

A SAMPLE SCHOOL NAME
SAMPLE DISTRICT NAME

MATHEMATICS C
Grade 5 Assessment, Spring 2017 B

H

Purpose: This report describes group achievement in terms of average scale scores and performance levels.

E

	F Number of Valid Scores	G Average Scale Score	Performance Levels										≥ Level 4 Met or Exceeded Expectations		I No Scores Reported	J Total Number of Students
			Level 1 Did Not Yet Meet Expectations		Level 2 Partially Met Expectations		Level 3 Approached Expectations		Level 4 Met Expectations		Level 5 Exceeded Expectations					
			#	%	#	%	#	%	#	%	#	%	#	%	#	#
Cross-State	81	749	3	3.7%	18	22.2%	27	33.3%	21	25.9%	12	14.8%	33	40.7%	N/A	N/A
State	**64**	**750**	**2**	**3.1%**	**11**	**17.2%**	**24**	**37.5%**	**18**	**28.1%**	**9**	**14.1%**	**27**	**42.2%**	**1**	65
District	64	750	2	3.1%	11	17.2%	24	37.5%	18	28.1%	9	14.1%	27	42.2%	0	64
Gender																
Female	26	759	0	0.0%	4	15.4%	7	26.9%	10	38.5%	5	19.2%	15	57.7%	0	26
Male	38	743	2	5.3%	7	18.4%	17	44.7%	8	21.1%	4	10.5%	12	31.6%	0	38
Ethnicity/Race																
Hispanic or Latino	17	751	0	0.0%	2	11.8%	8	47.1%	4	23.5%	3	17.6%	7	41.2%	0	17
American Indian or Alaska Native	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0
Asian	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0
Black or African-American	3	756	0	0.0%	0	0.0%	1	33.3%	2	66.7%	0	0.0%	2	66.7%	0	3
Native Hawaiian or Other Pacific Islander	1	741	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	1
White	18	753	0	0.0%	2	11.1%	9	50.0%	5	27.8%	2	11.1%	7	38.9%	0	18
Two or more races	15	742	2	13.3%	3	20.0%	4	26.7%	4	26.7%	2	13.3%	6	40.0%	0	15
Not Indicated	10	753	0	0.0%	4	40.0%	1	10.0%	3	30.0%	2	20.0%	5	50.0%	0	10
Economic Disadvantage																
Free/Reduced Lunch Eligible	8	751	0	0.0%	1	12.5%	4	50.0%	2	25.0%	1	12.5%	3	37.5%	0	8
Not Eligible for Free/Reduced Lunch	56	750	2	3.6%	10	17.9%	20	35.7%	16	28.6%	8	14.3%	24	42.9%	0	56

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Page 1 of 7

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7.0 Evidence Statement Analysis Report

7.1 Description of Evidence Statement Analysis Report – CMAS Mathematics, ELA, and CSLA

An Evidence Statement Analysis Report is available for each assessed grade/content area (ELA grades 3 through 9; CSLA grades 3 and 4; mathematics grades 3 through 8, Algebra I, Geometry, Algebra II, and Integrated Mathematics I, II, III). School and district level versions of the report are available. The report includes item level score information at the school, district, state, and cross-state (mathematics and ELA only) levels. The second page of the report includes item map information related to the Colorado Academic Standards (CAS). Sample Evidence Statement Analysis Reports are displayed at the end of this section on pages 49-52.

Information included on the Evidence Statement Analysis Report can be used to identify patterns of evidence statements where a school is performing better or worse than the district or state or where a district is performing better or worse than the state. For example, within a particular evidence statement, a school within a district may be out-performing the district and the state while the school may be performing worse than the district and the state in another evidence statement. In combination with other evidence and data, schools and districts can use the information in the Evidence Statement Analysis Report to identify patterns across evidence statements that may be indicative of potential areas of strength or weakness.

7.1.1 General Information

Refer to Page 1 of the Evidence Statement Analysis.

A. Identification Information

The Evidence Statement Analysis identifies the district name. The school name is also included on school level reports.

B. Subject Area and Grade Level

The content area, grade level, administration season, and year of the report are identified.

7.1.2 Item Analysis Information

Refer to Page 1 of the Evidence Statement Analysis. **Note:** For mathematics, writing tasks are not included. For this reason, there are no markers for G through I on the sample Mathematics Evidence Statement Analysis Reports.

C. Number of Students with Valid Scores

The number of students with valid scores is indicated. Reportable or valid scores are those records that have met attemptedness, are non-voided, and are without suppression codes that have excluded them from aggregations (e.g., expelled and home schooled students, or when a misadministration or irregularity occurred during testing).

D. Graph Key

The graph key includes explanatory text for the symbols and lines in the graph: Cross-State (mathematics and ELA only), State, and District for the district level report and Cross-State (mathematics and ELA only), State, District, and School for the school level report.

E. Evidence Statement and Difficulty Order

Items on the mathematics, English language arts, and CSLA assessments are written to evidence statements that are mapped to the CAS. Each operational item on the assessment is combined into an evidence statement group. Items may be aligned to more than one evidence statement. This means that one item could be represented on the report multiple times depending on its alignment.

The evidence statements are placed in order on the graph from most to least difficult appearing from left to right. This difficulty order is determined based on student performance on the items at the state level.

F. Graphical Representation of State, District, and School Level Performance by Evidence Statement

The graphical representation shows how the state, district, and school performed on each operational evidence statement. Cross-state consortium performance (mathematics and ELA only) is represented as a red line with triangles, the state is represented as a blue line with squares, the district is represented as green circles, and on the school level reports, the school is represented by orange inverted triangles.

The points on the graph represent at each level (cross-state, state, district and school) the average points earned compared to the points possible for the group of valid scores in that category. A school can then compare how those students performed on each evidence statement compared to other students in the district, state or cross-state.

For ELA and CSLA this comparison can also be used to evaluate school or district performance on the writing tasks as shown in the charts represented by letter G.

G. Writing Tasks

This section charts information related to the performance of the writing tasks included on the ELA and CSLA assessments.

H. Written Expression and Writing Knowledge

Writing Expression includes the development of ideas, organization, and clarity of language that the student demonstrates in the written response.

Writing Knowledge is knowledge of language/conventions which assesses the student's command of the conventions of standard English, including grammar and usage.

I. Prose Constructed Response (PCR)

This section breaks down the writing tasks by the three types of PCR items included on the English language arts and CSLA assessments. The PCRs ask for an extended student response that analyzes literary works in the categories of Literary Analysis and Narrative Writing and informational texts in the category of a Research Simulation Task.

7.1.3 Item Map Information

Refer to Page 2 of the Evidence Statement Analysis.

J. Evidence Statement

Evidence statements are listed in the same order as on the Page 1 graph, from most to least difficult based on the state level.

K. Colorado Academic Standard(s)

The CAS linked to the evidence statement is listed in the third column. An evidence statement could be connected to multiple standards. For statements that are considered Modeling or Modeling & Reasoning - Securely Held Knowledge, verbiage is indicated on the chart on Page 2. Additionally some integrated mathematics evidence statements cross multiple domains and are not linked to only a single CAS. Those statements indicate "Multiple" on the report.

L. Domain

The Domain level (e.g., Reading: Informational Text, Reading: Literature, Operations and Algebraic Thinking) is listed in this column.

M. School Student Count

The School Student Count represents the number of students whose form of the assessment contained an item written to the evidence statement listed in column J. The counts may differ by row as there are different forms of the assessment and not all forms include the same items or evidence statements.

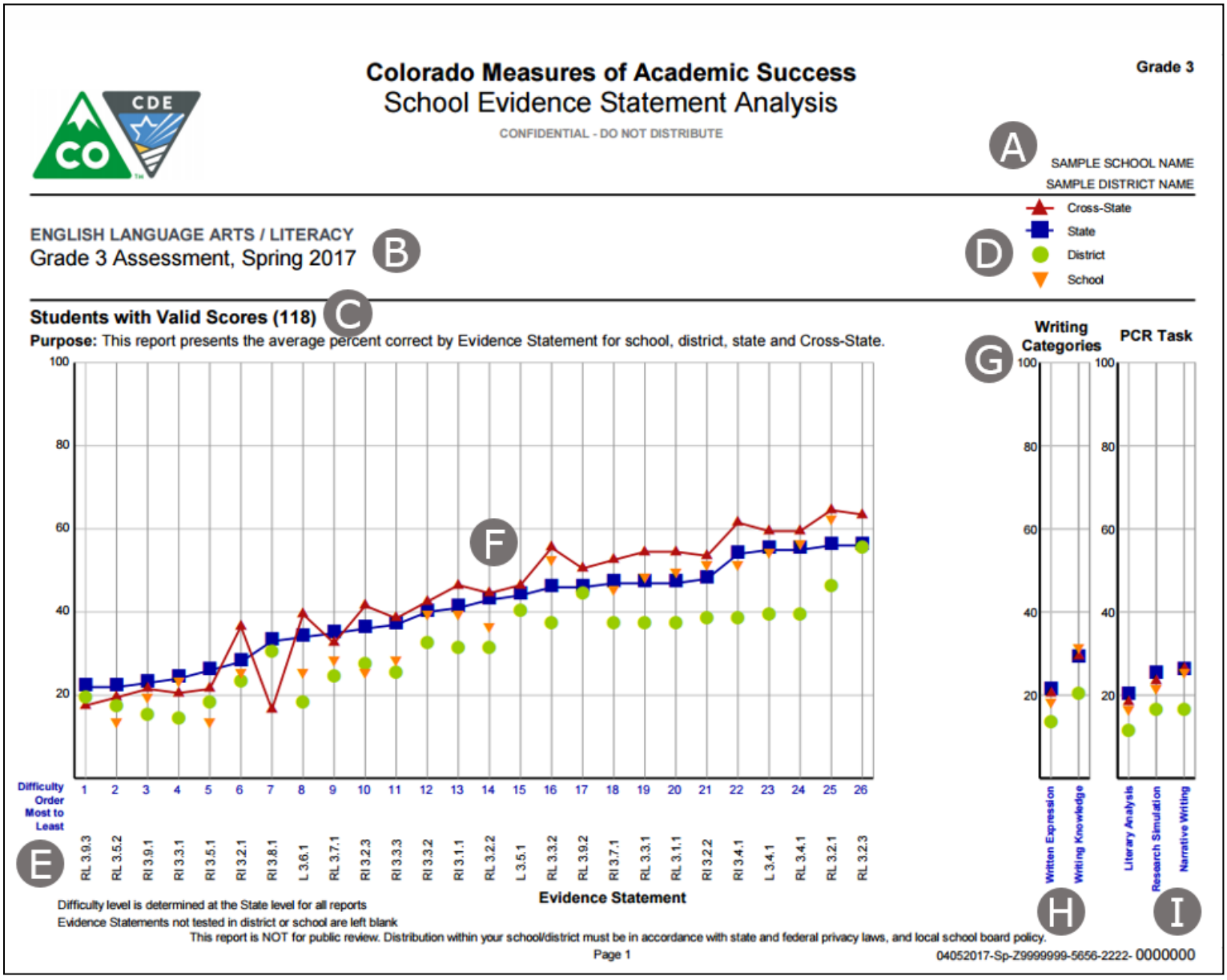
N. Additional Information

Links to more detailed information on the evidence statements and CAS are provided at the bottom of the report.

Evidence Statements: http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Colorado Academic Standards:
http://www.cde.state.co.us/standardsandinstruction/standardsresourcesk12

7.2 Sample Evidence Statement Analysis – CMAS English Language Arts and CSLA



Colorado Measures of Academic Success
School Evidence Statement Analysis

Grade 3

CONFIDENTIAL - DO NOT DISTRIBUTE

SAMPLE SCHOOL NAME
SAMPLE DISTRICT NAME

This report shows the operational Evidence Statements for the given grade and subject sorted by difficulty

ENGLISH LANGUAGE ARTS / LITERACY
Grade 3 Assessment, Spring 2017

M

Difficulty Order Most to Least	J Evidence Statement	K Colorado Academic Standard(s)	L Domain	School Student Count
1	RL 3.9.3	3.2.1.c.iii	Reading: Literature	11
2	RL 3.5.2	3.2.1.b.iii	Reading: Literature	11
3	RI 3.9.1	3.2.2.c.iii	Reading: Informational Text	11
4	RI 3.3.1	3.2.2.a.iii	Reading: Informational Text	11
5	RI 3.5.1	3.2.2.b.ii	Reading: Informational Text	11
6	RI 3.2.1	3.2.2.a.ii	Reading: Informational Text	11
7	RI 3.8.1	3.2.2.c.ii	Reading: Informational Text	11
8	L 3.6.1	3.2.3.e	Language	11
9	RL 3.7.1	3.2.1.c.i	Reading: Literature	11
10	RI 3.2.3	3.2.2.a.ii	Reading: Informational Text	11
11	RI 3.3.3	3.2.2.a.iii	Reading: Informational Text	11
12	RI 3.3.2	3.2.2.a.iii	Reading: Informational Text	11
13	RI 3.1.1	3.2.2.a.i	Reading: Informational Text	11
14	RL 3.2.2	3.2.1.a.iii	Reading: Literature	11
15	L 3.5.1	3.2.3.d	Language	11
16	RL 3.3.2	3.2.1.a.v	Reading: Literature	11
17	RL 3.9.2	3.2.1.c.iii	Reading: Literature	11
18	RI 3.7.1	3.2.2.c.i	Reading: Informational Text	11
19	RL 3.3.1	3.2.1.a.v	Reading: Literature	11
20	RL 3.1.1	3.2.1.a.i	Reading: Literature	11
21	RI 3.2.2	3.2.2.a.ii	Reading: Informational Text	11
22	RI 3.4.1	3.2.2.b.i	Reading: Informational Text	11
23	L 3.4.1	3.2.3.c	Language	11
24	RL 3.4.1	3.2.1.b.i	Reading: Literature	11
25	RL 3.2.1	3.2.1.a.iii	Reading: Literature	11
26	RL 3.2.3	3.2.1.a.iii	Reading: Literature	11

N

Evidence Statements: http://www.parcconline.org/assessments/test-design/ela-literacy/test-specifications-documents

Colorado Academic Standards: http://www.cde.state.co.us/standardsandinstruction/standardsresourcesk12

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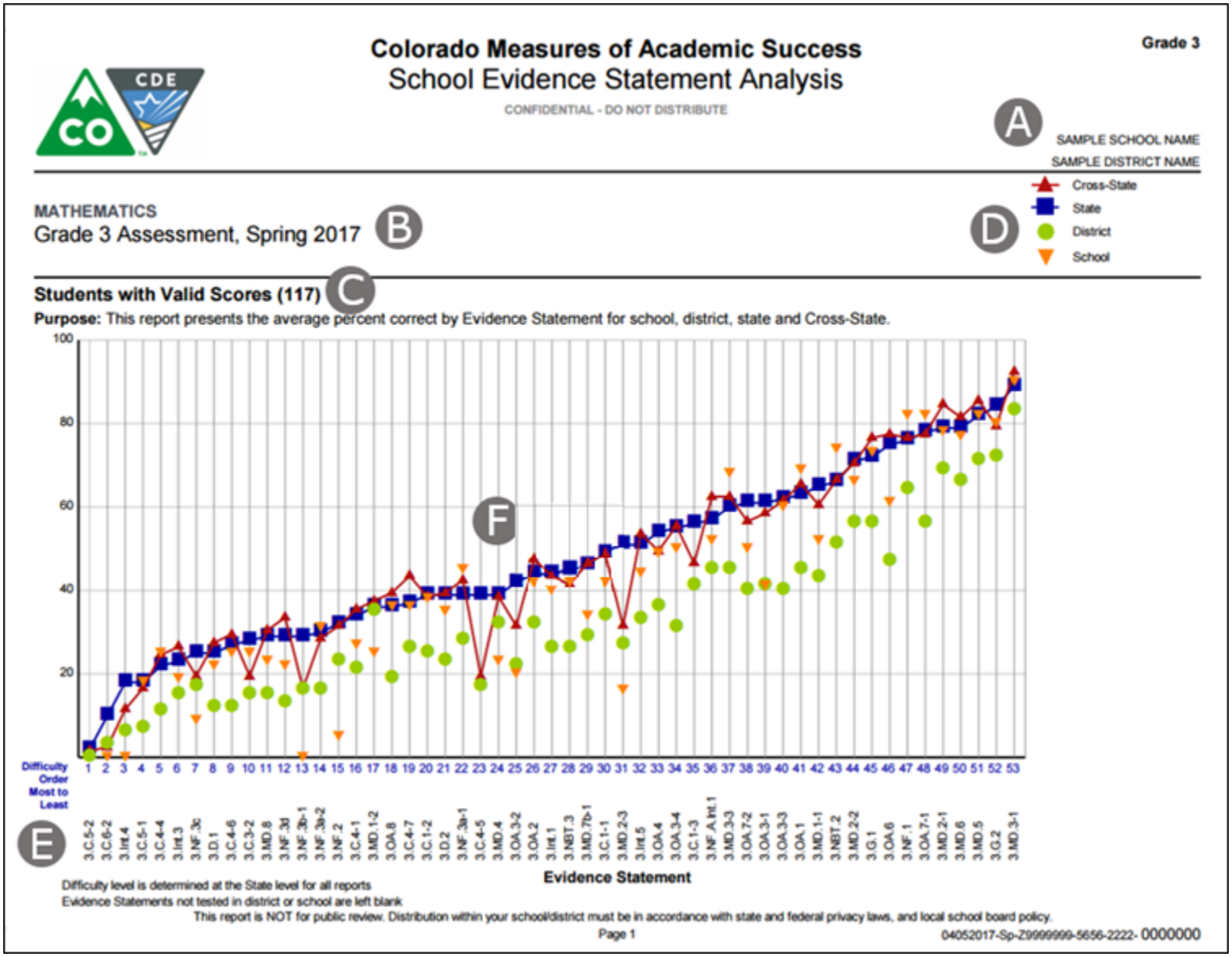
7.3 Sample Evidence Statement Analysis – CMAS Mathematics

Page 1



Sample Evidence Statement Analysis – CMAS Mathematics

Page 2

Colorado Measures of Academic Success
School Evidence Statement Analysis

Grade 3

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SAMPLE SCHOOL NAME
SAMPLE DISTRICT NAME

This report shows the operational Evidence Statements for the given grade and subject sorted by difficulty

MATHEMATICS

Grade 3 Assessment, Spring 2017

Difficulty Order Most to Least	J Evidence Statement	K Colorado Academic Standard(s)	L Domain	M School Student Count
1	3.C.5-2	3.4.2.a.ii	Measurement & Data	11
2	3.C.6-2	3.4.3.a.i 3.4.3.a.ii 3.4.3.a.iii	Measurement & Data	11
3	3.Int.4	Multiple	Multiple	11
4	3.C.5-1	3.1.3.d.i 3.1.3.d.ii 3.1.3.d.iii	Operations & Algebraic Thinking	11
5	3.C.4-4	3.1.2.a.iii.2 3.1.2.a.iii.4 3.1.2.a.iii.5 3.1.2.a.iii.6	Number & Operations - Fractions	11
6	3.Int.3	Multiple	Multiple	11
7	3.NF.3c	3.1.2.a.iii.3	Number & Operations - Fractions	11
8	3.D.1	Modeling and Reasoning	Modeling and Reasoning	11
9	3.C.4-6	3.1.3.d.iv	Operations & Algebraic Thinking	11
10	3.C.3-2	3.4.2.a.i 3.4.2.a.ii 3.4.2.a.iii	Measurement & Data	11
11	3.MD.8	3.4.2.c 3.4.2.c.i 3.4.2.c.ii 3.4.2.c.iii	Measurement & Data	11
12	3.NF.3d	3.1.2.a.iii.4 3.1.2.a.iii.5 3.1.2.a.iii.6	Number & Operations - Fractions	11
13	3.NF.3b-1	3.1.2.a.iii.2	Number & Operations - Fractions	11
14	3.NF.3a-2	3.1.2.a.iii.1	Number & Operations - Fractions	11
15	3.NF.2	3.1.2.a.ii	Number & Operations - Fractions	11
16	3.C.4-1	3.1.3.b.i	Operations & Algebraic Thinking	11
17	3.MD.1-2	3.4.3.a.i 3.4.3.a.ii 3.4.3.a.iii	Measurement & Data	11
18	3.OA.8	3.1.3.d.i 3.1.3.d.ii 3.1.3.d.iii	Operations & Algebraic Thinking	11
19	3.C.4-7	Modeling and Reasoning	Modeling and Reasoning	11
20	3.C.1-2	3.1.3.d.iv	Operations & Algebraic Thinking	11
21	3.D.2	Modeling and Reasoning	Modeling and Reasoning	11
22	3.NF.3a-1	3.1.2.a.iii.1	Number & Operations - Fractions	11
23	3.C.4-5	3.4.2.a.iii	Measurement & Data	11
24	3.MD.4	3.3.1.a.iii	Measurement & Data	11
25	3.OA.3-2	3.1.3.a.iii	Operations & Algebraic Thinking	11
26	3.OA.2	3.1.3.a.ii	Operations & Algebraic Thinking	11
27	3.Int.1	Multiple	Multiple	11
28	3.NBT.3	3.1.1.a.iii	Number & Operations in Base Ten	11
29	3.MD.7b-1	3.4.2.a.ii	Measurement & Data	11
30	3.C.1-1	3.1.3.b.i	Operations & Algebraic Thinking	11

continued

N

Evidence Statements: http://www.parcconline.org/assessments/test-design/mathematics/math-test-specifications-documents

Colorado Academic Standards: http://www.cde.state.co.us/standardsandinstruction/standardsresourcesk12

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8.0 Item Analysis Report

8.1 Description of Item Analysis Report – CMAS Science and Social Studies

An Item Analysis Report is available for CMAS science and social studies at the district and school levels for each assessed grade level and content area. The report includes item level score information at the school, district, and state levels. The back of the report includes item map information.

Information included on the Item Analysis Report can be used to identify patterns of items (and aligned CAS) where a school is performing better or worse than the district or state or where a district is performing better or worse than the state. For example, within a particular Grade Level Expectation (GLE), a school within a district may be out-performing the district and the state while the school may be performing worse than the district and the state in another GLE. In combination with other evidence and data, schools and districts can use the information in the Item Analysis Report to identify patterns across standards, GLEs, and PGCs that may be indicative of potential areas of strength or weakness. A sample Item Analysis Report is included on pages 55-56.

8.1.1 General Information

Refer to Page 1 of the Item Analysis Report.

A. Identification Information
The report identifies the school and district name and code.

B. Test Date
The administration season and year is indicated.

C. Subject Area
The subject area of the report is identified (either science or social studies).

D. Grade Level
The grade level of the assessment is indicated.

The general information is repeated on Page 2 of the report.

8.1.2 Item Analysis Information

Refer to Page 1 of the Item Analysis Report.

E. Number of Students with Valid Scores
The number of students with valid scores is indicated. Reportable or valid scores are those records that have met attemptedness, are non-voided, and are without suppression codes that have excluded them from aggregations (e.g., expelled and home schooled students, or when a misadministration or irregularity occurred during testing).

F. Graph Key
The graph key includes explanatory text for the symbols and lines in the graph: State, District, and School.

G. Percent of Average Points Earned

The percent of average points earned is included to the left of the graphical representation of state, district, and school performance by item. Items that were more difficult for students across the state have a lower percent of average points earned. For 1-point selected response items, the percent of students who correctly responded is recorded. For 2- and 3-point constructed response items, the average of points earned is divided by 2 or 3, respectively, in creating the percentage.

H. Numbered Items

Items are identified by numbers in blue text at the bottom of the graph and are ordered from most difficult to least difficult based on the state level, such that the most difficult item is labeled as 1.

I. Standard and Grade Level Expectation (GLE)/Prepared Graduate Competency (PGC)

On elementary and middle school item analysis reports, the corresponding standard and GLE are listed below each item. On the high school item analysis report, the corresponding standard and PGC are listed below each item.

J. Graphical Representation of State, District, and School Level Performance by Item

The graphical representation shows how the state, district, and school performed on each operational item. The state is represented as a blue line with squares, the district is represented as a green line with circles, and the school is represented by an orange line with inverted triangles.

K. Document Process Number

The document number located in the bottom-right corner of the report is a unique number, per administration, that is assigned by the testing contractor.

8.1.3 Item Map Information

Refer to Page 2 of the Item Analysis Report.

L. Item Map Information

Page 2 of the Item Analysis Report includes information for all the operational items that were included on the assessment. Items are ordered from most to least difficult, as they were on Page 1 of the report. For each item, the following information is included:

- Difficulty Order from Most to Least (matches Page 1)
- Standard and GLE Numbers (for grades 4, 5, 7, and 8 only—high school has Standard and PGC Number)
- Location on the Test (unit number and item number)
- Standard by Name
- Prepared Graduate Competency (PGC)
- Grade Level Expectation (GLE) (elementary and middle school only)
- Item Type (Selected Response (SR); 2-point Constructed Response (CR-2); 3-point Constructed Response (CR-3))

8.2 Sample Item Analysis Report – CMAS Science and Social Studies

Page 1

School Item Analysis Report

Colorado Measures of Academic Success (B) Spring 2017

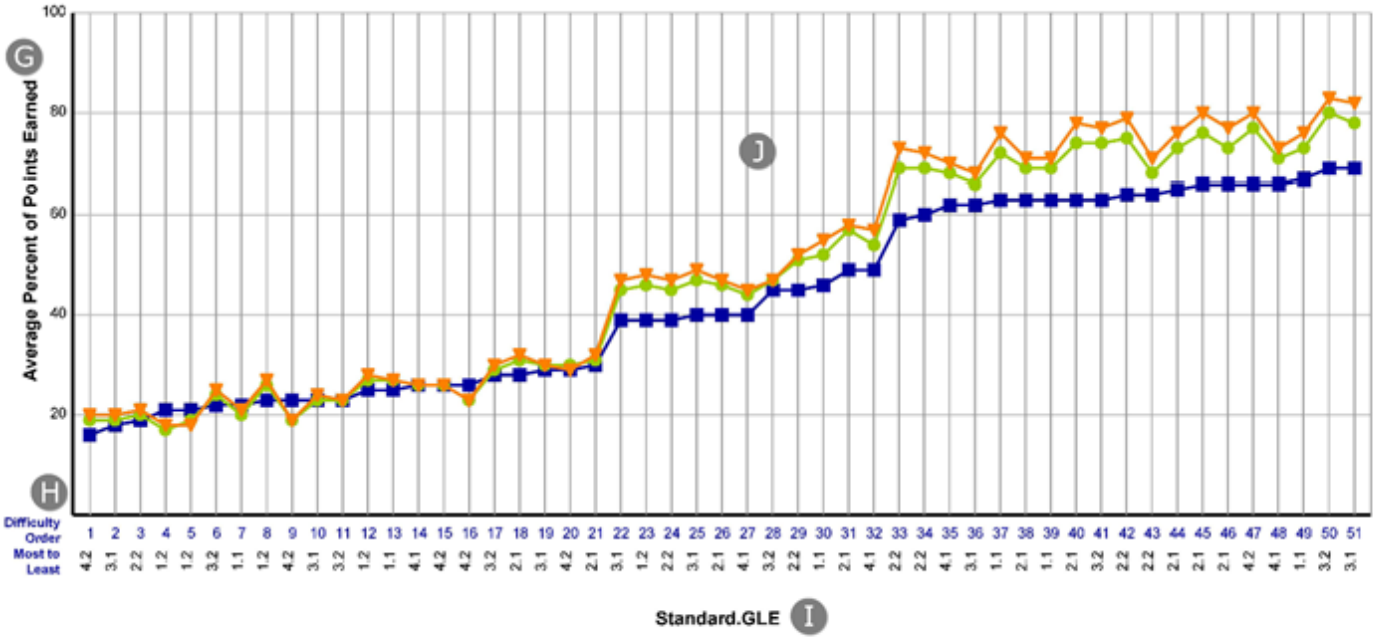
(A)

School: SCHOOL NAME (9999)
District: DISTRICT NAME (9999)

Social Studies (C) CONFIDENTIAL - DO NOT DISTRIBUTE (D) Grade 4

Purpose: This report presents the average percent correct by item for school, district and state.
Students with Valid Scores (300) (E)

(F) State, District, School



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(K) 0711201 7-Z999999-9999-9999-00001

Item Analysis Report Detail

Colorado Measures of Academic Success **Spring 2017**

This report shows the operational items for the given grade and subject sorted by difficulty.

Social Studies L

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Grade 4

Difficulty Order Most to Least	Standard.GLE	Section-Item Number	Standard	Prepared Graduate Competencies (PGCs)	Grade Level Expectations (GLEs)	Item Type Selected Response (SR) Constructed Response (CR)
1	4.2	3-023	Civics	PGC2	GLE2	SR
2	3.1	3-022	Economics	PGC1	GLE1	SR
3	2.2	3-020	Geography	PGC2	GLE2	SR
4	1.2	3-013	History	PGC2	GLE2	CR-3
5	1.2	3-012	History	PGC2	GLE2	CR-3
6	3.2	3-015	Economics	PGC2	GLE2	SR
7	1.1	3-006	History	PGC1	GLE1	CR-3
8	1.2	3-010	History	PGC2	GLE2	SR
9	4.2	3-014	Civics	PGC2	GLE2	CR-3
10	3.1	3-018	Economics	PGC1	GLE1	SR
11	3.2	3-021	Economics	PGC2	GLE2	SR
12	1.2	3-009	History	PGC2	GLE2	SR
13	1.1	3-011	History	PGC1	GLE1	SR
14	4.1	3-016	Civics	PGC1	GLE1	SR
15	4.2	3-017	Civics	PGC2	GLE2	SR
16	4.2	3-019	Civics	PGC2	GLE2	CR-3
17	3.2	3-003	Economics	PGC2	GLE2	SR
18	2.1	3-008	Geography	PGC1	GLE1	SR
19	3.1	3-005	Economics	PGC1	GLE1	SR
20	4.2	3-007	Civics	PGC2	GLE2	SR
21	2.1	3-004	Geography	PGC1	GLE1	SR
22	3.1	2-020	Economics	PGC1	GLE1	SR
23	1.2	2-017	History	PGC2	GLE2	SR
24	2.2	2-021	Geography	PGC2	GLE2	SR
25	3.1	2-016	Economics	PGC1	GLE1	SR
26	2.1	2-018	Geography	PGC1	GLE1	SR
27	4.1	2-019	Civics	PGC1	GLE1	CR-3
28	3.2	2-006	Economics	PGC2	GLE2	CR-3
29	2.2	2-007	Geography	PGC2	GLE2	SR
30	1.1	2-005	History	PGC1	GLE1	SR
31	2.1	2-003	Geography	PGC1	GLE1	SR
32	4.1	2-004	Civics	PGC1	GLE1	SR
33	2.2	1-018	Geography	PGC2	GLE2	SR
34	2.2	1-020	Geography	PGC2	GLE2	SR
35	4.1	1-019	Civics	PGC1	GLE1	CR-3
36	3.1	1-006	Economics	PGC1	GLE1	CR-3
37	1.1	1-015	History	PGC1	GLE1	SR
38	2.1	1-012	Geography	PGC1	GLE1	CR-3
39	1.1	1-013	History	PGC1	GLE1	CR-3
40	2.1	1-009	Geography	PGC1	GLE1	SR
41	3.2	1-016	Economics	PGC2	GLE2	SR
42	2.2	1-007	Geography	PGC2	GLE2	SR
43	2.2	1-014	Geography	PGC2	GLE2	CR-3
44	2.1	1-011	Geography	PGC1	GLE1	SR
45	2.1	1-005	Geography	PGC1	GLE1	SR
46	2.1	1-010	Geography	PGC1	GLE1	SR
47	4.2	1-004	Civics	PGC2	GLE2	SR
48	4.1	1-021	Civics	PGC1	GLE1	SR
49	1.1	1-017	History	PGC1	GLE1	SR
50	3.2	1-003	Economics	PGC2	GLE2	SR
51	3.1	1-008	Economics	PGC1	GLE1	SR

9.0 Content Standards Roster Report

9.1 Description of Content Standards Roster Report – CMAS Mathematics, ELA, and CSLA

The Content Standards Roster Report analyzes student performance on operational items on the spring 2017 assessment. Reports are available by grade and subject at the school level. The Content Standards Roster Report lists every student who has a roster flag in the summative data file and does not have a report suppression applied. Score information is only included for students with valid scores (i.e., not invalidated). This report provides the overall performance level, domain, and standard performance for each student. It also provides the same information aggregated at the cross-state (mathematics and ELA only), state, district, and school levels. Sample reports are included on pages 59-62.

9.1.1 General Information

A. School Information

This section of the report includes the name of school and the associated district.

B. Description of Report

The assessed content area (mathematics, English language arts, or CSLA), grade level/course, and assessment year.

9.1.2 Content Standards Information

C. Domain and Standard

All operational items are combined into the Domain and Standard group to which they apply. Some items represent multiple standards and may therefore be included in multiple groups on this report. If a domain has more than one standard for that grade level/course, then an overall column will also be provided.

A full list of the assessed standards by grade and content area is found in **Appendix D** and at: http://www.cde.state.co.us/standardsandinstruction/standardsresourcesk12.

D. Average Percent Correct and Points Possible

Within all domains and standards, this report provides the total points possible for that group based on the items in that group and the maximum points possible for those items.

For example, a standard might have four items aligned to it. Three of those items might be worth 2 points each and one item worth 4 points, meaning that group would have a maximum points possible of 10 points ((3x2)+4).

Columns with items that have max points possible of less than 6 points will show an "n/a" in the total points possible column. For domains with multiple standard groups, this amount will still be included in the total.

E. Student Percent Achieved

This column shows the percent of the total points possible each student listed achieved in each domain and standard group. Groups with fewer than 6 maximum points will have "< 6" listed in this column, not the student's percent correct. For Domains with multiple standard groups, this amount will still be included in the total.

F. State Average Percent Achieved

This column provides the average percent achieved for all students in the state with valid scores for each domain and standard group for each form combination. Groups with fewer than 6 maximum points will have "< 6" listed in this column. For Domains with multiple standard groups, this amount will still be included in the total.

G. Core Form

This column identifies the spring 2017 core form taken by each listed student. Each core or base form is used to create multiple operational forms. Students who have the same number in this column did not necessarily take the exact same operational form of the test. Information for all columns (maximum points, student percent correct, and state percent correct) are for the student's specific operational form combination. Comparisons cannot be made for students across domains unless both students took the same operational form of the assessment.

H. Student Information

Students will be listed in alphabetical order by last name, first name. Students will only have score information if a valid score is available. Students who were indicated as home schooled, expelled, withdrew before/during testing, medical exemption, or records indicated as duplicate will not appear on this report.

9.2 Sample Content Standards Roster Report – CMAS English Language Arts and CSLA

Page 1

Colorado Measures of Academic Success
Content Standards Roster

Grade 4

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A SAMPLE SCHOOL NAME
SAMPLE DISTRICT NAME
COLORADO

ENGLISH LANGUAGE ARTS / LITERACY
Grade 4 Assessment, Spring 2017 B

CO = State Average Percent Points Achieved
ST = Student Percent Points Achieved
PP = Total Points Possible

H STUDENT	G CORE FORM	Reading: Literature												Reading: Informational Text									
		OVERALL D			Key Ideas & Details C 4.2.1.a.i 4.2.1.a.iii 4.2.1.a.iv			Craft & Structure F 4.2.1.b.i 4.2.1.b.ii 4.2.1.b.iii			Integration of Knowledge & Ideas 4.2.1.c.i 4.2.1.c.ii			OVERALL			Key Ideas & Details 4.2.2.a.i 4.2.2.a.ii 4.2.2.a.iii			Craft & Structure 4.2.2.b.i 4.2.2.b.ii 4.2.2.b.iii			Integration of Knowledge & Ideas 4.2.2.c.i 4.2.2.c.ii 4.2.2.c.iii		
		CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP
1 STUDENT 1	15	40	0	32	40	0	32	38	0	8	n/a	n/a	<6	34	9	32	34	9	32	30	0	8	40	21	14
2 STUDENT 2	15	40	13	32	40	13	32	38	0	8	n/a	n/a	<6	34	3	32	34	3	32	30	0	8	40	7	14
3 STUDENT 3	11	26	0	32	26	E	32	25	0	8	n/a	n/a	<6	27	9	32	27	9	32	25	0	12	33	50	6
4 STUDENT 4	11	26	88	32	26		32	25	100	8	n/a	n/a	<6	27	88	32	27	88	32	25	100	12	33	33	6
5 STUDENT 5	13	29	19	32	29	19	32	25	0	6	n/a	n/a	<6	29	0	32	29	0	32	33	0	14	40	0	8
6 STUDENT 6	15	40	0	32	40	0	32	38	0	8	n/a	n/a	<6	34	13	32	34	13	32	30	0	8	40	29	14
7 STUDENT 7	16	54	75	32	54	75	32	63	100	8	n/a	n/a	<6	36	3	32	36	3	32	32	0	10	53	17	6
8 STUDENT 8	16	54	56	32	54	56	32	63	75	8	n/a	n/a	<6	36	0	32	36	0	32	32	0	10	53	0	6
9 STUDENT 9	12	4	13	32	4	13	32	n/a	n/a	<6	21	67	6	5	0	32	5	0	32	0	0	10	22	0	8
10 STUDENT 10	13	29	9	32	29	9	32	25	0	6	n/a	n/a	<6	29	0	32	29	0	32	33	0	14	40	0	8
11 STUDENT 11	12	4	3	32	4	3	32	n/a	n/a	<6	21	17	6	5	0	32	5	0	32	0	0	10	22	0	8
12 STUDENT 12	15	40	100	32	40	100	32	38	100	8	n/a	n/a	<6	34	100	32	34	100	32	30	100	8	40	100	14
13 STUDENT 13	16	54	56	32	54	56	32	63	50	8	n/a	n/a	<6	36	47	32	36	47	32	32	40	10	53	50	6
14 STUDENT 14	12	4	0	32	4	0	32	n/a	n/a	<6	21	0	6	5	13	32	5	13	32	0	0	10	22	50	8
15 STUDENT 15	13	29	3	32	29	3	32	25	0	6	n/a	n/a	<6	29	13	32	29	13	32	33	29	14	40	50	8
16 STUDENT 16	16	54	63	32	54	63	32	63	75	8	n/a	n/a	<6	36	13	32	36	13	32	32	0	10	53	67	6

For more information about the Colorado Academic Standards go to http://www.cde.state.co.us/standardsandinstruction/standardsresourcesk12
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Page 1 of 6

Colorado Measures of Academic Success
Content Standards Roster

Grade 4

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SAMPLE SCHOOL NAME

SAMPLE DISTRICT NAME

COLORADO

ENGLISH LANGUAGE ARTS / LITERACY
Grade 4 Assessment, Spring 2017

CO = State Average Percent Points Achieved
ST = Student Percent Points Achieved
PP = Total Points Possible

			Language			Writing Categories						Prose Constructed Response								
			Vocabulary Acquisition & Use			Written Expression			Writing Knowledge			Literary Analysis			Research Simulation			Narrative Writing		
	STUDENT	CORE FORM	4.2.3.c 4.2.3.c.i 4.2.3.c.ii 4.2.3.c.vii 4.2.3.d 4.2.3.d.i 4.2.3.d.ii 4.2.3.d.iii 4.2.3.e																	
			CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP
1	STUDENT 1	15	34	0	14	62	55	33	54	44	9	58	16	19	62	63	19	61	83	12
2	STUDENT 2	15	34	0	14	62	45	33	54	22	9	58	95	19	62	21	19	61	0	12
3	STUDENT 3	11	25	0	14	36	27	33	76	67	9	39	16	19	44	79	19	49	0	12
4	STUDENT 4	11	25	100	14	36	27	33	76	78	9	39	11	19	44	16	19	49	92	12
5	STUDENT 5	13	25	0	14	44	55	33	33	22	9	44	95	19	48	0	19	31	50	12
6	STUDENT 6	15	34	0	14	62	36	33	54	33	9	58	0	19	62	100	19	61	0	12
7	STUDENT 7	16	44	38	16	59	73	33	57	56	9	54	100	19	64	21	19	57	92	12
8	STUDENT 8	16	44	31	16	59	27	33	57	100	9	54	79	19	64	16	19	57	25	12
9	STUDENT 9	12	0	0	14	43	45	33	64	67	9	36	100	19	45	0	19	65	50	12
10	STUDENT 10	13	25	0	14	44	18	33	33	33	9	44	58	19	48	0	19	31	0	12
11	STUDENT 11	12	0	0	14	43	36	33	64	33	9	36	21	19	45	5	19	65	92	12
12	STUDENT 12	15	34	100	14	62	82	33	54	78	9	58	100	19	62	100	19	61	33	12
13	STUDENT 13	16	44	50	16	59	82	33	57	89	9	54	79	19	64	79	19	57	92	12
14	STUDENT 14	12	0	0	14	43	64	33	64	78	9	36	5	19	45	100	19	65	100	12
15	STUDENT 15	13	25	0	14	44	36	33	33	33	9	44	16	19	48	84	19	31	0	12
16	STUDENT 16	16	44	31	16	59	91	33	57	33	9	54	100	19	64	84	19	57	50	12

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Page 2 of 6

9.3 Sample Content Standards Roster Report – CMAS Mathematics

Page 1

Colorado Measures of Academic Success
Content Standards Roster

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Grade 4

A SAMPLE SCHOOL NAME
SAMPLE DISTRICT NAME
COLORADO

MATHEMATICS
Grade 4 Assessment, Spring 2017 B

CO = State Average Percent Points Achieved
ST = Student Percent Points Achieved
PP = Total Points Possible

	H STUDENT	G CORE FORM	Operations & Algebraic Thinking												Number & Operations in Base Ten									Number & Operations - Fractions								
			D OVERALL			C 4.1.3.b.i 4.1.3.b.ii 4.1.3.b.iii 4.1.3.b.iv 4.1.3.b.v 4.1.3.b.vi			F 4.2.1.b.i 4.2.1.b.ii 4.2.1.b.iii 4.2.1.b.iv			4.2.1.a			OVERALL			4.1.1.a.i 4.1.1.a.ii 4.1.1.a.iii 4.1.1.a.iv			4.1.3.a.i 4.1.3.a.ii 4.1.3.a.iii 4.1.3.a.iv			OVERALL			4.1.2.a.ii 4.1.2.a.iii			4.1.2.b.i 4.1.2.b.i.2 4.1.2.b.i.3 4.1.2.b.ii 4.1.2.b.ii.1 4.1.2.b.ii.2 4.1.2.b.ii.3			4.1.1.b.i 4.1.1.b.ii 4.1.1.b.iii		
			CO	ST	PP	CO	E ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP
1	STUDENT 1	15	35	0	9	35		8	n/a	n/a	<6	n/a	n/a	<6	47	0	11	n/a	n/a	<6	45	0	9	48	0	14	n/a	n/a	<6	53	0	6	n/a	n/a	<6
2	STUDENT 2	15	35	0	9	35		8	n/a	n/a	<6	n/a	n/a	<6	47	27	11	n/a	n/a	<6	45	22	9	48	43	14	n/a	n/a	<6	53	50	6	n/a	n/a	<6
3	STUDENT 3	12	56	50	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	67	77	13	67	83	6	64	73	11	36	43	14	n/a	n/a	<6	17	13	8	n/a	n/a	<6
4	STUDENT 4	15	35	100	9	35	100	8	n/a	n/a	<6	n/a	n/a	<6	47	100	11	n/a	n/a	<6	45	100	9	48	100	14	n/a	n/a	<6	53	100	6	n/a	n/a	<6
5	STUDENT 5	06	36	0	9	35	0	8	n/a	n/a	<6	n/a	n/a	<6	49	0	11	n/a	n/a	<6	47	0	9	51	0	14	n/a	n/a	<6	57	0	6	n/a	n/a	<6
6	STUDENT 6	13	38	38	8	29	29	7	n/a	n/a	<6	n/a	n/a	<6	50	64	11	n/a	n/a	<6	44	56	9	43	64	14	n/a	n/a	<6	31	50	8	n/a	n/a	<6
7	STUDENT 7	17	43	0	8	37	0	6	n/a	n/a	<6	n/a	n/a	<6	53	0	9	n/a	n/a	<6	51	0	7	39	6	16	n/a	n/a	<6	36	10	10	n/a	n/a	<6
8	STUDENT 8	17	43	13	8	37	0	6	n/a	n/a	<6	n/a	n/a	<6	53	33	9	n/a	n/a	<6	51	29	7	39	31	16	n/a	n/a	<6	36	30	10	n/a	n/a	<6
9	STUDENT 9	16	45	0	7	42	0	6	n/a	n/a	<6	n/a	n/a	<6	44	0	13	44	0	6	43	0	7	32	0	14	29	0	7	23	0	8	n/a	n/a	<6
10	STUDENT 10	16	45	43	7	42	33	6	n/a	n/a	<6	n/a	n/a	<6	44	38	13	44	50	6	43	29	7	32	36	14	29	29	7	23	25	8	n/a	n/a	<6
11	STUDENT 11	15	35	0	9	35	0	8	n/a	n/a	<6	n/a	n/a	<6	47	27	11	n/a	n/a	<6	45	22	9	48	43	14	n/a	n/a	<6	53	50	6	n/a	n/a	<6
12	STUDENT 12	15	35	0	9	35	0	8	n/a	n/a	<6	n/a	n/a	<6	47	27	11	n/a	n/a	<6	45	22	9	48	43	14	n/a	n/a	<6	53	50	6	n/a	n/a	<6
13	STUDENT 13	16	45	100	7	42	100	6	n/a	n/a	<6	n/a	n/a	<6	44	100	13	44	100	6	43	100	7	32	64	14	29	57	7	23	50	8	n/a	n/a	<6
14	STUDENT 14	16	45	0	7	42	0	6	n/a	n/a	<6	n/a	n/a	<6	44	0	13	44	0	6	43	0	7	32	0	14	29	0	7	23	0	8	n/a	n/a	<6
15	STUDENT 15	15	35	100	9	35	100	8	n/a	n/a	<6	n/a	n/a	<6	47	100	11	n/a	n/a	<6	45	100	9	48	100	14	n/a	n/a	<6	53	100	6	n/a	n/a	<6
16	STUDENT 16	16	45	0	7	42	0	6	n/a	n/a	<6	n/a	n/a	<6	44	0	13	44	0	6	43	0	7	32	0	14	29	0	7	23	0	8	n/a	n/a	<6

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Page 1 of 8

Sample Content Standards Roster Report – CMAS Mathematics

Colorado Measures of Academic Success
Content Standards Roster

CONFIDENTIAL - DO NOT DISTRIBUTE

Grade 4

SAMPLE SCHOOL NAME

SAMPLE DISTRICT NAME

COLORADO

MATHEMATICS
Grade 4 Assessment, Spring 2017

CO = State Average Percent Points Achieved
ST = Student Percent Points Achieved
PP = Total Points Possible

STUDENT	CORE FORM	OVERALL			Measurement & Data												Geometry			Modeling & Reasoning					
					4.4.1.a.i 4.4.1.a.ii 4.4.1.a.iii 4.4.1.a.iv 4.4.1.a.v			4.3.1.a 4.3.1.b			4.4.1.b.i 4.4.1.b.ii 4.4.1.b.iii 4.4.1.b.iv			4.4.2.a 4.4.2.b 4.4.2.c 4.4.2.d			On Grade Level			Securely Held Knowledge		
		CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP	CO	ST	PP
1 STUDENT 1	15	42	0	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	56	81	16	63	60	10			
2 STUDENT 2	15	42	17	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	56	75	16	63	80	10			
3 STUDENT 3	12	33	14	7	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	60	38	16	40	40	10			
4 STUDENT 4	15	42	100	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	56	50	16	63	70	10			
5 STUDENT 5	06	43	0	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	58	56	16	62	30	10			
6 STUDENT 6	13	25	33	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	59	63	16	40	60	10			
7 STUDENT 7	17	40	0	8	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	64	44	16	60	50	10			
8 STUDENT 8	17	40	13	8	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	64	75	16	60	80	10			
9 STUDENT 9	16	25	0	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	58	63	16	47	20	10			
10 STUDENT 10	16	25	0	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	58	75	16	47	70	10			
11 STUDENT 11	15	42	17	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	56	75	16	63	60	10			
12 STUDENT 12	15	42	17	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	56	69	16	63	60	10			
13 STUDENT 13	16	25	83	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	58	56	16	47	50	10			
14 STUDENT 14	16	25	0	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	58	31	16	47	30	10			
15 STUDENT 15	15	42	100	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	56	69	16	63	40	10			
16 STUDENT 16	16	25	0	6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	n/a	n/a	<6	58	6	16	47	50	10			

For more information about the Colorado Academic Standards go to http://www.cde.state.co.us/standardsandinstruction/standardsresourcesk12
This report is NOT for public review. Distribution within your school/district must be in accordance with state and federal privacy laws, and local school board policy.

Page 2 of 8

9.4 Description of Content Standards Roster Report – CMAS Science and Social Studies

The Content Standards Roster is available for each grade and subject assessed at each school. It lists every student who should have tested in the school. Score information is only included for students with valid scores (i.e., not invalidated or suppressed). This report provides the overall performance level, reporting category, and Prepared Graduate Competencies (PGC) and Grade Level Expectations (GLE) data for each student. It also provides the same information aggregated at the state, district, and school levels. A sample report is included on pages 65-66.

Note: The District School Roster provides aggregated information for each school within a district.

9.4.1 General Information

Refer to Page 1 of the Content Standards Roster.

A. Identification Information

The report identifies the school and district name and code.

B. Test Date

The administration season and year is indicated.

C. Subject Area

The subject area of the report is identified (either science or social studies).

D. Grade Level

The grade level of the assessment is indicated.

The general information is repeated on Page 2 of the report.

9.4.2 Performance Level and Content Standards Information

Refer to Page 1 of the Content Standards Roster.

E. Key

The key indicates the ranges of scale scores for each performance level for the overall test. It also explains the symbols used to identify the performance indicators for content standard performance (Potential Relative Strength, Typical, or Potential Relative Weakness).

F. Student Information

Students are identified by last name, first name, and middle initial. Students who were indicated as home schooled, expelled, withdrew before/during testing, medical exemption, or records indicated as duplicate will not appear on this report.

G. Content Standards Performance School Summary

The percentage and number of students in a school who show Potential Relative Strength (filled circle), Typical Performance (half-filled circle), and Potential Relative Weakness (empty circle) for the reporting categories are provided for each standard. At the state level, the distribution is approximately 15%/70%/15%.

H. State, District, and School Average

For comparison purposes, the average overall scale score and content standard (reporting category) scale score are shown for the state, district, and school.

I. Overall Performance Level

The overall performance level is indicated for each student on the roster.

J. Overall Scale Score

The overall scale score is indicated for each student on the roster.

K. SEM Range

The standard error of measurement (SEM) is related to the reliability of the assessment. It can vary across the range of scale scores, especially at the very high and low ends where there typically are fewer items measuring that level of achievement. The SEM represents the range of overall scores the student would be likely to earn if the assessment was taken again.

L. Results for Each Content Standard (Reporting Category): Scale Score and Performance Indicator

For each content standard (reporting category), the student's Scale Score (SS) and Performance Indicator (PI) of Potential Relative Strength, Typical Performance, or Potential Relative Weakness is shown.

M. Process Number

The process number found in the bottom-right corner of the report is a unique number, per administration, that is assigned to the report by the testing contractor.

9.4.3 Prepared Graduate Competencies (PGCs) and Grade Level Expectations (GLEs) Performance

Refer to Page 2 of the Content Standards Roster.

N. Student Information

Students are identified by last name, first name, and middle initial.

O. State, District, and School Average

For comparison purposes, the average percentage correct is shown for the PGCs at the state, district, and school levels. If there are two or more GLEs under a PGC in an elementary or middle school report, percent correct is shown for these as well.

P. Prepared Graduate Competencies and Grade Level Expectations

PGCs and GLEs are important parts of the CAS. PGCs represent the concepts and skills students need to master in order to be college and career ready by the time of graduation. The GLEs are grade-specific expectations that indicate that students are making progress toward the PGCs.

Q. Points Possible

The number of points possible for each PGC and GLE is identified.

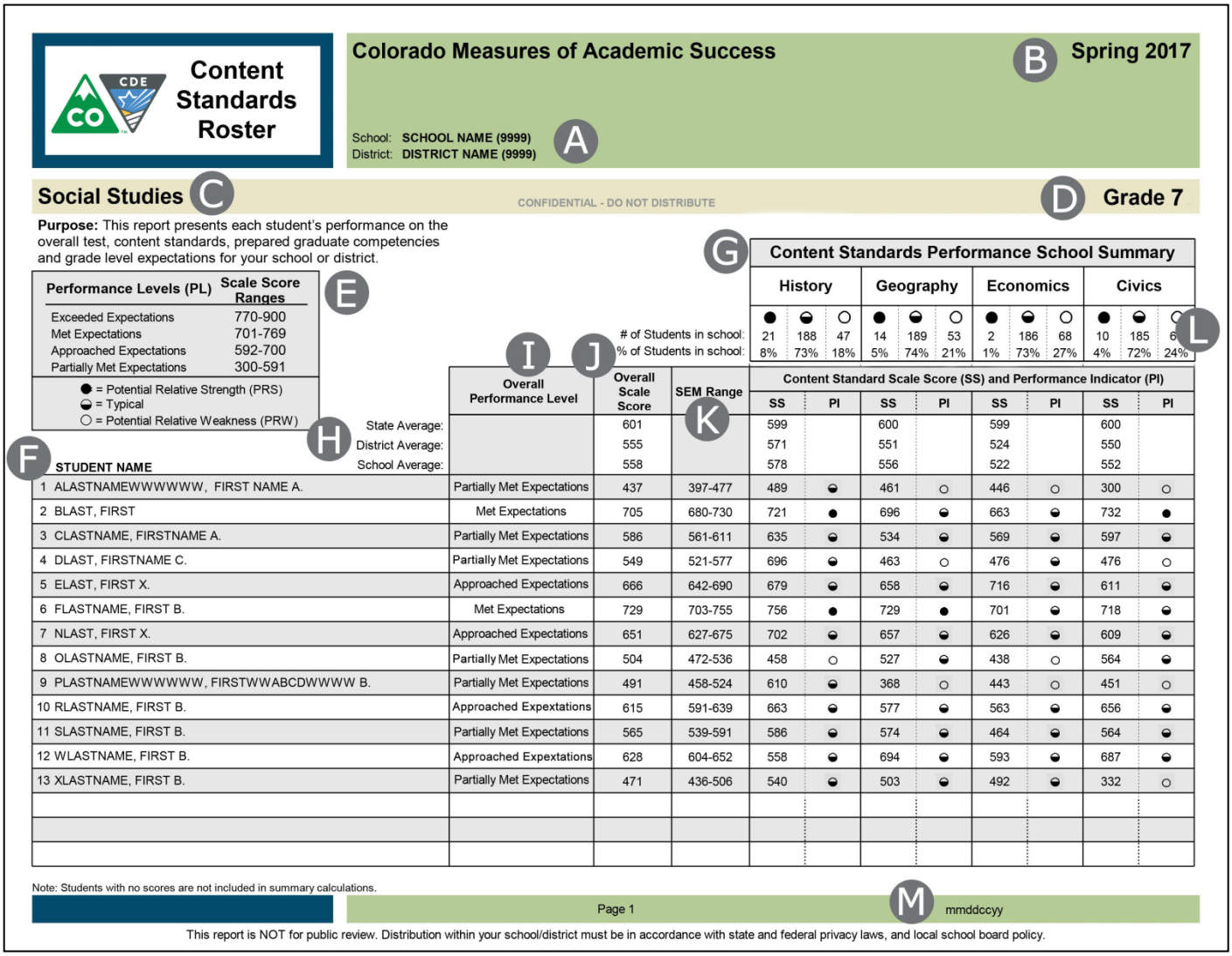
R. Performance for Prepared Graduate Competencies and Grade Level Expectations

This section of the report describes performance with percent correct for PGCs and GLEs. The percentage correct for each GLE is presented. If there is more than one GLE within a PGC on elementary and middle school reports, then the percentage correct by PGC is also provided. The PGCs and GLEs are listed in the same order using the same number references as they appear on Page 2 of the Student Performance Report. The order and text for each PGC and GLE is included in **Appendix C**.

Note: Information is not provided at the GLE level on the high school report.

9.5 Sample Content Standards Roster Report – CMAS Science and Social Studies

Page 1



Content Standards Roster

Colorado Measures of Academic Success — B Spring 2017

School: SCHOOL NAME (9999) (A)
District: DISTRICT NAME (9999)

Social Studies (C) — CONFIDENTIAL - DO NOT DISTRIBUTE — (D) Grade 7

Purpose: This report presents each student's performance on the overall test, content standards, prepared graduate competencies and grade level expectations for your school or district.

Performance Levels (PL)	Scale Score Ranges
Exceeded Expectations	770-900
Met Expectations	701-769
Approached Expectations	592-700
Partially Met Expectations	300-591

(E)

● = Potential Relative Strength (PRS)
◒ = Typical
○ = Potential Relative Weakness (PRW)

(G) Content Standards Performance School Summary

	History			Geography			Economics			Civics		
	●	◒	○	●	◒	○	●	◒	○	●	◒	○
# of Students in school:	21	188	47	14	189	53	2	186	68	10	185	6
% of Students in school:	8%	73%	18%	5%	74%	21%	1%	73%	27%	4%	72%	24%

(L)

(I) (J) (K)

(F) STUDENT NAME	Overall Performance Level	Overall Scale Score	SEM Range	Content Standard Scale Score (SS) and Performance Indicator (PI)							
				History SS	History PI	Geography SS	Geography PI	Economics SS	Economics PI	Civics SS	Civics PI
(H) State Average:		601		599		600		599		600	
District Average:		555		571		551		524		550	
School Average:		558		578		556		522		552	
1 ALASTNAMEWWWWWW, FIRST NAME A.	Partially Met Expectations	437	397-477	489	◒	461	○	446	○	300	○
2 BLAST, FIRST	Met Expectations	705	680-730	721	●	696	◒	663	◒	732	●
3 CLASTNAME, FIRSTNAME A.	Partially Met Expectations	586	561-611	635	◒	534	◒	569	◒	597	◒
4 DLAST, FIRSTNAME C.	Partially Met Expectations	549	521-577	696	◒	463	○	476	◒	476	○
5 ELAST, FIRST X.	Approached Expectations	666	642-690	679	◒	658	◒	716	◒	611	◒
6 FLASTNAME, FIRST B.	Met Expectations	729	703-755	756	●	729	●	701	◒	718	◒
7 NLAST, FIRST X.	Approached Expectations	651	627-675	702	◒	657	◒	626	◒	609	◒
8 OLASTNAME, FIRST B.	Partially Met Expectations	504	472-536	458	○	527	◒	438	○	564	◒
9 PLASTNAMEWWWWWW, FIRSTWWABCDWWWW B.	Partially Met Expectations	491	458-524	610	◒	368	○	443	○	451	○
10 RLASTNAME, FIRST B.	Approached Expextations	615	591-639	663	◒	577	◒	563	◒	656	◒
11 SLASTNAME, FIRST B.	Partially Met Expectations	565	539-591	586	◒	574	◒	464	◒	564	◒
12 WLASTNAME, FIRST B.	Approached Expextations	628	604-652	558	◒	694	◒	593	◒	687	◒
13 XLASTNAME, FIRST B.	Partially Met Expectations	471	436-506	540	◒	503	◒	492	◒	332	○

Note: Students with no scores are not included in summary calculations.

Page 1 (M) mmddccyy

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Sample Content Standards Roster Report – CMAS Science and Social Studies

Content Standards Roster

Colorado Measures of Academic Success — **Spring 2017**

School: **SCHOOL NAME (9999)**
District: **DISTRICT NAME (9999)**

Social Studies — CONFIDENTIAL - DO NOT DISTRIBUTE — **Grade 7**

Purpose: This report presents each student's performance on the prepared graduate competencies and grade level expectations for your school or district. Percent correct for each GLE is presented. If there is more than one GLE within a PGC then percent correct by PGC is also provided.

P **Prepared Graduate Competencies (PGC) and Grade Level Expectations (GLE) Performance**

	History		Geography		Economics		Civics	
	Points Possible Q							
	8	12	8-10	8-10	8	8	9	9
N **STUDENT NAME**	PGC1 GLE1	PGC2 GLE2	PGC1 GLE1	PGC2 GLE2	PGC1 GLE1	PGC2 GLE2	PGC1 GLE1	PGC2 GLE2 R
O State Average Form A:	56%	43%	52%	50%	50%	48%	56%	47%
District Average Form A:	50%	38%	43%	42%	35%	37%	46%	40%
School Average Form A:	51%	40%	46%	41%	34%	38%	46%	41%
State Average Form B:								
State Average Form C:								
1 ALASTNAMEWWWWWW, FIRST NAME A.	13%	25%	22%	33%	25%	13%	22%	0%
2 BLAST, FIRST	63%	83%	78%	56%	63%	50%	78%	78%
3 CLASTNAME, FIRSTNAME A.	63%	42%	22%	44%	38%	25%	11%	89%
4 DLAST, FIRSTNAME C.	88%	58%	11%	33%	13%	50%	33%	22%
5 ELAST, FIRST X.	75%	58%	67%	56%	63%	88%	56%	67%
6 FLASTNAME, FIRST B.	75%	92%	67%	78%	75%	63%	67%	78%
7 NLAST, FIRST X.	75%	67%	89%	44%	63%	38%	67%	44%
8 OLASTNAME, FIRST B.	25%	17%	56%	22%	0%	38%	44%	44%
9 PLASTNAMEWWWWWW, FIRSTWWABCDWWWW B.	75%	25%	22%	11%	0%	38%	33%	22%
10 RLASTNAME, FIRST B.	88%	50%	22%	56%	38%	50%	67%	67%
11 SLASTNAME, FIRST B.	38%	42%	44%	44%	25%	38%	44%	44%
12 WLASTNAME, FIRST B.	50%	17%	67%	67%	25%	63%	44%	78%
13 XLASTNAME, FIRST B.	38%	42%	22%	33%	13%	50%	22%	0%

Note: Students with no scores are not included in summary calculations.

Page 2 mmddccyy

This report is NOT for public review. Distribution within your school/district must be in accordance with state and federal privacy laws, and local school board policy.

9.6 Description of Content Standards Roster Report – CoAlt Science and Social Studies

The CoAlt Science and Social Studies Content Standards Roster Report is available for each grade and subject assessed at each school. It lists every student who should have tested in the school. Score information is only included for students with valid scores (i.e., not invalidated or suppressed). This report provides the overall and standards-level data for each student. A sample CoAlt Science and Social Studies Content Standards Roster Report is included on page 69.

Note: The District School Roster provides this information for each school within a district.

9.6.1 General Information

Refer to Page 1 of the Content Standards Roster.

A. Identification Information

The report identifies the school and district name and code.

B. Test Date

The administration season and year are indicated.

C. Subject Area

The subject area of the report is identified (either science or social studies).

D. Grade Level

The grade level of the assessment is indicated.

9.6.2 Performance Level and Content Standards Information

Refer to Page 1 of the Content Standards Roster.

E. Key

The key indicates the ranges of scale scores for each performance level for the overall test.

F. Student Information

Students are identified by last name, first name, and middle initial. Students who were indicated as home schooled, expelled, withdrew before/during testing, medical exemption, or records indicated as duplicate will not appear on this report.

G. Overall Performance Level

The overall performance level is indicated for each student on the roster.

H. State, District, and School Average Scale Score

The average scale score is shown for the state, district, and school. Below, the scale score for each student is shown. Students with an Inconclusive designation do not have a scale score.

I. Points Possible

The number of points possible for each content standard is shown.

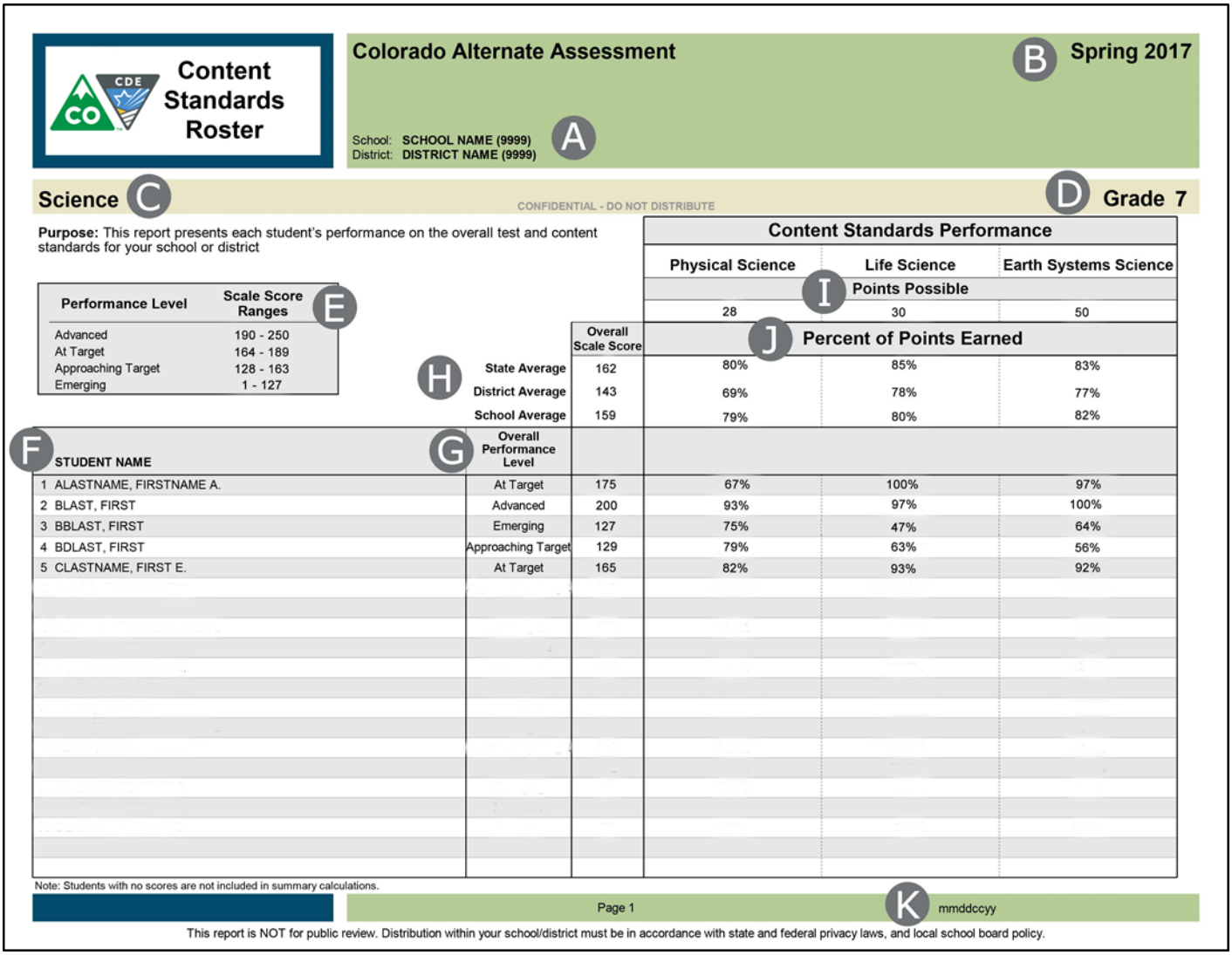
J. Percentage of Points Earned

This section of the report describes performance with percent of points earned by content standard. The average percentage of points earned for the state, district, and school are shown. Below, the percent of points earned for each student is shown. These fields are blank for students with an Inconclusive designation.

K. Process Number

The process number found in the bottom-right corner of the report is a unique number, per administration, that is assigned to the report by the testing contractor.

9.7 Sample Content Standards Roster Report – CoAlt Science and Social Studies



Content Standards Roster

Colorado Alternate Assessment (B) Spring 2017

School: SCHOOL NAME (9999)
District: DISTRICT NAME (9999) (A)

Science (C) CONFIDENTIAL - DO NOT DISTRIBUTE (D) Grade 7

Purpose: This report presents each student's performance on the overall test and content standards for your school or district

Performance Level (E)	Scale Score Ranges
Advanced	190 - 250
At Target	164 - 189
Approaching Target	128 - 163
Emerging	1 - 127

	Overall Scale Score	Content Standards Performance (J) Percent of Points Earned		
		Physical Science	Life Science	Earth Systems Science
(I) Points Possible		28	30	50
(H) State Average	162	80%	85%	83%
District Average	143	69%	78%	77%
School Average	159	79%	80%	82%
(F) STUDENT NAME	(G) Overall Performance Level			
1 ALASTNAME, FIRSTNAME A.	At Target	175	67%	100%	97%
2 BLAST, FIRST	Advanced	200	93%	97%	100%
3 BBLAST, FIRST	Emerging	127	75%	47%	64%
4 BDLAST, FIRST	Approaching Target	129	79%	63%	56%
5 CLASTNAME, FIRST E.	At Target	165	82%	93%	92%

Note: Students with no scores are not included in summary calculations.

Page 1 (K) mmddccyy

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Appendix A

Scale Score Ranges

CMAS Mathematics
Overall Scale Score Ranges

Grade Level/Content	Does Not Yet Meet	Partially Met Expectations	Approached Expectations	Met Expectations	Exceeded Expectations
	Level 1	Level 2	Level 3	Level 4	Level 5
Grade 3	650-699	700-724	725-749	750-789	790-850
Grade 4				750-795	796-850
Grade 5				750-789	790-850
Grade 6				750-787	788-850
Grade 7				750-785	786-850
Grade 8				750-800	801-850
Algebra I				750-804	805-850
Geometry				750-782	783-850
Algebra II				750-807	808-850
Integrated I				750-798	799-850
Integrated II				750-784	785-850
Integrated III				750-803	804-850

CMAS English Language Arts
Overall Scale Score Ranges

Grade Level	Does Not Yet Meet	Partially Met Expectations	Approached Expectations	Met Expectations	Exceeded Expectations
	Level 1	Level 2	Level 3	Level 4	Level 5
Grade 3	650-699	700-724	725-749	750-809	810-850
Grade 4				750-789	790-850
Grade 5				750-798	799-850
Grade 6				750-789	790-850
Grade 7				750-784	785-850
Grade 8				750-793	794-850
Grade 9				750-790	791-850

Colorado Spanish Language Arts
Overall Scale Score Ranges

Grade Level	Does Not Yet Meet	Partially Met Expectations	Approached Expectations	Met Expectations	Exceeded Expectations
	Level 1	Level 2	Level 3	Level 4	Level 5
Grade 3	650-699	700-724	725-749	750-778	779-850
Grade 4				750-771	772-850

CMAS Science
Overall Scale Score Ranges

Grade Level	Partially Met Expectations	Approached Expectations	Met Expectations	Exceeded Expectations
	Level 1	Level 2	Level 3	Level 4
Grade 5	300-545	546-649	650-770	771-900
Grade 8	300-555	556-651	652-784	785-900
High School	300-542	543-672	673-773	774-900

CMAS Science
2017 Content Standards Performance Indicator Ranges*

Grade Level	Physical Science	Life Science	Earth Systems Science	Scientific Inquiry and Nature of Science
Grade 5	471-720	480-718	480-717	478-716
Grade 8	444-710	438-710	446-708	446-712
High School	458-710	467-708	463-711	452-713

CMAS Social Studies
Overall Scale Score Ranges

Grade Level	Partially Met Expectations	Approached Expectations	Met Expectations	Exceeded Expectations
	Level 1	Level 2	Level 3	Level 4
Grade 4	300-556	557-698	699-792	793-900
Grade 7	300-591	592-700	701-769	770-900

CMAS Social Studies
2017 Content Standards Performance Indicator Ranges*

Grade Level	History	Geography	Economics	Civics
Grade 4	481-743	486-748	482-746	461-744
Grade 7	466-726	461-728	443-732	436-729

*At the Content Standards level there are Performance Indicators based on the overall state performance. These levels are not for accountability use and are not set in relation to the content or the Overall Performance Levels. The cut scores are set using one standard deviation around the mean scale score for the state. They will change from year to year. Students within this range have "Typical" performance for the state. Students with scores below this range have a "Potential Relative Weakness" in this area and students above the range have a "Potential Relative Strength".

CoAlt Science
Overall Scale Score Ranges

Grade Level	Emerging	Approaching Target	At Target	Advanced
	Level 1	Level 2	Level 3	Level 4
Grade 5	0-134	135-159	160-183	184-250
Grade 8	0-127	128-163	164-189	190-250
High School	0-139	**140-163**	164-192	193-250

CoAlt Social Studies
Overall Scale Score Ranges

Grade Level	Emerging	Approaching Target	At Target	Advanced
	Level 1	Level 2	Level 3	Level 4
Grade 4	0-142	143-162	163-187	188-250
Grade 7	0-133	134-162	163-190	191-250

Appendix B

Performance Level Descriptors

Grade 4 CMAS Social Studies
Performance Level Descriptors

Students demonstrate mastery of social studies concepts and 21st century skills aligned to the Colorado Academic Standards (CAS) at various performance levels. The performance level descriptors are organized in a manner that assumes students demonstrating higher levels of command have mastered the concepts and skills within the lower levels. For example, a student at moderate command also masters the concepts and skills of limited command.

Students who Exceeded Expectations demonstrated distinguished command of the CAS and can typically

- analyze primary source documents and connect the various eras and events in Colorado history to events in U.S. and World History;
- use geographic tools to investigate and analyze settlement patterns, how people adapt to and modify the physical environment, and how places in Colorado have changed over time;
- analyze opportunity costs and ways to reduce financial risk to make financial decisions; and
- analyze multiple perspectives on an issue and provide solutions.

Student who Met Expectations demonstrated strong command of the CAS and can typically

- explain cause-and-effect relationships present in Colorado history using historical tools such as organizing and sequencing events and reading primary sources;
- create and investigate questions about Colorado in relation to other places and examine the connections between the physical environment and human activities such as migration;
- explain how the natural, human, and capital resources of Colorado have influenced the types of goods and services provided;
- analyze opportunity costs and risks to make financial decisions;
- compare arguments for both sides of a public policy debate; and
- explain the origins, structure, and functions of the Colorado government and its relationship with local and federal governments.

Student who Approached Expectations demonstrated moderate command of the CAS and can typically

- describe how the people and cultures who have lived in Colorado have interacted with each other and have affected the development of Colorado;
- describe how Colorado's political structure developed, including the Colorado Constitution and the relationship between state and national government;
- compare the physical geography of Colorado with that of neighboring states and describe how places in Colorado are connected by technology and the movement of goods and services;
- identify and define types of economic incentives, choices, opportunity costs, and risks that individuals face;
- connect goods and services produced throughout Colorado's history to economic incentives; and
- provide examples of civic and political issues faced by the state.

Students who Partially Met Expectations demonstrated limited command of the CAS and can typically

- recognize that major political and cultural groups have affected the development of Colorado;
- use maps, grids, and other geographic tools to answer questions about Colorado;
- describe various technological developments, including those that affect Colorado industries;
- identify goods and services produced in Colorado; and
- identify the structure and functions of the Colorado government and the services it provides.

Grade 7 CMAS Social Studies
Performance Level Descriptors

Students demonstrate mastery of social studies concepts and 21st century skills aligned to the Colorado Academic Standards (CAS) at various performance levels. The performance level descriptors are organized in a manner that assumes students demonstrating higher levels of command have mastered the concepts and skills within the lower levels. For example, a student at moderate command also masters the concepts and skills of limited command.

Students who Exceeded Expectations demonstrated distinguished command of the CAS and can typically

- analyze historical sources while formulating historical questions and defending a thesis;
- use geographic tools to investigate and analyze data to make inferences and predictions regarding regional issues and perspectives in the Eastern Hemisphere;
- demonstrate how supply and demand influence changes in equilibrium price and quantity;
- evaluate how various governments interact and investigate examples of global collaboration; and
- apply various definitions of good government to evaluate the actions of different governments.

Students who Met Expectations demonstrated strong command of the CAS and can typically

- explain the historical time periods, individuals, groups, ideas, perspectives, themes, and how people are interconnected within regions of the Eastern Hemisphere;
- summarize the development of early civilizations, including Greece, Rome, China, Africa, and the medieval world;
- describe how the physical environment influences economy, culture, and trade patterns;
- explain how resources, production, choices, supply, demand, price, profit, and taxes are related;
- analyze how national and international government policies influence the global community; and
- compare the rights, roles, and responsibilities of citizens in various governments.

Students who Approached Expectations demonstrated moderate command of the CAS and can typically

- describe the contributions of various peoples and cultures in the Eastern Hemisphere;
- compare different physical systems and cultural patterns to describe how different regions and places are interconnected;
- examine multiple points of view and issues in various regions in the Eastern Hemisphere;
- recognize how supply and demand influence price, profit, and production in a market economy;
- compare how taxes affect individual income and spending;
- compare different forms of government in the world and their sources of authority; and
- explain the rights and roles of citizens in various governments.

Students who Partially Met Expectations demonstrated limited command of the CAS and can typically

- recognize the contributions of various peoples and cultures to the Eastern Hemisphere;
- use geographic tools to answer questions and identify patterns in the Eastern Hemisphere;
- identify factors that cause changes in supply, demand, and price;
- define resources and identify trade patterns based on the distribution of resources; and
- list the responsibilities and roles of citizens in various governments.

Grade 5 CMAS Science
Performance Level Descriptors

Students demonstrate mastery of science concepts and 21st century skills aligned to the Colorado Academic Standards (CAS) at various performance levels. The performance level descriptors are organized in a manner that assumes students demonstrating higher levels of command have mastered the concepts and skills within the lower levels. For example, a student at moderate command also masters the concepts and skills of limited command.

Students who Exceeded Expectations demonstrated distinguished command of the CAS and can typically

- evaluate and provide feedback on scientific evidence and reasoning about the separation of mixtures and how separation affects the total weight/mass;
- develop hypotheses about why similarities and differences exist between the body systems and parts of humans, plants, and animals;
- evaluate scientific claims about natural resources, in terms of reasonability and validity; and
- assess and provide feedback, through reasoning based on evidence, on scientific explanations about weather and factors that change Earth's surface.

Students who Met Expectations demonstrated strong command of the CAS and can typically

- explain why certain procedures that are used to separate simple mixtures work and discuss any unexpected results;
- evaluate evidence and models of the structure and functions of human, plant, and animal organs and organ systems;
- investigate and generate evidence that human systems are interdependent;
- analyze and interpret data to explore concerns associated with natural resources; and
- formulate testable questions and scientific explanations around weather and factors that change Earth's surface.

Students who Approached Expectations demonstrated moderate command of the CAS and can typically

- discuss how the mass/weight of a mixture is a sum of its parts and design a procedure to separate simple mixtures based on physical properties;
- create models of human, plant, and animal organ systems, and compare and contrast similarities and differences between the organisms;
- explore and describe the origins and usage of natural resources in Colorado; and
- interpret data about Earth, including weather and changes to Earth's surface.

Students who Partially Met Expectations demonstrated limited command of the CAS and can typically

- select appropriate tools and follow procedures to separate simple mixtures;
- identify how humans, plants, and animals address basic survival needs;
- identify the functions of human body systems;
- distinguish between renewable and nonrenewable resources; and
- use appropriate tools and resources to gather data regarding weather conditions and Earth processes.

Grade 8 CMAS Science
Performance Level Descriptors

Students demonstrate mastery of science concepts and 21st century skills aligned to the Colorado Academic Standards (CAS) at various performance levels. The performance level descriptors are organized in a manner that assumes students demonstrating higher levels of command have mastered the concepts and skills within the lower levels. For example, a student at moderate command also masters the concepts and skills of limited command.

Students who Exceeded Expectations demonstrated distinguished command of the CAS and can typically

- design an investigation to predict the movement of an object by examining the forces applied to it;
- use models to predict amounts of energy transferred;
- analyze data and models to support claims about genetic reproduction and traits of individuals;
- use observations and models to develop and communicate a weather prediction; and
- evaluate scientific theories and investigations that explain how the solar system was formed.

Students who Met Expectations demonstrated strong command of the CAS and can typically

- use mathematical expressions and appropriate information from sources to describe the movement of an object;
- analyze different forms of energy and energy transfer using tools;
- construct an experiment to show mass is conserved;
- investigate the characteristics and behaviors of waves using models, technology, and basic rules of waves;
- analyze human impact on local ecosystems;
- use mathematics to predict the physical traits and genetic makeup of offspring; and
- relate tides, eclipses, lunar phases, and seasons to the motion and positions of the Sun, Earth, and the Moon, using the basic rules of the solar system.

Students who Approached Expectations demonstrated moderate command of the CAS and can typically

- analyze speed and acceleration of moving objects;
- describe different forms of energy and energy transfer;
- use a variety of sources, including popular media and peer-generated explanations, to investigate and describe an environmental issue;
- analyze data and historical research for various weather conditions and compare to historical data for that date and location; and
- investigate and ask testable questions about Earth's different climates using various techniques.

Students who Partially Met Expectations demonstrated limited command of the CAS and can typically

- distinguish between physical and chemical changes;
- recognize the relationship between pitch and frequency in sound;
- identify human activities that alter the ecosystem;
- recognize that genetic information is passed from one generation to the next;
- compare basic and severe weather conditions and develop an action plan for safety; and
- use tools and simulations to explore the solar system.

High School CMAS Science
Performance Level Descriptors

Students demonstrate mastery of science concepts and 21st century skills aligned to the Colorado Academic Standards (CAS) at various performance levels. The performance level descriptors are organized in a manner that assumes students demonstrating higher levels of command have mastered the concepts and skills within the lower levels. For example, a student at moderate command also masters the concepts and skills of limited command.

Students who Exceeded Expectations demonstrated distinguished command of the CAS and can typically

- justify and predict the effects of force and mass on an object's motion, discuss conflicting results, and identify force pairs in interacting objects;
- using historical models, justify an evidence-based explanation for the current model of the atom and predict the amount of product formed in a nuclear or chemical reaction;
- justify an evidence-based explanation that demonstrates how ecosystems follow the laws of conservation of matter and energy;
- use evidence to develop a logical argument explaining how specialized tissues are formed, cloning occurs, and how environmental toxins cause genetic mutations;
- explain how genetic changes over time are the result of interactions within populations, heritability, genetic variation, and differential survival and reproduction;
- use data to analyze how forces and energies beyond Earth's have influenced the history of the universe and provide feedback on the validity of alternative explanations;
- analyze evidence to answer questions regarding changes to Earth, including those that result in shifts in climate and natural hazards; and
- predict impacts of resource exploration, development, and consumption and design a plan to reduce resource use.

Students who Met Expectations demonstrated strong command of the CAS and can typically

- explain how force and mass affect the acceleration of an object;
- identify reactants, predict products, and balance equations in chemical and nuclear reactions;
- analyze evidence to describe energy transformations and conservation;
- evaluate scenarios regarding human population growth and sustainability;
- differentiate between conditions for optimal enzyme and photosynthetic activity;
- model and describe how homeostasis is maintained in cells, organs, and organisms;
- analyze how organisms use passive and active transport;
- explain the processes of DNA replication, transcription, translation, and gene regulation;
- model relationships among organisms demonstrating common ancestry;
- infer the history of the universe, solar system, and Earth using evidence from past events;
- explain the historical development of the theory of plate tectonics; and
- use data to evaluate impacts of resource exploration, development, and consumption, and draw conclusions about sustainable use.

Students who Approached Expectations demonstrated moderate command of the CAS and can typically

- use evidence to demonstrate how mass and distance affect the force of gravity between objects;
- develop models of atoms, molecules, elements, compounds, pure substances, and mixtures and identify the types of bonds that occur in molecules and compounds;
- use data to measure and compare energy transformations and efficiency;
- model how carbon, nitrogen, phosphorus, and water cycle in an ecosystem;
- recognize the importance of keystone and non-native species in an ecosystem;
- identify the relationship between photosynthesis, cellular respiration, and energy;

- differentiate between and give examples of passive and active transport;
- explain the relationship between genes and proteins and provide examples of how mutations can affect organisms;
- describe how changes in genetic traits lead to population adaptations;
- explain how external forces and energies influence Earth;
- recognize the interactions within Earth's geosphere, atmosphere, hydrosphere, and biosphere, including those that result in shifts in climate and natural hazards; and
- compare and contrast the costs and benefits of using resources provided by Earth and the Sun.

Students who Partially Met Expectations demonstrated limited command of the CAS and can typically

- use Newton's laws to describe the relationship among forces, masses, and the motion of objects;
- identify the properties of matter and understand that mass and energy are conserved;
- investigate energy transformations and the conservation of energy;
- describe how energy flows through trophic levels;
- identify primary and secondary succession in an ecosystem;
- identify biomolecules, their building blocks, and their functions;
- interpret data to identify transport mechanisms;
- recognize that DNA controls traits;
- identify how genetic traits can be passed down through generations;
- use media and technology to investigate the universe, solar system, and Earth;
- use data to describe the theory of plate tectonics; and
- identify how factors interact to determine climate.

Grade 4 CoAlt Social Studies
Performance Level Descriptors

Students demonstrate social studies concepts and skills aligned to the Grade Level Expectations and Extended Evidence Outcomes contained in the Colorado Academic Standards.

With appropriate support, Advanced students can typically:

- Identify historical eras, groups (e.g., miners, settlers and farmers), ideas, and themes in Colorado history
- Identify the cause and effect of growth in Colorado during various key events in U.S. history
- Integrate historical knowledge with geographical skills
- Recognize that particular dwellings, tools, and modes of transportation are specific to certain geographic areas and cultures in Colorado's history
- Identify regions and activities of Colorado based on specific physical features and label a map
- Identify choice and opportunity cost and compare the difference between the two
- Identify a specific perspective on an issue
- Identify the origins and structures of government

With appropriate support, At Target students can typically:

- Sequence Colorado historical events
- Identify the locations of specific activities or events in Colorado's history
- Identify specific factors that affected the growth of Colorado
- Match tools, modes of transportation, and products to natural resources or locations in Colorado
- Label a map using given map symbols
- Identify ways in which Colorado communities and markets were (and are) connected
- Identify the approximate value of goods
- Identify the functions of different levels of government
- Identify how people respond to positive and negative consequences

With appropriate support, Approaching Target students can typically:

- Match historical Colorado cultures with related artifacts, modes of transportation, and resources
- Match physical, natural, and geographic features on a map to their appropriate symbols
- Identify types of goods, services and resources native to Colorado
- Recognize that items vary in their value
- Recognize that there are different levels of governance

With appropriate support, Emerging students can typically:

- Identify artifacts (e.g., tools, housing, modes of transportation, and clothing) related to Colorado history
- Identify features on a map of Colorado
- Recognize that items have value
- Recognize emergency situations and appropriate responses that affect members of the Colorado community
- Recognize that there are laws and rules

An Inconclusive designation is given to students who did not respond to any items on the assessment.

Grade 7 CoAlt Social Studies
Performance Level Descriptors

Students demonstrate social studies concepts and skills aligned to the Grade Level Expectations and Extended Evidence Outcomes contained in the Colorado Academic Standards.

With appropriate support, Advanced students can typically:

- Determine appropriate questions to ask in order to learn about specific historical events
- Compare information from multiple sources related to a significant historical event
- Identify the best source of information regarding a historical event and use a historical event to match a source with a particular perspective
- Match natural resources with ancient communities and their dwellings
- Use a map to determine where to go for a specific purpose and to determine the direction in which to travel from one point to another
- Estimate the total purchase price of an item with sales tax included
- Recognize how supply and demand can affect price
- Recognize rights and responsibilities of citizens

With appropriate support, At Target students can typically:

- Match artifacts with their ancient culture or location within the Eastern Hemisphere
- Select the appropriate source of information to answer questions surrounding historical events
- Recognize that sources have different purposes
- Use map symbols and directionality words to locate places on a map
- Recognize that communities were built near natural resources
- Identify the environmental resources that influenced settlement in the Eastern Hemisphere
- Recognize that the total purchase price of an item will increase because of sales tax
- Identify community needs or services that are paid for by taxes
- Differentiate between laws and rules
- Identify the positive and negative consequences of obeying laws and rules

With appropriate support, Approaching Target students can typically:

- Recognize significant artifacts related to ancient civilizations of the Eastern Hemisphere
- Select the appropriate source of information to answer social studies questions
- Identify the appropriate questions to ask in order to learn more about an event or era
- Use symbols to identify a location on a map
- Identify reasons goods and services might go on sale
- Identify ways in which countries and nations resolve differences
- Recognize local laws, state laws, and federal laws and identify examples of following these laws/rules

With appropriate support, Emerging students can typically:

- Recognize artifacts
- Identify part(s) of a map (e.g., title, key, compass rose, scale)
- Recognize there are different types of informational resources
- Recognize that areas have different natural resources
- Recognize that many items have a sales tax
- Recognize that all countries have laws

An Inconclusive designation is given to students who did not respond to any items on the assessment.

Grade 5 CoAlt Science
Performance Level Descriptors

Students demonstrate science concepts and skills aligned to the Grade Level Expectations and Extended Evidence Outcomes contained in the Colorado Academic Standards.

With appropriate support, Advanced students can typically:

- Demonstrate that the weight of a mixture is the same before and after separation
- Distinguish between healthy choices and unhealthy choices for the human body
- Compare and contrast characteristics between groups of plants and groups of animals
- Sort animals by observable characteristics
- Identify ways to conserve resources
- Identify landforms that are created by Earth's forces
- Identify forms of precipitation by physical characteristics

With appropriate support, At Target students can typically:

- Determine the weight of an individual component of a mixture after separation
- Identify the function of the internal organs of the human body
- Recognize a relationship between healthy choices and a healthy body
- Understand how plants and animals get the food they need to survive
- Compare the physical characteristics of plants to plants and animals to animals
- Distinguish between renewable and nonrenewable resources
- Identify forces that create common landforms
- Use weather condition symbols to recognize different types of weather based on observable characteristics

With appropriate support, Approaching Target students can typically:

- Identify physical properties of matter
- Select appropriate tools to separate simple mixtures based on physical properties
- Separate simple mixtures based on physical properties
- Identify the functions of the sensory organs, stomach, lungs, and heart
- List ways to maintain a healthy body
- List observable characteristics of animals
- Match animals to animals and plants to plants based on similar physical characteristics
- List basic survival needs for plants and animals
- List Earth's resources
- Identify a source of energy as renewable or nonrenewable
- Label basic landforms of Earth
- Compare forms of precipitation

With appropriate support, Emerging students can typically:

- Recognize physical properties of matter
- Identify observable parts of the human body
- Recognize basic survival needs for plants and animals
- Identify basic Earth resources
- Recognize basic landforms of Earth
- Identify common forms of precipitation (e.g., rain and snow)
- Recognize sources of daily/weekly weather information

An Inconclusive designation is given to students who did not respond to any items on the assessment.

Grade 8 CoAlt Science
Performance Level Descriptors

Students demonstrate science concepts and skills aligned to the Grade Level Expectations and Extended Evidence Outcomes contained in the Colorado Academic Standards.

With appropriate support, Advanced students can typically:

- Match an object to itself before and after a physical or chemical change
- Compare and contrast different water or sound waves using wave characteristics
- Determine if different materials can absorb, reflect, or refract light
- Predict the effect of a human activity on a local ecosystem
- Identify why the appearances of the Sun and the moon change in the sky, including phases of the moon and eclipses

With appropriate support, At Target students can typically:

- Determine an object's directionality and compare the speeds of moving objects
- Determine sources for light and heat
- Determine if an object has undergone a physical or chemical change
- Identify sources of waves
- Identify human activities that have an effect on local ecosystems
- Identify traits that are passed down from parent to child
- Compare safe and unsafe practices during severe weather conditions
- Use models and simulations to explore the motions of Earth, the moon, and the Sun

With appropriate support, Approaching Target students can typically:

- Recognize that the speed and direction of a force can change moving objects
- Compare different forms of energy
- Label chemical and physical changes
- Label different types of waves
- Recognize the effect of human activity on the local ecosystem
- Identify similarities and differences in parents and children
- Identify severe weather conditions and follow a simple action plan for severe weather
- Recognize facts and fiction in regards to space exploration

With appropriate support, Emerging students can typically:

- Identify objects changing speed while moving
- Recognize that heat, light, and electricity are forms of energy
- Identify different types of waves
- Recognize stages of human aging
- Recognize different weather conditions
- Identify different climates
- Identify scientific tools related to weather and space exploration
- Acknowledge that celestial objects have patterns of movement

An Inconclusive designation is given to students who did not respond to any items on the assessment.

High School CoAlt Science
Performance Level Descriptors

Students demonstrate science concepts and skills aligned to the Grade Level Expectations and Extended Evidence Outcomes contained in the Colorado Academic Standards.

With appropriate support, Advanced students can typically:

- Predict the direction or relative speed of an object as a result of an unbalanced force
- Group items based on physical properties
- Identify products in a chemical reaction
- Determine types of energy associated with common objects
- Compare characteristics of different types of animals
- Recognize how cells group together and how body systems work together
- Recognize how organism populations have adapted to change
- Identify the factors that affect climate

With appropriate support, At Target students can typically:

- Compare objects and the forces required to move them
- Identify item characteristics as physical or chemical
- Compare elements and compounds
- Identify the chemical reaction in an object that causes an observable change
- Identify an element present in a compound
- Distinguish between different types of energy transformations
- Compare positive and negative effects of human activities on ecosystems
- Compare healthy and unhealthy lifestyle choices
- Distinguish between inherited traits and learned behaviors
- Recognize how the earth has changed over time

With appropriate support, Approaching Target students can typically:

- Identify the fastest object in a group
- Use ratios to determine a type of physical change in a mixture
- Identify chemical reactions in household items and common organisms
- Identify sources of energy
- Identify similarities and differences in parents and children
- List basic needs for space travel
- Identify severe weather conditions and follow a simple action plan for severe weather

With appropriate support, Emerging students can typically:

- Understand that force is required to move
- Identify the result of a chemical reaction
- Identify parts of plant and animal cells
- Recognize how ecosystems are affected by human activities
- Identify different climates
- Match scientific tools to their use in weather and space exploration

An Inconclusive designation is given to students who did not respond to any items on the assessment.

Grade 3 English Language Arts/Literacy and CSLA Performance Level Descriptors

Performance Level	Level of Text Complexity[1]	Range of Accuracy[2]	Quality of Evidence[3]
5	Very Complex Moderately Complex Readily Accessible	Mostly Accurate Mostly Accurate Accurate	Explicit Explicit Explicit
4	Very Complex Moderately Complex Readily Accessible	Generally Accurate Generally Accurate Mostly Accurate	Explicit Explicit Explicit
3	Very Complex Moderately Complex Readily Accessible	Minimally Accurate Generally Accurate Mostly Accurate	Explicit Explicit Explicit
2	Very Complex Moderately Complex Readily Accessible	Inaccurate Minimally Accurate Partially Accurate	Explicit Explicit Explicit

1. Text Complexity

The PARCC complexity framework reflects the importance of text complexity as it relates to the CCSS, which indicates that 50 percent of an item's complexity is linked to the complexity of the text(s) used as the stimulus for that item. Consequently, to determine students' performance levels, it is critical to identify the pattern of responses when students respond to items linked to passages with distinct text complexities. To this end, PARCC has developed a clear and consistent model to define text complexity and has determined to use three text complexity levels: readily accessible, moderately complex, or very complex. For more information on text complexity, refer to the CCSS Appendix A (http://www.corestandards.org/ELA-Literacy) and Appendix B (http://www.corestandards.org/ELA-Literacy).

PARCC uses two components for determining text complexity for **all** passages:

- Two quantitative text complexity measures (Reading Maturity Metric and Lexile) will be used to analyze all reading passages to determine **an initial** recommendation for placement of a text into a grade band and subsequently a grade level.

- Text Analysis Worksheets (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents), one for informational text and one for literary text, are then used to determine qualitative measures. Trained evaluators use these worksheets to determine a recommendation for qualitative text complexity within the grade level, with each text defined as readily accessible, moderately complex, or very complex.

For multimedia texts, qualitative judgments from one or both of the "optional" categories in the Complexity Analysis Worksheet will be combined with judgments in the other categories to make a holistic determination of the complexity of the material.

2. Range of Accuracy

There are three types of items on the PARCC summative assessments. For Evidence-Based Selected Response (EBSR) and Technology-Enhanced Constructed Response (TECR) items, the design is such that the items help contribute to an understanding of how accurately students comprehend text (demonstrate mastery of CCSS Reading Standards 2-10). Some of these items offer opportunities for

students to receive partial credit based on the range of accuracy. For Prose-Constructed Response (PCR) items, PARCC has developed draft scoring rubrics (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents) that include a Reading dimension to measure comprehension. Scores on the PCR items contribute to an evaluation of the degree to which a student can accurately comprehend a text. The PARCC assessment Performance Level Descriptors (PLDs) describe five levels of accuracy at grades 3-8 that are determined using the reading data collected through EBSR, TECR, and PCR items:

Accurate – The student is able to accurately state both the general ideas expressed in the text(s) and the key and supporting details. The response is complete, and the student demonstrates full understanding.

Mostly accurate – The student is able to accurately state most of the general ideas expressed in the text(s) and the key and supporting details, but the response is incomplete or contains minor inaccuracies. The student demonstrates understanding.

Generally accurate – The student is able to accurately state the gist of the text(s) but fails to accurately state the key and supporting details in the text or to connect such details to the overarching meaning of the text(s). The student demonstrates basic understanding.

Partially accurate – The student is able to accurately state the gist of the text(s) but is unable to state some of the key or supporting details with accuracy. The student is partially able to connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates partial understanding**.**

Minimally accurate – The student is unable to accurately state the gist of the text(s) but is able to minimally state some of the key or supporting details with accuracy. The student does not connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates minimal understanding.

Inaccurate – The student is unable to accurately state either the gist of the text or the key and supporting details evident in the text. The student demonstrates limited understanding.

3. Quality of Evidence

All items are designed to contribute to an understanding of how students "read closely to determine what the text says explicitly and to make logical inferences from it" and "cite specific textual evidence when writing or speaking to support conclusions drawn from the text" (CCSS Anchor Reading Standard 1). Some items offer opportunities for students to receive partial credit based on the quality of evidence provided. Students support their comprehension with explicit and/or inferential evidence:

Explicit evidence – Students show how the explicit words and phrases (details) from the text support statements made about the meaning of the text.

Inferential evidence – Students show how inferences drawn from the text support statements made about the meaning of the text.

Reading Sub-Claims	**Reading Literature** Students demonstrate comprehension and draw evidence from readings of grade-level, complex literary text.	**Reading Information** Students demonstrate comprehension and draw evidence from readings of grade-level, complex informational text.	**Vocabulary Interpretation and Use** Students use context to determine the meaning of words and phrases.
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Literary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Informational Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Vocabulary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text. ● With moderately complex text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text. ● With readily accessible text, students demonstrate the ability to be accurate when asking and/or answering questions, showing full understanding of the text when referring to explicit details and examples in the text.	In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the ability to be generally accurate when asking and/or answering questions, showing general understanding of the text when referring to explicit details and examples in the text. ● With moderately complex text, students demonstrate the ability to be generally accurate when asking and/or answering questions, showing general understanding of the text when referring to explicit details and examples in the text. ● With readily accessible text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text.	In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the ability to be minimally accurate when asking and/or answering questions, showing minimal understanding of the text when referring to explicit details and examples in the text. ● With moderately complex text, students demonstrate the ability to be generally accurate when asking and/or answering questions, showing basic understanding of the text when referring to explicit details and examples in the text. ● With readily accessible text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text.	In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the inability to ask or answer questions, showing limited understanding of the text when referring to explicit details and examples in the text. ● With moderately complex text, students demonstrate the ability to be minimally accurate when asking and/or answering questions, showing minimal understanding of the text when referring to explicit details and examples in the text. ● With readily accessible text, students demonstrate the ability to be partially accurate when asking and/or answering questions, showing partial understanding of the text when referring to explicit details and examples in the text.

Writing Sub-Claim for Written Expression: Students produce clear and coherent writing in which the development, organization, and style are appropriate to the task, purpose, and audience.	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	**Level 4**	**Level 3**	**Level 2**
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, in the majority of instances demonstrating purposeful and controlled organization. The student: ● Provides effective development of the topic and/or narrative elements, using reasoning, details, text-based evidence, and/or description. ● Develops topic and/or narrative elements in a manner that is appropriate to the task and purpose. ● Demonstrates purposeful organization that includes an introduction and/or conclusion. ● Effectively uses linking words and phrases, descriptive words, and/or temporal words to express ideas with clarity.	In **writing**, students address the prompts and provide development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating purposeful and mostly controlled organization. The student: ● Develops the topic and/or narrative elements using reasoning, details, text-based evidence, and/or description. ● Develops topic and/or narrative elements in a manner that is mostly appropriate to the task and purpose. ● Demonstrates purposeful organization that is mostly controlled and may include an introduction and/or conclusion. ● Uses linking words and phrases, descriptive words, and/or temporal words to express ideas with clarity.	In **writing**, students address the prompts and provide basic development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating organization that sometimes is controlled. The student: ● Develops the topic and/or narrative elements using some reasoning, details, text- based evidence, and/or description. ● Demonstrates some organization. ● Includes some linking words and phrases, descriptive words, and/or temporal words, limiting the clarity with which ideas are expressed.	In **writing**, students address the prompts and provide minimal development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating organization that often is not controlled. The student: ● Minimal development of the topic and/or narrative elements and is, therefore, inappropriate to the task and purpose. ● Demonstrates minimal organization. ● Includes minimal linking words and phrases, descriptive words, and/or temporal words, limiting the clarity with which ideas are expressed.

Writing Sub-Claim for Knowledge of Language and Conventions: Students demonstrate knowledge of conventions and other important elements of language.	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students demonstrate full command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage, but overall meaning is clear.	In **writing**, students demonstrate command of the conventions of Standard English consistent with edited writing. There are errors in grammar and usage that may occasionally impede understanding.	In **writing**, students demonstrate basic command of the conventions of Standard English consistent with edited writing. There are few patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, students demonstrate minimal command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating minimal control over language.

Grade 4 English Language Arts/Literacy and CSLA Performance Level Descriptors

Performance Level	Level of Text Complexity[1]	Range of Accuracy[2]	Quality of Evidence[3]
5	Very Complex Moderately Complex Readily Accessible	Mostly Accurate Mostly Accurate Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
4	Very Complex Moderately Complex Readily Accessible	Generally Accurate Generally Accurate Mostly Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
3	Very Complex Moderately Complex Readily Accessible	Minimally Accurate Generally Accurate Mostly Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
2	Very Complex Moderately Complex Readily Accessible	Inaccurate Minimally Accurate Partially Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential

1. Text Complexity

The PARCC complexity framework reflects the importance of text complexity as it relates to the CCSS, which indicates that 50 percent of an item's complexity is linked to the complexity of the text(s) used as the stimulus for that item. Consequently, to determine students' performance levels, it is critical to identify the pattern of responses when students respond to items linked to passages with distinct text complexities. To this end, PARCC has developed a clear and consistent model to define text complexity and has determined to use three text complexity levels: readily accessible, moderately complex, or very complex. For more information on text complexity, refer to the CCSS Appendix A (http://www.corestandards.org/ELA-Literacy) and Appendix B (http://www.corestandards.org/ELA-Literacy).

PARCC uses two components for determining text complexity for **all** passages:

- Two quantitative text complexity measures (Reading Maturity Metric and Lexile) will be used to analyze all reading passages to determine **an initial** recommendation for placement of a text into a grade band and subsequently a grade level.

- Text Analysis Worksheets (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents), one for informational text and one for literary text, are then used to determine qualitative measures. Trained evaluators use these worksheets to determine a recommendation for qualitative text complexity within the grade level, with each text defined as readily accessible, moderately complex, or very complex.

For multimedia texts, qualitative judgments from one or both of the "optional" categories in the Complexity Analysis Worksheet will be combined with judgments in the other categories to make a holistic determination of the complexity of the material.

2. Range of Accuracy

There are three types of items on the PARCC summative assessments. For Evidence-Based Selected Response (EBSR) and Technology-Enhanced Constructed Response (TECR) items, the design is such that the items help contribute to an understanding of how accurately students comprehend text (demonstrate mastery of CCSS Reading Standards 2-10). Some of these items offer opportunities for

students to receive partial credit based on the range of accuracy. For Prose-Constructed Response (PCR) items, PARCC has developed draft scoring rubrics (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents) that include a Reading dimension to measure comprehension. Scores on the PCR items contribute to an evaluation of the degree to which a student can accurately comprehend a text.

The PARCC assessment Performance Level Descriptors (PLDs) describe five levels of accuracy at grades 3-8 that are determined using the reading data collected through EBSR, TECR, and PCR items:

Accurate – The student is able to accurately state both the general ideas expressed in the text(s) and the key and supporting details. The response is complete, and the student demonstrates full understanding.

Mostly accurate – The student is able to accurately state most of the general ideas expressed in the text(s) and the key and supporting details, but the response is incomplete or contains minor inaccuracies. The student demonstrates understanding.

Generally accurate – The student is able to accurately state the gist of the text(s) but fails to accurately state the key and supporting details in the text or to connect such details to the overarching meaning of the text(s). The student demonstrates basic understanding.

Partially accurate – The student is able to accurately state the gist of the text(s) but is unable to state some of the key or supporting details with accuracy. The student is partially able to connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates partial understanding.

Minimally accurate – The student is unable to accurately state the gist of the text(s) but is able to minimally state some of the key or supporting details with accuracy. The student does not connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates minimal understanding.

Inaccurate – The student is unable to accurately state either the gist of the text or the key and supporting details evident in the text. The student demonstrates limited understanding.

3. Quality of Evidence

All items are designed to contribute to an understanding of how students "read closely to determine what the text says explicitly and to make logical inferences from it" and "cite specific textual evidence when writing or speaking to support conclusions drawn from the text" (CCSS Anchor Reading Standard 1). Some items offer opportunities for students to receive partial credit based on the quality of evidence provided. Students support their comprehension with explicit and/or inferential evidence:

Explicit evidence – Students show how the explicit words and phrases (details) from the text support statements made about the meaning of the text.

Inferential evidence – Students show how inferences drawn from the text support statements made about the meaning of the text.

Reading Sub-Claims	**Reading Literature** Students demonstrate comprehension and draw evidence from readings of grade-level, complex literary text.	**Reading Information** Students demonstrate comprehension and draw evidence from readings of grade-level, complex informational text.	**Vocabulary Interpretation and Use** Students use context to determine the meaning of words and phrases.
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Literary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Informational Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Vocabulary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With moderately complex text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With readily accessible text, students demonstrate the ability to be accurate when asking and/or answering questions, showing full understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to be generally accurate when asking and/or answering questions, showing general understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With moderately complex text, students demonstrate the ability to be generally accurate when asking and/or answering questions, showing general understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With readily accessible text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to ask and/or answer questions with minimal accuracy, showing minimal understanding of the text when referring to explicit details and examples in the text. • With moderately complex text, students demonstrate the ability to be generally accurate when asking and/or answering questions, showing basic understanding of the text when referring to explicit details and examples in the text. • With readily accessible text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the inability to be accurate when asking and/or answering questions, showing limited understanding of the text when referring to explicit details and examples in the text. • With moderately complex text, students demonstrate the ability to ask and/or answer questions with minimal accuracy, showing minimal understanding of the text when referring to explicit details and examples in the text. • With readily accessible text, students demonstrate the ability to be partially accurate when asking and/or answering questions, showing partial understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.

Writing Sub-Claim for Written Expression: Students produce clear and coherent writing in which the development, organization, and style are appropriate to the task, purpose, and audience.	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, in the majority of instances demonstrating purposeful and controlled organization. The student: • Provides effective development of the topic and/or narrative elements, using reasoning, details, text-based evidence, and/or description. • Develops topic and/or narrative elements in a manner that is appropriate to the task and purpose. • Demonstrates purposeful organization that includes an introduction and/or conclusion. • Correctly uses linking words and phrases, descriptive words, and/or temporal words to express ideas with clarity.	In **writing**, students address the prompts and provide development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating purposeful and mostly controlled organization. The student: ● Develops the topic and/or narrative elements using reasoning, details, text- based evidence, and/or description. ● Develops topic and/or narrative elements in a manner that is mostly appropriate to the task and purpose. ● Demonstrates purposeful organization that is mostly controlled and may include an introduction and/or conclusion. ● Uses linking words and phrases, descriptive words, and/or temporal words to express ideas with clarity.	In **writing**, students address the prompts and provide basic development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating organization that sometimes is controlled. The student: ● Develops topic and/or narrative elements in manner that is general in its appropriateness to the task and purpose. ● Demonstrates some organization. ● Includes some linking words and phrases, descriptive words, and/or temporal words, limiting the clarity with which ideas are expressed.	In **writing**, students address the prompts and provide minimal development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating organization that often is not controlled. The student: ● Provides minimal development of the topic and/or narrative elements and is, therefore, inappropriate to the task and purpose. ● Demonstrates minimal organization. ● Includes minimal linking words and phrases, descriptive words, and/or temporal words, limiting the clarity with which ideas are expressed.

Writing Sub-Claim for Knowledge of Language and Conventions: Students demonstrate knowledge of conventions and other important elements of language.	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students demonstrate full command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage, but overall meaning is clear.	In **writing**, students demonstrate command of the conventions of Standard English consistent with edited writing. There are errors in grammar and usage that may occasionally impede understanding.	In **writing**, students demonstrate basic command of the conventions of Standard English consistent with edited writing. There are few patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, students demonstrate minimal command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating minimal control over language.

Grade 5 English Language Arts/Literacy Performance Level Descriptors

Performance Level	Level of Text Complexity[1]	Range of Accuracy[2]	Quality of Evidence[3]
5	Very Complex Moderately Complex Readily Accessible	Mostly Accurate Mostly Accurate Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
4	Very Complex Moderately Complex Readily Accessible	Generally Accurate Generally Accurate Mostly Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
3	Very Complex Moderately Complex Readily Accessible	Minimally Accurate Generally Accurate Mostly Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
2	Very Complex Moderately Complex Readily Accessible	Inaccurate Minimally Accurate Partially accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential

1. Text Complexity

The PARCC complexity framework reflects the importance of text complexity as it relates to the CCSS, which indicates that 50 percent of an item's complexity is linked to the complexity of the text(s) used as the stimulus for that item. Consequently, to determine students' performance levels, it is critical to identify the pattern of responses when students respond to items linked to passages with distinct text complexities. To this end, PARCC has developed a clear and consistent model to define text complexity and has determined to use three text complexity levels: readily accessible, moderately complex, or very complex. For more information on text complexity, refer to the CCSS Appendix A (http://www.corestandards.org/ELA-Literacy) and Appendix B (http://www.corestandards.org/ELA-Literacy).

PARCC uses two components for determining text complexity for **all** passages:

- Two quantitative text complexity measures (Reading Maturity Metric and Lexile) will be used to analyze all reading passages to determine **an initial** recommendation for placement of a text into a grade band and subsequently a grade level.

- Text Analysis Worksheets (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents), one for informational text and one for literary text, are then used to determine qualitative measures. Trained evaluators use these worksheets to determine a recommendation for qualitative text complexity within the grade level, with each text defined as readily accessible, moderately complex, or very complex.

For multimedia texts, qualitative judgments from one or both of the "optional" categories in the Complexity Analysis Worksheet will be combined with judgments in the other categories to make a holistic determination of the complexity of the material.

2. Range of Accuracy

There are three types of items on the PARCC summative assessments. For Evidence-Based Selected Response (EBSR) and Technology-Enhanced Constructed Response (TECR) items, the design is such that the items help contribute to an understanding of how accurately students comprehend text (demonstrate mastery of CCSS Reading Standards 2-10). Some of these items offer opportunities for

students to receive partial credit based on the range of accuracy. For Prose-Constructed Response (PCR) items, PARCC has developed draft scoring rubrics (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents) that include a Reading dimension to measure comprehension. Scores on the PCR items contribute to an evaluation of the degree to which a student can accurately comprehend a text.

The PARCC assessment Performance Level Descriptors (PLDs) describe five levels of accuracy at grades 3-8 that are determined using the reading data collected through EBSR, TECR, and PCR items:

Accurate – The student is able to accurately state both the general ideas expressed in the text(s) and the key and supporting details. The response is complete, and the student demonstrates full understanding.

Mostly accurate – The student is able to accurately state most of the general ideas expressed in the text(s) and the key and supporting details, but the response is incomplete or contains minor inaccuracies. The student demonstrates understanding.

Generally accurate – The student is able to accurately state the gist of the text(s) but fails to accurately state the key and supporting details in the text or to connect such details to the overarching meaning of the text(s). The student demonstrates basic understanding.

Partially accurate – The student is able to accurately state the gist of the text(s) but is unable to state some of the key or supporting details with accuracy. The student is partially able to connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates partial understanding.

Minimally accurate – The student is unable to accurately state the gist of the text(s) but is able to minimally state some of the key or supporting details with accuracy. The student does not connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates minimal understanding.

Inaccurate – The student is unable to accurately state either the gist of the text or the key and supporting details evident in the text. The student demonstrates limited understanding.

3. Quality of Evidence

All items are designed to contribute to an understanding of how students "read closely to determine what the text says explicitly and to make logical inferences from it" and "cite specific textual evidence when writing or speaking to support conclusions drawn from the text" (CCSS Anchor Reading Standard 1). Some items offer opportunities for students to receive partial credit based on the quality of evidence provided. Students support their comprehension with explicit and/or inferential evidence:

Explicit evidence – Students show how the explicit words and phrases (details) from the text support statements made about the meaning of the text.

Inferential evidence – Students show how inferences drawn from the text support statements made about the meaning of the text.

Reading Sub-Claims	**Reading Literature** Students demonstrate comprehension and draw evidence from readings of grade-level, complex literary text.	**Reading Information** Students demonstrate comprehension and draw evidence from readings of grade-level, complex informational text.	**Vocabulary Interpretation and Use** Students use context to determine the meaning of words and phrases.
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Literary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Informational Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Vocabulary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to be mostly accurate when quoting or referencing, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With moderately complex text, students demonstrate the ability to be mostly accurate when quoting or referencing, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With readily accessible text, students demonstrate the ability to be accurate when quoting or referencing, showing full understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to be generally accurate when quoting or referencing, showing general understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With moderately complex text, students demonstrate the ability to be generally accurate when quoting or referencing, showing general understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With readily accessible text, students demonstrate the ability to be mostly accurate when quoting or referencing, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to be minimally accurate when quoting or referencing, showing minimal understanding of the text when referring to explicit details and examples in the text. • With moderately complex text, students demonstrate the ability to be generally accurate when quoting or referencing, showing basic understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With readily accessible text, students demonstrate the ability to be mostly accurate when quoting or referencing, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the inability to be accurate when quoting or referencing, showing limited understanding of the text when referring to explicit details and examples in the text. • With moderately complex text, students demonstrate the ability to be minimally accurate when quoting or referencing, showing minimal understanding of the text when referring to explicit details and examples in the text. • With readily accessible text, students demonstrate the ability to be partially accurate when quoting or referencing, showing partial understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.

Writing Sub-Claim for Written Expression: Students produce clear and coherent writing in which the development, organization, and style are appropriate to the task, purpose, and audience.	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, in the majority of instances demonstrating purposeful and controlled organization. The student: ● Provides effective development of the topic and/or narrative elements, using reasoning, details, and/or description. ● Develops topic and/or narrative elements in a manner that is appropriate to the task, purpose, and audience. ● Demonstrates coherence, clarity, and cohesion and includes an introduction and/or conclusion. ● Attends to the norms and conventions of the discipline. ● Effectively draws evidence from literary or informational texts to support analysis, reflection, and research. ● Effectively uses concrete words and phrases, sensory details, linking and transitional words, and/or domain-specific vocabulary to clarify ideas.	In **writing**, students address the prompts and provide development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating purposeful and mostly controlled organization. The student: ● Develops the topic and/or narrative elements using reasoning, details, and/or description. ● Develops topic and/or narrative elements in a manner that is mostly appropriate to the task, purpose, and audience. ● Demonstrates general coherence, clarity, and cohesion and may or may not include an introduction and/or conclusion. ● Demonstrates general awareness of the norms and conventions of the discipline. ● Draws evidence from literary or informational texts to support analysis, reflection, and research. ● Uses concrete words and phrases, sensory details, linking and transitional words, and/or domain-specific vocabulary to clarify ideas.	In **writing**, students address the prompts and provide basic development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating organization that sometimes is controlled. The student: ● Develops the topic and/or narrative elements minimally by using some reasoning, details, and/or description. ● Develops topic and/or narrative elements in manner that is general in its appropriateness to the task, purpose, and audience. ● Demonstrates some coherence, clarity, and cohesion, omitting the introduction or conclusion. ● Demonstrates some awareness of the norms of the discipline. ● Draws partial evidence from literary or informational texts to support analysis, reflection, and research. ● Includes some descriptions, sensory details, linking and transitional words, or domain-specific vocabulary to clarify ideas.	In **writing**, students address the prompts and provide minimal development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating organization that often is not controlled. The student: ● Minimal development of the topic and/or narrative elements and is, therefore, inappropriate to the task and purpose. ● Demonstrates minimal coherence, clarity, and cohesion. ● Demonstrates minimal awareness of the norms of the discipline. ● Draws minimal evidence from literary or informational texts to support analysis, reflection, and research. ● Includes minimal descriptions, sensory details, linking and transitional words, or domain-specific vocabulary, limiting the overall clarity with which ideas are expressed.

Writing Sub-Claim for Knowledge of Language and Conventions: Students demonstrate knowledge of conventions and other important elements of language.	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students demonstrate full command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage, but overall meaning is clear.	In **writing**, students demonstrate command of the conventions of Standard English consistent with edited writing. There are errors in grammar and usage that may occasionally impede understanding.	In **writing**, students demonstrate basic command of the conventions of Standard English consistent with edited writing. There are few patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, students demonstrate minimal command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating minimal control over language.

Grade 6 English Language Arts/Literacy Performance Level Descriptors

Performance Level	Level of Text Complexity[1]	Range of Accuracy[2]	Quality of Evidence[3]
5	Very Complex Moderately Complex Readily Accessible	Mostly Accurate Mostly Accurate Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
4	Very Complex Moderately Complex Readily Accessible	Generally Accurate Generally Accurate Mostly Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
3	Very Complex Moderately Complex Readily Accessible	Minimally Accurate Generally Accurate Mostly Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
2	Very Complex Moderately Complex Readily Accessible	Inaccurate Minimally Accurate Partially Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential

1. Text Complexity

The PARCC complexity framework reflects the importance of text complexity as it relates to the CCSS, which indicates that 50 percent of an item's complexity is linked to the complexity of the text(s) used as the stimulus for that item. Consequently, to determine students' performance levels, it is critical to identify the pattern of responses when students respond to items linked to passages with distinct text complexities. To this end, PARCC has developed a clear and consistent model to define text complexity and has determined to use three text complexity levels: readily accessible, moderately complex, or very complex. For more information on text complexity, refer to the CCSS Appendix A (http://www.corestandards.org/ELA-Literacy) and Appendix B (http://www.corestandards.org/ELA-Literacy).

PARCC uses two components for determining text complexity for **all** passages:

- Two quantitative text complexity measures (Reading Maturity Metric and Lexile) will be used to analyze all reading passages to determine **an initial** recommendation for placement of a text into a grade band and subsequently a grade level.

- Text Analysis Worksheets (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents), one for informational text and one for literary text, are then used to determine qualitative measures. Trained evaluators use these worksheets to determine a recommendation for qualitative text complexity within the grade level, with each text defined as readily accessible, moderately complex, or very complex.

For multimedia texts, qualitative judgments from one or both of the "optional" categories in the Complexity Analysis Worksheet will be combined with judgments in the other categories to make a holistic determination of the complexity of the material.

2. Range of Accuracy

There are three types of items on the PARCC summative assessments. For Evidence-Based Selected Response (EBSR) and Technology-Enhanced Constructed Response (TECR) items, the design is such that the items help contribute to an understanding of how accurately students comprehend text (demonstrate mastery of CCSS Reading Standards 2-10). Some of these items offer opportunities for

students to receive partial credit based on the range of accuracy. For Prose-Constructed Response (PCR) items, PARCC has developed draft scoring rubrics (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents) that include a Reading dimension to measure comprehension. Scores on the PCR items contribute to an evaluation of the degree to which a student can accurately comprehend a text.

The PARCC assessment Performance Level Descriptors (PLDs) describe five levels of accuracy at grades 3-8 that are determined using the reading data collected through EBSR, TECR, and PCR items:

Accurate – The student is able to accurately state both the general ideas expressed in the text(s) and the key and supporting details. The response is complete, and the student demonstrates full understanding.

Mostly accurate – The student is able to accurately state most of the general ideas expressed in the text(s) and the key and supporting details, but the response is incomplete or contains minor inaccuracies. The student demonstrates understanding.

Generally accurate – The student is able to accurately state the gist of the text(s) but fails to accurately state the key and supporting details in the text or to connect such details to the overarching meaning of the text(s). The student demonstrates basic understanding.

Partially accurate – The student is able to accurately state the gist of the text(s) but is unable to state some of the key or supporting details with accuracy. The student is partially able to connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates partial understanding.

Minimally accurate – The student is unable to accurately state the gist of the text(s) but is able to minimally state some of the key or supporting details with accuracy. The student does not connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates minimal understanding.

Inaccurate – The student is unable to accurately state either the gist of the text or the key and supporting details evident in the text. The student demonstrates limited understanding.

3. Quality of Evidence

All items are designed to contribute to an understanding of how students "read closely to determine what the text says explicitly and to make logical inferences from it" and "cite specific textual evidence when writing or speaking to support conclusions drawn from the text" (CCSS Anchor Reading Standard 1). Some items offer opportunities for students to receive partial credit based on the quality of evidence provided. Students support their comprehension with explicit and/or inferential evidence:

Explicit evidence – Students show how the explicit words and phrases (details) from the text support statements made about the meaning of the text.

Inferential evidence – Students show how inferences drawn from the text support statements made about the meaning of the text.

Reading Sub-Claims	**Reading Literature** Students demonstrate comprehension and draw evidence from readings of grade-level, complex literary text.	**Reading Information** Students demonstrate comprehension and draw evidence from readings of grade-level, complex informational text.	**Vocabulary Interpretation and Use** Students use context to determine the meaning of words and phrases.
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Literary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Informational Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Vocabulary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text • With moderately complex text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do accurate analyses of the text, showing full understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do generally accurate analyses of the text, showing general understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing general understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing basic understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the inability to do an accurate analysis of the text, showing limited understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do partially accurate analyses of the text, showing partial understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.

Writing Sub-Claim for Written Expression: Students produce clear and coherent writing in which the development, organization, and style are appropriate to the task, purpose, and	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing,** students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, while demonstrating effective coherence, clarity, and/or cohesion. The student: ● Provides effective development of the claim, topic, and/or narrative elements, using clear reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is appropriate to the task, purpose, and audience. ● Demonstrates coherence, clarity, and cohesion and includes an introduction, conclusion, and a logical progression of ideas. ● Establishes and maintains an effective style, while attending to the norms and conventions of the discipline. ● Effectively draws evidence from literary or informational texts to support analysis, reflection, and research. ● Includes precise language including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide development of ideas, including when drawing evidence from multiple sources, while demonstrating coherence, clarity, and/or cohesion. The student: ● Provides development of the claim, topic, and/or narrative elements, using reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is mostly appropriate to the task, purpose, and audience. ● Demonstrates general coherence, clarity, and cohesion and includes an introduction, conclusion, and logically grouped ideas. ● Establishes and maintains a mostly effective style, while attending to the norms and conventions of the discipline. ● Draws evidence from literary or informational texts to support analysis, reflection, and research. ● Includes mostly precise language, including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide basic development of ideas, including when drawing evidence from multiple sources, while generally demonstrating basic coherence, clarity, and/or cohesion. The student: ● Provides some development of the claim, topic, and/or narrative elements, using basic reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is somewhat appropriate to the task, purpose, and audience. ● Demonstrates some coherence, clarity, and/or cohesion, making the writer's progression of ideas somewhat unclear. ● Employs a style that is generally effective, with basic awareness of the norms of the discipline. ● Draws some evidence from literary or informational texts to support analysis, reflection, and research. ● Includes some descriptions, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.	In **writing**, students address the prompts and provide minimal development of ideas, including when drawing evidence from multiple sources, while demonstrating minimal coherence, clarity, and/or cohesion. The student: ● Provides minimal development of the claim, topic, and/or narrative elements, using minimal reasoning, details, text-based evidence, and/or description. ● Minimal development of the claim, topic and/or narrative elements that is minimally appropriate to the task, purpose, and audience. ● Demonstrates minimal coherence, clarity, and/or cohesion, making the writer's progression of ideas unclear. ● Employs a minimally effective style, and minimal awareness of the norms of the discipline. ● Draws minimal evidence from literary or informational texts to support analysis, reflection, and research. ● Includes minimal descriptions, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.

Writing Sub-Claim for Knowledge of Language and Conventions: Students demonstrate knowledge of conventions and other important elements of language.	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students demonstrate full command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage, but overall meaning is clear.	In **writing**, students demonstrate command of the conventions of Standard English consistent with edited writing. There are errors in grammar and usage that may occasionally impede understanding.	In **writing**, students demonstrate basic command of the conventions of Standard English consistent with edited writing. There are few patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, students demonstrate minimal command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating minimal control over language.

Grade 7 English Language Arts/Literacy Performance Level Descriptors

Performance Level	Level of Text Complexity[1]	Range of Accuracy[2]	Quality of Evidence[3]
5	Very Complex Moderately Complex Readily Accessible	Mostly Accurate Mostly Accurate Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
4	Very Complex Moderately Complex Readily Accessible	Generally Accurate Generally Accurate Mostly Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
3	Very Complex Moderately Complex Readily Accessible	Minimally Accurate Generally Accurate Mostly Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
2	Very Complex Moderately Complex Readily Accessible	Inaccurate Minimally Accurate Partially Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential

1. Text Complexity

The PARCC complexity framework reflects the importance of text complexity as it relates to the CCSS, which indicates that 50 percent of an item's complexity is linked to the complexity of the text(s) used as the stimulus for that item. Consequently, to determine students' performance levels, it is critical to identify the pattern of responses when students respond to items linked to passages with distinct text complexities. To this end, PARCC has developed a clear and consistent model to define text complexity and has determined to use three text complexity levels: readily accessible, moderately complex, or very complex. For more information on text complexity, refer to the CCSS Appendix A (http://www.corestandards.org/ELA-Literacy) and Appendix B (http://www.corestandards.org/ELA-Literacy).

PARCC uses two components for determining text complexity for **all** passages:

- Two quantitative text complexity measures (Reading Maturity Metric and Lexile) will be used to analyze all reading passages to determine **an initial** recommendation for placement of a text into a grade band and subsequently a grade level.

- Text Analysis Worksheets (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents), one for informational text and one for literary text, are then used to determine qualitative measures. Trained evaluators use these worksheets to determine a recommendation for qualitative text complexity within the grade level, with each text defined as readily accessible, moderately complex, or very complex.

For multimedia texts, qualitative judgments from one or both of the "optional" categories in the Complexity Analysis Worksheet will be combined with judgments in the other categories to make a holistic determination of the complexity of the material.

2. Range of Accuracy

There are three types of items on the PARCC summative assessments. For Evidence-Based Selected Response (EBSR) and Technology-Enhanced Constructed Response (TECR) items, the design is such that the items help contribute to an understanding of how accurately students comprehend text (demonstrate mastery of CCSS Reading Standards 2-10). Some of these items offer opportunities for

students to receive partial credit based on the range of accuracy. For Prose-Constructed Response (PCR) items, PARCC has developed draft scoring rubrics (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents) that include a Reading dimension to measure comprehension. Scores on the PCR items contribute to an evaluation of the degree to which a student can accurately comprehend a text.

The PARCC assessment Performance Level Descriptors (PLDs) describe five levels of accuracy at grades 3-8 that are determined using the reading data collected through EBSR, TECR, and PCR items:

Accurate – The student is able to accurately state both the general ideas expressed in the text(s) and the key and supporting details. The response is complete, and the student demonstrates full understanding.

Mostly accurate – The student is able to accurately state most of the general ideas expressed in the text(s) and the key and supporting details, but the response is incomplete or contains minor inaccuracies. The student demonstrates understanding.

Generally accurate – The student is able to accurately state the gist of the text(s) but fails to accurately state the key and supporting details in the text or to connect such details to the overarching meaning of the text(s). The student demonstrates basic understanding.

Partially accurate – The student is able to accurately state the gist of the text(s) but is unable to state some of the key or supporting details with accuracy. The student is partially able to connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates partial understanding.

Minimally accurate – The student is unable to accurately state the gist of the text(s) but is able to minimally state some of the key or supporting details with accuracy. The student does not connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates minimal understanding.

Inaccurate – The student is unable to accurately state either the gist of the text or the key and supporting details evident in the text. The student demonstrates limited understanding.

3. Quality of Evidence

All items are designed to contribute to an understanding of how students "read closely to determine what the text says explicitly and to make logical inferences from it" and "cite specific textual evidence when writing or speaking to support conclusions drawn from the text" (CCSS Anchor Reading Standard 1). Some items offer opportunities for students to receive partial credit based on the quality of evidence provided. Students support their comprehension with explicit and/or inferential evidence:

Explicit evidence – Students show how the explicit words and phrases (details) from the text support statements made about the meaning of the text.

Inferential evidence – Students show how inferences drawn from the text support statements made about the meaning of the text.

Reading Sub-Claims	**Reading Literature** Students demonstrate comprehension and draw evidence from readings of grade-level, complex literary text.	**Reading Information** Students demonstrate comprehension and draw evidence from readings of grade-level, complex informational text.	**Vocabulary Interpretation and Use** Students use context to determine the meaning of words and phrases.
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Literary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Informational Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Vocabulary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With moderately complex text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With readily accessible text, students demonstrate the ability to do accurate analyses of the text, showing full understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the ability to do generally accurate analyses of the text, showing general understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing general understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing basic understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the inability to do an accurate analysis of the text, showing limited understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With moderately complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With readily accessible text, students demonstrate the ability to do partially accurate analyses of the text, showing partial understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.

Writing Sub-Claim for Written Expression: Students produce clear and coherent writing in which the development, organization, and style are appropriate to the task, purpose, and audience.	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, while demonstrating effective coherence, clarity, and/or cohesion. The student: ● Provides effective development of the claim, topic, and/or narrative elements, using clear reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is appropriate to the task, purpose, and audience. ● Demonstrates coherence, clarity, and cohesion and includes an introduction, conclusion, and a logical progression of ideas. ● Establishes and maintains an effective style, while attending to the norms and conventions of the discipline. ● Effectively draws evidence from literary or informational texts to support analysis, reflection, and research. ● Includes precise language including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide development of ideas, including when drawing evidence from multiple sources, while demonstrating coherence, clarity, and/or cohesion. The student: ● Provides development of the claim, topic, and/or narrative elements, using reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is mostly appropriate to the task, purpose, and audience. ● Demonstrates general coherence, clarity, and cohesion and includes an introduction, conclusion, and logically grouped ideas. ● Establishes and maintains a mostly effective style, while attending to the norms and conventions of the discipline. ● Draws evidence from literary or informational texts to support analysis, reflection, and research. ● Includes mostly precise language, including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide basic development of ideas, including when drawing evidence from multiple sources, while generally demonstrating basic coherence, clarity, and/or cohesion. The student: ● Provides some development of the claim, topic, and/or narrative elements, using basic reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is somewhat appropriate to the task, purpose, and audience. ● Demonstrates some coherence, clarity, and/or cohesion, making the writer's progression of ideas somewhat unclear. ● Employs a style that is generally effective, with basic awareness of the norms of the discipline. ● Draws some evidence from literary or informational texts to support analysis, reflection, and research. ● Includes some descriptions, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.	In **writing**, students address the prompts and provide minimal development of ideas, including when drawing evidence from multiple sources, while demonstrating minimal coherence, clarity, and/or cohesion. The student: ● Provides minimal development of the claim, topic, and/or narrative elements, using minimal reasoning, details, text-based evidence, and/or description. ● Minimal development of the claim, topic and/or narrative elements that is minimally appropriate to the task, purpose, and audience. ● Demonstrates minimal coherence, clarity, and/or cohesion, making the writer's progression of ideas unclear. ● Employs a minimally effective style, and minimal awareness of the norms of the discipline. ● Draws minimal evidence from literary or informational texts to support analysis, reflection, and research. ● Includes minimal descriptions, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.

Writing Sub-Claim for Knowledge of Language and Conventions: Students demonstrate knowledge of conventions and other important elements of language.	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students demonstrate full command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage, but overall meaning is clear.	In **writing**, students demonstrate command of the conventions of Standard English consistent with edited writing. There are errors in grammar and usage that may occasionally impede understanding.	In **writing**, students demonstrate basic command of the conventions of Standard English consistent with edited writing. There are few patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, students demonstrate minimal command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating minimal control over language.

Grade 8 English Language Arts/Literacy Performance Level Descriptors

Performance Level	Level of Text Complexity[1]	Range of Accuracy[2]	Quality of Evidence[3]
5	Very Complex Moderately Complex Readily Accessible	Mostly Accurate Mostly Accurate Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
4	Very Complex Moderately Complex Readily Accessible	Generally Accurate Generally Accurate Mostly Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
3	Very Complex Moderately Complex Readily Accessible	Minimally Accurate Generally Accurate Mostly Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
2	Very Complex Moderately Complex Readily Accessible	Inaccurate Minimally Accurate Partially Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential

1. Text Complexity

The PARCC complexity framework reflects the importance of text complexity as it relates to the CCSS, which indicates that 50 percent of an item's complexity is linked to the complexity of the text(s) used as the stimulus for that item. Consequently, to determine students' performance levels, it is critical to identify the pattern of responses when students respond to items linked to passages with distinct text complexities. To this end, PARCC has developed a clear and consistent model to define text complexity and has determined to use three text complexity levels: readily accessible, moderately complex, or very complex. For more information on text complexity, refer to the CCSS Appendix A (http://www.corestandards.org/ELA-Literacy) and Appendix B (http://www.corestandards.org/ELA-Literacy).

PARCC uses two components for determining text complexity for **all** passages:

- Two quantitative text complexity measures (Reading Maturity Metric and Lexile) will be used to analyze all reading passages to determine **an initial** recommendation for placement of a text into a grade band and subsequently a grade level.

- Text Analysis Worksheets (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents), one for informational text and one for literary text, are then used to determine qualitative measures. Trained evaluators use these worksheets to determine a recommendation for qualitative text complexity within the grade level, with each text defined as readily accessible, moderately complex, or very complex.

For multimedia texts, qualitative judgments from one or both of the "optional" categories in the Complexity Analysis Worksheet will be combined with judgments in the other categories to make a holistic determination of the complexity of the material.

2. Range of Accuracy

There are three types of items on the PARCC summative assessments. For Evidence-Based Selected Response (EBSR) and Technology-Enhanced Constructed Response (TECR) items, the design is such that the items help contribute to an understanding of how accurately students comprehend text (demonstrate mastery of CCSS Reading Standards 2-10). Some of these items offer opportunities for

students to receive partial credit based on the range of accuracy. For Prose-Constructed Response (PCR) items, PARCC has developed draft scoring rubrics (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents) that include a Reading dimension to measure comprehension. Scores on the PCR items contribute to an evaluation of the degree to which a student can accurately comprehend a text.

The PARCC assessment Performance Level Descriptors (PLDs) describe five levels of accuracy at grades 3-8 that are determined using the reading data collected through EBSR, TECR, and PCR items:

Accurate – The student is able to accurately state both the general ideas expressed in the text(s) and the key and supporting details. The response is complete, and the student demonstrates full understanding.

Mostly accurate – The student is able to accurately state most of the general ideas expressed in the text(s) and the key and supporting details, but the response is incomplete or contains minor inaccuracies. The student demonstrates understanding.

Generally accurate – The student is able to accurately state the gist of the text(s) but fails to accurately state the key and supporting details in the text or to connect such details to the overarching meaning of the text(s). The student demonstrates basic understanding.

Partially accurate – The student is able to accurately state the gist of the text(s) but is unable to state some of the key or supporting details with accuracy. The student is partially able to connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates partial understanding.

Minimally accurate – The student is unable to accurately state the gist of the text(s) but is able to minimally state some of the key or supporting details with accuracy. The student does not connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates minimal understanding.

Inaccurate – The student is unable to accurately state either the gist of the text or the key and supporting details evident in the text. The student demonstrates limited understanding.

3. Quality of Evidence

All items are designed to contribute to an understanding of how students "read closely to determine what the text says explicitly and to make logical inferences from it" and "cite specific textual evidence when writing or speaking to support conclusions drawn from the text" (CCSS Anchor Reading Standard 1). Some items offer opportunities for students to receive partial credit based on the quality of evidence provided. Students support their comprehension with explicit and/or inferential evidence:

Explicit evidence – Students show how the explicit words and phrases (details) from the text support statements made about the meaning of the text.

Inferential evidence – Students show how inferences drawn from the text support statements made about the meaning of the text.

Reading Sub-Claims	**Reading Literature** Students demonstrate comprehension and draw evidence from readings of grade-level, complex literary text.	**Reading Information** Students demonstrate comprehension and draw evidence from readings of grade-level, complex informational text.	**Vocabulary Interpretation and Use** Students use context to determine the meaning of words and phrases.
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Literary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Informational Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Vocabulary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do mostly accurate analyses of text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do accurate analyses of the text, showing full understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do generally accurate analyses of the text, showing general understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing general understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing basic understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the inability to do an accurate analysis of the text, showing limited understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do partially accurate analyses of the text, showing partial understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.

Writing Sub-Claim for Written Expression: Students produce clear and coherent writing in which the development, organization, and style are appropriate to the task, purpose, and audience.	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, while demonstrating effective coherence, clarity, and/or cohesion. The student: ● Provides effective development of the claim, topic, and/or narrative elements, using clear reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is appropriate to the task, purpose, and audience. ● Demonstrates coherence, clarity, and cohesion and includes an introduction, conclusion, and a logical progression of ideas. ● Establishes and maintains an effective style, while attending to the norms and conventions of the discipline. ● Effectively draws evidence from literary or informational texts to support analysis, reflection, and research. ● Includes precise language including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide development of ideas, including when drawing evidence from multiple sources, while demonstrating coherence, clarity, and/or cohesion. The student: ● Provides development of the claim, topic, and/or narrative elements, using reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is mostly appropriate to the task, purpose, and audience. ● Demonstrates general coherence, clarity, and cohesion and includes an introduction, conclusion, and logically grouped ideas. ● Establishes and maintains a mostly effective style, while attending to the norms and conventions of the discipline. ● Draws evidence from literary or informational texts to support analysis, reflection, and research. ● Includes mostly precise language, including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide basic development of ideas, including when drawing evidence from multiple sources, while generally demonstrating basic coherence, clarity, and/or cohesion. The student: ● Provides some development of the claim, topic, and/or narrative elements, using basic reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is somewhat appropriate to the task, purpose, and audience. ● Demonstrates some coherence, clarity, and/or cohesion, making the writer's progression of ideas somewhat unclear. ● Employs a style that is generally effective, with basic awareness of the norms of the discipline. ● Draws some evidence from literary or informational texts to support analysis, reflection, and research. ● Includes some descriptions, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.	In **writing**, students address the prompts and provide minimal development of ideas, including when drawing evidence from multiple sources, while demonstrating minimal coherence, clarity, and/or cohesion. The student: ● Provides minimal development of the claim, topic, and/or narrative elements, using minimal reasoning, details, text-based evidence, and/or description. ● Minimal development of the claim, topic and/or narrative elements that is minimally appropriate to the task, purpose, and audience. ● Demonstrates minimal coherence, clarity, and/or cohesion, making the writer's progression of ideas unclear. ● Employs a minimally effective style, and minimal awareness of the norms of the discipline. ● Draws minimal evidence from literary or informational texts to support analysis, reflection, and research. ● Includes minimal descriptions, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.

Writing Sub-Claim for Knowledge of Language and Conventions: Students demonstrate knowledge of conventions and other important elements of language.	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students demonstrate full command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage, but overall meaning is clear.	In **writing**, students demonstrate command of the conventions of Standard English consistent with edited writing. There are errors in grammar and usage that may occasionally impede understanding.	In **writing**, students demonstrate basic command of the conventions of Standard English consistent with edited writing. There are few patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, students demonstrate minimal command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating minimal control over language.

Grade 9 English Language Arts/Literacy Performance Level Descriptors

Performance Level	Level of Text Complexity[1]	Range of Accuracy[2]	Quality of Evidence[3]
5	Very Complex Moderately Complex Readily Accessible	Mostly Accurate Mostly Accurate Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
4	Very Complex Moderately Complex Readily Accessible	Generally accurate Generally Accurate Mostly Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
3	Very Complex Moderately Complex Readily Accessible	Minimally Accurate Minimally Accurate Generally Accurate	Explicit & Inferential Explicit & Inferential Explicit & Inferential
2	Very Complex Moderately Complex Readily Accessible	Inaccurate Minimally Accurate Minimally Accurate	Explicit Explicit & Inferential Explicit & Inferential

1. Text Complexity

The PARCC complexity framework reflects the importance of text complexity as it relates to the CCSS, which indicates that 50 percent of an item's complexity is linked to the complexity of the text(s) used as the stimulus for that item. Consequently, to determine students' performance levels, it is critical to identify the pattern of responses when students respond to items linked to passages with distinct text complexities. To this end, PARCC has developed a clear and consistent model to define text complexity and has determined to use three text complexity levels: readily accessible, moderately complex, or very complex. For more information on text complexity, refer to the CCSS Appendix A (http://www.corestandards.org/ELA-Literacy) and Appendix B (http://www.corestandards.org/ELA-Literacy).

PARCC uses two components for determining text complexity for **all** passages:

- Two quantitative text complexity measures (Reading Maturity Metric and Lexile) will be used to analyze all reading passages to determine **an initial** recommendation for placement of a text into a grade band and subsequently a grade level.

- Text Analysis Worksheets (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents), one for informational text and one for literary text, are then used to determine qualitative measures. Trained evaluators use these worksheets to determine a recommendation for qualitative text complexity within the grade level, with each text defined as readily accessible, moderately complex, or very complex.

For multimedia texts, qualitative judgments from one or both of the "optional" categories in the Complexity Analysis Worksheet will be combined with judgments in the other categories to make a holistic determination of the complexity of the material.

2. Range of Accuracy

There are three types of items on the PARCC summative assessments. For Evidence-Based Selected Response (EBSR) and Technology-Enhanced Constructed Response (TECR) items, the design is such that

the items help contribute to an understanding of how accurately students comprehend text (demonstrate mastery of CCSS Reading Standards 2-10). Some of these items offer opportunities for students to receive partial credit based on the range of accuracy. For Prose-Constructed Response (PCR) items, PARCC has developed draft scoring rubrics (http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents) that include a Reading dimension to measure comprehension. Scores on the PCR items contribute to an evaluation of the degree to which a student can accurately comprehend a text.

The PARCC assessment Performance Level Descriptors (PLDs) describe five levels of accuracy at grades 9-11 that are determined using the reading data collected through EBSR, TECR, and PCR items:

Accurate – The student is able to accurately state both the general ideas expressed in the text(s) and the key and supporting details. The response is complete, and the student demonstrates full understanding.

Mostly accurate – The student is able to accurately state most of the general ideas expressed in the text(s) and the key and supporting details, but the response is incomplete or contains minor inaccuracies. The student demonstrates understanding.

Generally accurate – The student is able to accurately state the gist of the text(s) but fails to accurately state the key and supporting details in the text or to connect such details to the overarching meaning of the text(s). The student demonstrates basic understanding.

Minimally accurate – The student is unable to accurately state the gist of the text(s) but is able to minimally state some of the key or supporting details with accuracy. The student does not connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates minimal understanding.

Inaccurate – The student is unable to accurately state either the gist of the text or the key and supporting details evident in the text. The student demonstrates limited understanding.

3. Quality of Evidence

All items are designed to contribute to an understanding of how students "read closely to determine what the text says explicitly and to make logical inferences from it" and "cite specific textual evidence when writing or speaking to support conclusions drawn from the text" (CCSS Anchor Reading Standard 1). Some items offer opportunities for students to receive partial credit based on the quality of evidence provided. Students support their comprehension with explicit and/or inferential evidence:

Explicit evidence – Students show how the explicit words and phrases (details) from the text support statements made about the meaning of the text.

Inferential evidence – Students show how inferences drawn from the text support statements made about the meaning of the text.

Reading Sub-Claims	**Reading Literature** Students demonstrate comprehension and draw evidence from readings of grade-level, complex literary text.	**Reading Information** Students demonstrate comprehension and draw evidence from readings of grade-level, complex informational text.	**Vocabulary Interpretation and Use** Students use context to determine the meaning of words and phrases.
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Literary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Informational Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents	**See Vocabulary Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do accurate analyses of the text, showing full understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do generally accurate analyses of the text, showing basic understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing basic understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do minimally accurate analysis of the text, showing minimal understanding of the text when referring to explicit details and examples in the text. • With moderately complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do generally accurate analyses of the text, showing partial understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the inability to do an accurate analysis of the text, showing limited understanding of the text when referring to explicit details and examples in the text. • With moderately complex text, students demonstrate the ability to do minimally accurate analysis of the text, showing minimal understanding of the text when referring to explicit details and examples in the text. • With readily accessible text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.

Writing Sub-Claim for Written Expression: Students produce clear and coherent writing in which the development, organization, and style are appropriate to the task, purpose, and	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	**Level 4**	**Level 3**	**Level 2**
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, while demonstrating effective coherence, clarity, and/or cohesion. The student: • Provides effective development of the claim, topic, and/or narrative elements, using clear reasoning, details, text-based evidence, and/or description. • Develops claim, topic, and/or narrative elements in a manner that is appropriate to the task, purpose, and audience. • Demonstrates coherence, clarity, and cohesion and includes an introduction, conclusion, and a logical progression of ideas. • Establishes and maintains an effective style, while attending to the norms and conventions of the discipline. • Effectively draws evidence from literary or informational texts to support analysis, reflection, and research. • Includes precise language, including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide adequate development of ideas, including when drawing evidence from multiple sources, while demonstrating coherence, clarity, and/or cohesion. The student: • Provides development of the claim, topic, and/or narrative elements, using reasoning, details, text- based evidence, and/or description. • Develops claim, topic, and/or narrative elements in a manner that is generally appropriate to the task, purpose, and audience. • Demonstrates some coherence, clarity, and cohesion and includes an introduction, conclusion, and logically grouped ideas. • Establishes and maintains a mostly effective style, while attending to the norms and conventions of the discipline. • Draws evidence from literary or informational texts to support analysis, reflection, and research. • Includes mostly precise language, including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide partial development of ideas, including when drawing evidence from multiple sources, while demonstrating partial coherence, clarity, and/or cohesion. The student: • Provides partial development of the claim, topic, and/or narrative elements, using some reasoning, details, text-based evidence, and/or description. • Develops claim, topic, and/or narrative elements in a manner that is limited in its appropriateness to the task, purpose, and audience. • Demonstrates partial coherence, clarity, and/or cohesion, and includes some evidence of an introduction, conclusion, and logically grouped ideas. • Employs a style that is partially effective, with some awareness of the norms of the discipline. • Draws partial evidence from literary or informational texts to support analysis, reflection, and research. • Includes some description, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.	In **writing**, students address the prompts and provide limited development of ideas, including when drawing evidence from multiple sources, while demonstrating limited coherence, clarity, and/or cohesion. The student: • Provides minimal development of the claim, topic, and/or narrative elements, using limited reasoning, details, text-based evidence, and/or description. • Develops claim, topic, and/or narrative elements in a manner that is inappropriate to the task, purpose, and audience. • Demonstrates limited coherence, clarity, and/or cohesion, making the writer's progression of ideas somewhat unclear. • Employs a style that has limited effectiveness, with limited awareness of the norms of the discipline. • Draws minimal evidence from literary or informational texts to support analysis, reflection, and research. • Includes limited description, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.

Writing Sub-Claim for Knowledge of Language and Conventions: Students demonstrate knowledge of conventions and other important elements of language.	
EVIDENCES: Students are expected to produce responses that demonstrate the skills and content listed in the evidence tables at the accuracy level and with the quality of evidence as described for students at each level.	**See Writing Evidence Table** http://parcc-assessment.org/assessments/test-design/ela-literacy/test-specifications-documents

Level 5	**Level 4**	**Level 3**	**Level 2**
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, the student demonstrates command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage that do not impede understanding, demonstrating control over language.	In **writing**, the student demonstrates moderate command of the conventions of Standard English consistent with edited writing. There are a few patterns of errors in grammar and usage that may occasionally impede understanding, demonstrating adequate control over language.	In **writing**, student demonstrates partial command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, student demonstrates limited command of the conventions of Standard English consistent with edited writing. There are multiple patterns of errors in grammar and usage that frequently impede understanding, demonstrating minimal control over language.

Grade 3 Mathematics Performance Level Descriptors

	Grade 3 Math : Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Products and Quotients 3.OA.1 3.OA .2 3.OA .4 3.OA .6 3.OA.7-1 3.OA.7-2	**Understands** and interprets products and quotients of whole numbers. Determines the unknown whole number in a multiplication or division problem by relating multiplication and division. **Both factors are greater than 5 and less than or equal 10.** **Represents a multiplication or division situation as an equation.** Accurately multiplies and divides within 100, using strategies relating multiplication and division or properties of operations.	Interprets products and quotients of whole numbers. Determines the unknown whole number in a multiplication or division problem by relating multiplication and division. **One factor** is **greater than or equal** to 5. **Accurately** multiplies and divides within 100, using strategies relating multiplication and division or properties of operations.	**Interprets** products and quotients of whole numbers. Determines the unknown whole number in a multiplication or division problem by relating multiplication and division, with both factors less than or equal to 5, or with one factor of 10. Multiplies and divides within 100, **using strategies relating multiplication and division or properties of operations.**	Determines products and quotients of whole numbers within 100. Determines the unknown whole number in a multiplication or division problem by relating multiplication and division, with both factors less than or equal to 5, or with one factor of 10.
Multiplication and Division 3.OA.3-1 3.OA.3-2 3.OA.3-3 3.OA.3-4	Uses multiplication and division within 100 to solve word problems involving equal groups, arrays, **area, and measurement quantities other than area. Both factors are greater than 5 and less than or equal to 10.** **Identifies multiple contexts given a numerical expression involving multiplication and division.**	**Uses multiplication and division within 100 to solve word problems** involving equal groups and arrays. **One factor** is **greater than or equal** to 5.	Given a visual aid, uses multiplication and division within 100 to solve word problems involving equal groups **and arrays**, with both factors less than or equal to 5, or with one factor of 10.	Given a visual aid, uses multiplication and division within 100 to solve word problems involving equal groups. Both factors are less than or equal to 5, with both factors less than or equal to 5, or with one factor of 10.
Two-Step Problems 3.OA.8 3.Int.1 3.Int.2	Solves two-step **unscaffolded** word problems using the four operations, **including rounding where appropriate**, in which the unknown is in a variety of positions. **Both values** for each operation performed is substantial (towards the upper limits as defined by the standard assessed).	Solves two-step scaffolded word problems using the four operations **in which the unknown is in a variety of positions.** One of the values for each operation performed is substantial (towards the upper limits as defined by the standard assessed).	Solves two-step scaffolded word problems using the four operations and in which the sum, difference, product or quotient is always the unknown. **One of the values for each operation performed is substantial (towards the upper limits as defined by the standard assessed).**	Solves two-step scaffolded word problems using the four operations and in which the sum, difference, product or quotient is always the unknown.
Fraction Equivalence 3.NF.3a-1	Understands, recognizes and generates equivalent fractions with denominators of 2, 3, 4, 6 and 8.	**Understands, recognizes and generates equivalent fractions using denominators of 2, 4, and 8.**	Given a visual model, **understands,** recognizes and **generates** equivalent fractions with denominators of 2, 4 and 8.	Given a visual model recognizes equivalent fractions with denominators of 2, 4 and 8.

	Grade 3 Math : Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
3.NF.3a-2 3.NF.3b-1 3.NF-3c 3.NF-3d 3.NF.A.Int.1	Expresses whole numbers as fractions and recognize fractions that are equivalent to whole numbers. Compares two fractions that have the same numerator or same denominator using symbols to justify conclusions. **Plots the location of equivalent fractions on a number line.** The student must recognize that two fractions must refer to the same whole in order to compare. **Given a whole number and two fractions in a real-world situation, plots all three numbers on a number line and determines which fraction is closest to the whole number. Justifies the comparison by plotting points on a number line.**	Expresses whole numbers as fractions. Compares two fractions that have the same numerator or same denominator using symbols **and justifies conclusions by using a visual model.** The student must recognize that two fractions must refer to the same whole in order to compare.	Expresses **whole numbers** as fractions. **Compares two fractions that have the same numerator or same denominator using symbols. The student must recognize that two fractions must refer to the same whole in order to compare.**	Expresses the number 1 as a fraction.
Fractions as Numbers 3.NF.1 3.NF.2 3.NF.A.Int.1	Understands 1/*b* is equal to one whole that is partitioned into *b* equal parts – limiting the denominators to 2, **3**, 4, **6** and 8. Represents 1/*b* on a number line diagram by partitioning the number line between 0-1 into *b* equal parts recognizing that *b* is the total number of parts. Demonstrates the understanding of the quantity *a*/*b* by marking off *a* parts of 1/*b* from 0 on the number line and **states that the endpoint locates the number *a*/*b*.** **Applies the concepts of 1/*b* and *a*/*b* in real-world situations.** **Describes the number line that best fits**	Understands 1/*b* is equal to one whole that is partitioned into *b* equal parts – limiting the denominators to 2, 4 and **8**. Represents 1/*b* on a number line diagram by partitioning the number line between 0-1 into *b* equal parts recognizing that *b* is the total number of parts. **Demonstrates the understanding of the quantity *a*/*b* by marking off *a* parts of 1/*b* from 0 on the number line.**	Understands 1/*b* is equal to one whole that is partitioned into *b* equal parts – limiting the denominators to 2 and 4. **Represents 1/*b* on a number line diagram by partitioning the number line between 0-1 into *b* equal parts recognizing that *b* is the total number of parts.** **Represents fractions in the form *a*/*b* using a visual model.**	Understands 1/*b* is equal to one whole that is partitioned into *b* equal parts – limiting the denominators to 2 and 4. Identifies 1/*b* on a number line diagram when partitioned between 0 and 1 into *b* equal parts.

	Grade 3 Math : Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	the context.			
Time 3.MD.1-1 3.MD.1-2	Tells, writes and measures time to the nearest minute. Solves **two–step** word problems involving addition **and** subtraction of time intervals in minutes.	Tells, writes and measures time to the nearest minute. **Solves one-step word problems involving addition or subtraction of time intervals in minutes.**	Tells, writes and measures time to the nearest minute. **Solves one-step word problems involving addition or subtraction of time intervals in minutes, with scaffolding, such as a number line diagram.**	Tells, writes and measures time to the nearest minute.
Volumes and Masses 3.MD.2-1 3.MD.2-2 3.MD.2-3 3.Int.5	Using grams, kilograms or liters, measures, estimates and **solves multi-step word problems** involving liquid volumes and masses of objects using any of the four basic operations. **Number values should be towards the higher end of the acceptable values for each operation.** Uses estimated measurements **to compare answers** to one-step word problems. **Evaluates usefulness and accuracy of estimations.**	**Using grams, kilograms or liters, measures and estimates liquid volumes and masses of objects using any of the four basic operations.** **Uses estimated measurements, when indicated, to answer one-step word problems.**	Using grams, kilograms or liters, measures **and estimates** liquid volumes and masses of objects **using concrete objects** (beakers, measuring cups, scales) **to develop estimates.**	Using grams, kilograms or liters, measures liquid volumes and masses of concrete objects (beakers, measuring cups, scales).
Geometric Measurement 3.MD.5 3.MD.6 3.MD.7b-1 3.MD.7d	Recognizes area as an attribute of plane figures. Understands area is measured using square units. **Describes a visual model to show understanding that** area that can be found by covering a plane figure without gaps or overlaps by unit squares and counting them. **Connects counting squares to multiplication when finding area.** Represents the area of a plane figure as "n" square units.	Recognizes area as an attribute of plane figures. With a visual model, understands area is measured using square units. Determines area by covering a plane figure without gaps or overlaps by unit squares and counting them. **Represents the area of a plane figure as "n" square units.**	Recognizes area as an attribute of plane figures. With a visual model, understands area is measured using square units. **Determines area by covering a plane figure without gaps or overlaps by unit squares and counting them.**	Recognizes area as an attribute of plane figures. With a visual model, understands area is measured using square units. Determines area by counting unit squares.

	Grade 3 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Multi-Digit Arithmetic 3.NBT.2 3.NBT.3	Accurately adds and subtracts within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. Multiplies one-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value	**Accurately** adds and subtracts within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. Uses repeated addition to multiply one-digit whole numbers by multiples of 10 in the range 10-90 **using strategies based on place value and properties of operations.**	Adds and subtracts within 1000, using strategies and algorithms based on place value, properties of operations with scaffolding, and/or the relationship between addition and subtraction. **Uses repeated addition to multiply one-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value and properties of operations.**	Adds and subtracts within 1000, using strategies and algorithms based on place value, properties of operations with scaffolding, and/or the relationship between addition and subtraction.
Scaled Graphs 3.MD.3-1 3.MD.3-3 3.Int.4	Completes a scaled picture graph and a scaled bar graph to represent a data set. Solves one-and two-step "how many more" and "how many less" problems, **requiring a substantial addition, subtraction or multiplication step,** using information presented in scaled bar graphs.	**Completes a scaled picture graph and a scaled bar graph to represent a data set**. Solves one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.	**Completes a scaled picture graph and a scaled bar graph to represent a data set, with scaffolding, such as using a model as a guide.** Solves one-step "how many more" and "how many less" problems using information presented in scaled bar graphs.	Identifies a correctly scaled picture graph and a correctly scaled bar graph to represent a data set. Solves one-step "how many more" and "how many less" problems using information presented in scaled bar graphs.
Measurement Data 3.MD.4	Generates measurement data by measuring lengths to the nearest half and **fourth** inch. Shows the data by making a line plot, where the horizontal scale is marked in appropriate units of whole numbers, halves **or quarters**. **Uses the line plot to answer questions or solve problems.**	Generates measurement data by measuring lengths to the nearest half inch. Shows the data by making a line plot, where the horizontal scale is marked in appropriate units of whole numbers or halves.	**Generates measurement data by measuring lengths to the nearest half inch.** **Shows the data by making a line plot, where the horizontal scale is marked in appropriate units of whole numbers or halves, with scaffolding.**	Identifies correct measurement from figures with appropriate scale provided.
Understanding Shapes 3.G.1	Understands the properties of quadrilaterals and the subcategories of quadrilaterals. Recognizes **and sorts** examples of quadrilaterals that have shared attributes and **shows** that the shared attributes can define a larger category.	**Understands the properties** of quadrilaterals and the subcategories of quadrilaterals. Recognizes examples of quadrilaterals that have shared attributes and that the shared attributes can define a larger category.	Identifies examples of quadrilaterals and the subcategories of quadrilaterals. **Recognizes examples of quadrilaterals that have shared attributes and that the shared attributes can define a larger category.**	Identifies examples of quadrilaterals and the subcategories of quadrilaterals.

	Grade 3 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Draws examples and **non-examples** of quadrilaterals with specific attributes.	**Draws examples of quadrilaterals with specific attributes.**		
Perimeter and Area 3.G.2 3.MD.8 3.Int.3	Solves real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and provides examples of rectangles with **the same perimeter and different areas** or with the same area and different perimeters**.** **A substantial addition, subtraction, or multiplication step with number values towards the higher end of the acceptable values for each operation** Partitions shapes into parts with equal areas and expresses the area as a unit fraction of the whole.	Solves mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, **finding an unknown side length**, and **provides examples of** rectangles with the same area and different perimeters.	Solves mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, **and identifying rectangles with the same area and different perimeters.**	Solves mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths.

	Grade 3 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Properties of Operations 3.C.1-1 3.C.1-2 3.C.1-3 3.C.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • a logical/defensible approach based on a conjecture and/or stated	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • a logical/**defensible** approach based on	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • a **logical** approach based on a	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • an approach based on a conjecture

	Grade 3 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	assumptions, utilizing mathematical connections (when appropriate) • an efficient and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion	a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • a logical progression of steps • precision of calculation • **correct** use of grade-level vocabulary, symbols and labels • justification of a conclusion	conjecture and/or stated assumptions • a **logical**, but incomplete, progression of steps • **minor** calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations	and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations
	• **determination of whether an argument or conclusion is generalizable** • evaluating, interpreting and critiquing the validity of other's responses, reasonings, and approaches, utilizing mathematical connections (when appropriate). **Provides a counter-example where applicable.**	• evaluating**, interpreting and critiquing** the validity of other's responses, **reasonings, and approaches, utilizing mathematical connections (when appropriate)**.	• **evaluating the validity of other's responses, approaches and conclusions.**	
Concrete Referents and Diagrams 3.C.3-1 3.C.3-2 3.C.6-1 3.C.6-2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response based on operations using concrete referents such as diagrams--including number lines (whether provided in the prompt or constructed by the student) and connecting the diagrams to a written (symbolic) method, which may include: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an **efficient** and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-**organized and complete** response based on operations using concrete referents such as diagrams--including number lines (**whether provided in the prompt or constructed by the student**) and connecting the diagrams to a written (symbolic) method, which may include: • a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • a logical progression of steps • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluating, **interpreting, and critiquing**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates **a response** based on operations using concrete referents such as diagrams – including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include: • **a logical approach based on a conjecture and/or stated assumptions** • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations. • **evaluating** the validity of other's responses, **approaches and conclusions**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates **an** incomplete response based on operations using concrete referents such as diagrams – including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include: • a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses

	Grade 3 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• **determination of whether an argument or conclusion is generalizable** • evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning**, and providing a counter-example where applicable**	the validity of other's responses, approaches, and **reasoning.**		
Distinguish Correct Explanation/ Reasoning from that which is Flawed 3.C.4-1 3.C.4-2 3.C.4-3 3.C.4-4 3.C.4-5 3.C.4-6 3.C.5-1 3.C.5-2 3.C.4-7	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response by: • presenting and defending solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately • **evaluating** explanation/reasoning; if there is a flaw in the argument • presenting **and defending** corrected reasoning Response may include: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • **an efficient** and logical progression of steps **with appropriate justification** • **precision of calculation**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates **a well-organized** and complete response by: • presenting and **defending** solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems • presenting corrected reasoning Response may include: • a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • **a logical progression of steps** • **precision of calculation**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response by**:** • presenting solutions to **multi-step** problems in the form of valid chains of reasoning**,** using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying and **describing the flaw in reasoning or describing errors in solutions to multi-step problems** • **presenting corrected reasoning** Response may include: • **a logical approach based on a conjecture and/or stated assumptions** • **a logical**, but incomplete, progression of steps • **minor** calculation errors	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response by: • presenting solutions to scaffolded two-step problems in the form of valid chains of reasoning, sometimes using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying an error in reasoning Response may include: • a conjecture based on faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error
	• correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • **evaluation of whether an argument or conclusion is generalizable** • evaluating, interpreting, and critiquing the validity of other's responses,	• **correct** use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • evaluating**, interpreting and critiquing** the validity of other's responses, approaches and **reasoning**.	• **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • **evaluating** the validity of other's responses, **approaches and conclusions.**	• limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses

	Grade 3 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	approaches and reasoning, and **providing a counter-example where applicable.**			

	Grade 3 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly and quantitatively, using appropriate tools strategically, looking for the making use of structure, and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling 3.D.1 3.D.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions or making assumptions and using approximations to simplify a real-world situation • **analyzing and/or creating constraints, relationships and goals** • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • **justifying and defending models which lead to a conclusion** • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • improving the model if it has not served its purpose • writing a concise arithmetic expression or equation to describe a situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions or **making assumptions and using** approximations to simplify a real-world situation • **mapping relationships** between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in the context **of the situation** • reflecting on whether the results make sense • modifying **and/or improving** the model if it has not served its purpose • writing an arithmetic expression or equation to describe a situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships between important quantities by using provided tools to create models** • analyzing relationships mathematically **between important quantities** to draw conclusions • **interpreting mathematical results in a simplified context** • **reflecting on whether the results make sense** • **modifying the model if it has not served its purpose** • writing an arithmetic expression or equation to describe a situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities by using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an arithmetic expression or equation to describe a situation

Grade 4 Mathematics Performance Level Descriptors

	Grade 4 Math : Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Fractions and Decimals 4.NF.1-2 4.NF.2-1 4.NF.A.Int.1 4.NF.5 4.NF.6 4.NF.7 4.NF.Int.1 4.NF.Int.2	Compares decimals to hundredths; uses decimal notations for fractions with denominators 10 or 100. Compares fractions, with like or unlike numerators and denominators, by creating equivalent fractions with common denominators, comparing to a benchmark fraction and **generating equivalent fractions.** Recognizes that decimals and fractions must refer to the same whole in order to compare. Shows results using symbols. **Demonstrates the use of conceptual understanding of fractional equivalence and ordering when solving** simple word problems requiring fraction comparison. **Converts a simple fraction to a denominator of 10 or 100 and writes as a decimal (e.g.,1/2 = 5/10 = .5, ¼ = 25/100 = 0.25, 1/20 = 5/100 = 0.05).** **Adds fractions with denominators of 10 and 100.**	Given a visual model and/or manipulatives, compares decimals to hundredths: **Expresses a fraction with denominator 10 as an equivalent fraction with denominator 100.** **Uses decimal notation for fractions with denominators 10 or 100.** Compares fractions, with like or unlike numerators and denominators, by **creating equivalent fractions with common denominators** and comparing to a benchmark fraction. Recognizes that decimals and fractions must refer to the same whole in order to compare. Shows results using symbols. **Solves simple word problems requiring fraction comparison**.	Given a visual model and/or manipulatives, compares decimals to hundredths; uses decimal notations for fractions (tenths and hundredths); compares fractions, with like **or unlike numerators and denominators by comparing to a benchmark fraction.** **Recognizes that decimals and fractions must refer to the same whole in order to compare.** **Shows results using symbols.** **Solves simple word problems requiring fraction comparison with scaffolding**.	Given a visual model and/or manipulatives, compares decimals to hundredths; uses decimal notations for fractions (tenths and hundredths); compares fractions with like denominators.
Building Fractions 4.NF.3a 4.NF.3b-1 4.NF.3c 4.NF.3d 4.NF.Int.1	**Understands** and solves mathematical and real-world problems involving the addition and subtraction of fractions and mixed numbers with like denominators by joining and separating parts referring to the same whole, and **justifying the solution by using a visual model.** Decomposes a fraction into a sum of fractions with the same denominator in	Using visual models and/or manipulatives, solves mathematical and **word problems** involving the addition and subtraction of fractions and **mixed numbers** with like denominators by joining and separating parts referring to the same whole. Decomposes a fraction into a sum of fractions with the same denominator in	Using visual models and/or manipulatives, solves mathematical problems involving the addition and subtraction of fractions with like denominators by joining and separating parts referring to the same whole. **Decomposes a fraction into a sum of fractions with the same denominator in**	Using visual models and/or manipulatives, solves mathematical problems involving the addition and subtraction of fractions with like denominators by joining and separating parts referring to the same whole.

	Grade 4 Math : Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	more than one way and records the decomposition using an equation.	more than one way and records the decomposition using an equation.	**more than one way and records the decomposition using an equation.**	
Multiplying Fractions 4.NF.4a 4.NF.4b-1 4.NF.4b-2 4.NF.4c 4.NF.Int.1	**Describes a visual fraction model** and solves mathematical and real-world problems by recognizing that fraction *a*/*b* is a multiple of 1/*b* and uses that construct to multiply a fraction by a whole number.	Using visual models and/or manipulatives, solves mathematical and **real- world problems** by recognizing that fraction *a*/*b* is a multiple of 1/*b* and uses that construct to multiply a fraction by a whole number.	Using visual models and/or manipulatives, solves mathematical problems by recognizing that fraction *a*/*b* is a multiple of 1/*b* **and uses that construct to multiply a fraction by a whole number.**	Using visual models and/or manipulatives, solves mathematical problems by recognizing that fraction *a*/*b* is a multiple of 1/*b*.
Solving with Multiplication 4.OA.1-1 4.OA. 1-2 4.OA.2	Interprets multiplication equations as comparisons and represents statements of multiplicative comparisons as multiplicative equations. **Distinguishes multiplicative comparisons.** Uses multiplication or division to solve **multi-step** word problems involving multiplicative comparisons. Uses a symbol for the unknown number.	Interprets multiplication equations as comparisons or represents statements of multiplicative comparisons as multiplicative equations. Uses multiplication or division to solve **one- or two-step word problems** involving multiplicative comparisons.	Interprets multiplication equations as comparisons or represents statements of multiplicative comparisons as multiplicative equations. **Uses multiplication or division to solve scaffolded word problems involving multiplicative comparisons.**	Interprets multiplication equations as comparisons or represents statements of multiplicative comparisons as multiplicative equations.
Multi-step Problems 4.OA.3-1 4.OA.3-2 4.NBT.5-1 4.NBT.5-2 4.NBT.6-1 4.NBT.6-2 4.Int.2 4.Int.3 4.Int.4 4.Int.5	Solves multi-step word problems using the four operations with whole numbers: in multiplying a three-or four-digit by a one-digit number or two two-digit numbers. Finds whole number quotients and remainders with up to **four**-digit dividends and one-digit divisors and interprets remainders as appropriate. Chooses from a variety of strategies to solve these problems and **selects an appropriate context for the task.**	Solves two-step word and other problems using the four operations with whole numbers: in multiplying a three-digit by a one-digit number or two two-digit numbers Finds whole number quotients and remainders with up to three-digit dividends and one-digit divisors and **interprets remainders as appropriate**. **Chooses from a variety of strategies to solve these problems.**	Solves one- or two-step **word** problems using the four operations with whole numbers: in multiplying a three-digit by a one-digit number or two two-digit numbers. Finds whole number quotients and remainders with up to three-digit dividends and one-digit divisors. **Chooses from a variety of strategies to solve these problems. Can only solve two-step problems when scaffolding is provided for each step.**	Solves one-step mathematical problems using the four operations with whole numbers: in multiplying a three-digit by a one-digit number or two two-digit numbers. Finds whole number quotients and remainders with up to three-digit dividends and one-digit divisors.
Place Value 4.NBT.1 4.NBT.2 4.NBT.3	In any **multi**-digit whole number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right.	In any **four-digit** whole number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right.	In any three-digit whole number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right.	In any three-digit whole number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right.

	Grade 4 Math : Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
4.NBT.Int.1	Reads, writes and compares multi-digit whole numbers using base-10 numerals, number names in expanded form and inequality symbols (>, <, =), rounds to any place **and chooses appropriate context given a rounded number.** **Performs computations by applying conceptual understanding of place value, rather than by applying multi-digit algorithms.**	Reads, writes and compares **four-digit** whole numbers using base-10 numerals, number names in expanded form and inequality symbols (>, <, =), and **rounds to any place.**	**Reads, writes and compares three-digit whole numbers using base-10 numerals, number names in expanded form and inequality symbols (>, <, =), and rounds to any place with scaffolding.**	
Addition and Subtraction 4.NBT.4-1 4.NBT.4-2 4.Int.7 4.Int.8	Solves **multiple**-step word and other problems by adding or subtracting multi-digit whole numbers using the standard algorithm.	Solves **two**-step word problems and other problems by adding and subtracting multi-digit whole numbers using the standard algorithm.	Solves one-step word problems and other problems by adding and subtracting multi-digit whole numbers using the standard algorithm with accuracy.	Solves one-step word problems and other problems by adding and subtracting multi-digit whole numbers using the standard algorithm with limited accuracy.

	Grade 4 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Operations and Factors 4.OA.4-1 4.OA.4-2 4.OA.4-3 4.OA.4-4	Recognizes that a whole number is a multiple of each of its factors, and within the range of 1-100, finds **all** factor pairs and determines multiples of whole numbers. Determines whether a whole number in the range 1-100 is prime or composite.	Recognizes that a whole number is a multiple of each of its factors, and within the range of 1-100 finds factor pairs or determines multiples of whole numbers. Determines whether a whole number in the range 1-100 is prime or composite.	Recognizes that a whole number is a multiple of each of its factors, and within the range of 1-100 finds factor pairs or determines multiples of whole numbers. **Determines, with scaffolding, whether a whole number in the range 1-100 is prime or composite.**	Recognizes that a whole number is a multiple of each of its factors, and within the range of 1-100 identifies factor pairs or multiples of whole numbers.
Measurement and Conversion 4.MD.1 4.MD.2-1 4.MD.2-2 4.MD.3 4.Int.6	Solves measurement word problems involving whole numbers which include calculation of area and perimeter – including those in which **side lengths are missing –** using all four operations. Solves measurement word problems which include calculation of area and	**Solves measurement word problems involving whole numbers which include calculation of area and perimeter – when information about side lengths is provided –** using all four operations. Solves measurement word problems **which include calculation of area and**	Solves mathematical measurement problems involving whole numbers using all four operations**.** Solves mathematical measurement problems using addition, subtraction, **and multiplication** of simple fractions.	Solves mathematical measurement problems involving whole numbers using all four operations**.** Solves mathematical measurement problems using addition and subtraction of simple fractions.

	Grade 4 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	perimeter – including those in which **side lengths are missing** – using addition, subtraction, and multiplication of simple fractions. Records measurement equivalents in a two-column table. Uses knowledge of measurement units within one system to solve word problems, real-world problems, and mathematical problems involving converting from larger units to smaller units. Represents measurement quantities using diagrams such as number line diagrams **that require students to provide the appropriate measurement scale given the context.**	**perimeter – when information about side lengths is provided –** using addition, subtraction, and multiplication of simple fractions. Records measurement equivalents in a two-column table. Uses knowledge of measurement units within one system to **solve word problems, real-world problems and mathematical problems** involving converting from larger units to smaller units. **Represents measurement quantities using diagrams such as number line diagrams that feature a measurement scale**.	**Records measurement equivalents in a two-column table.** **Uses knowledge of measurement units within one system to convert from larger units to smaller units.**	
Represent and Interpret Data 4.MD.4-1 4.MD.4-2	Makes a line plot to display a data set of measurements in fractions of a unit with like denominators limited to 2, 4 and 8, **(including mixed numbers)** and uses addition and subtraction of fractions to solve problems involving information in the line plots and **evaluates the solution in relation to the data.**	Makes a line plot to display a data set of measurements in fractions of a unit with like denominators of 2 or 4 and **uses addition and subtraction of fractions to solve problems involving information in the line plot.**	**Makes** a line plot to display a data set of measurements in fractions of a unit with like denominators of 2 or 4.	Identifies a correct line plot that displays a data set of measurements in fractions of a unit with like denominators of 2 or 4.
Geometric Measurement 4.MD.5 4.MD.6 4.MD.7	Recognizes how angles are formed and that angle measures are additive. Understands and applies concepts of angle measurement **recognizing that angles are measured in reference to a circle.** Uses a protractor to measure and sketch angles.	Understands and applies concepts of angle measurement**.** Uses a protractor to measure and **sketch angles.**	Understands and **applies** concepts of angle measurement. **Uses a protractor to measure angles.**	Understands and identifies concepts of angle measurement.

	Grade 4 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Solves mathematical and real-world problems by composing and decomposing angles**.** Solves mathematical and real-world angle problems, **including problems that require the use of equations with a symbol for the unknown angle measure.**	**Solves mathematical and real-world problems by composing and decomposing angles.**		
Lines, Angles and Shapes 4.G 1 4.G.2 4.G.3	Draws and identifies points, lines, line segments, rays, angles (right, obtuse and acute), perpendicular lines, parallel lines, lines of symmetry and right triangles, and use **any of these** to classify **or describe** two-dimensional figures.	**Draws** and identifies points, lines, line segments, rays, angles (right, obtuse and acute), perpendicular lines, parallel lines, lines of symmetry and right triangles, and use some of these to classify **two-dimensional figures.**	Identifies points, lines, line segments, rays, angles (right, obtuse and acute), perpendicular lines, parallel lines, lines of symmetry and right triangles, and **use some of these to classify quadrilaterals and triangles.**	Identifies points, lines, line segments, rays, angles (right, obtuse and acute), perpendicular lines, parallel lines, lines of symmetry and right triangles.
Generate and Analyze Patterns 4.OA.5	Generates a number or shape pattern that follows a given rule and identifies apparent features of the pattern that were not explicit in the rule itself **and describes the rule for generating the number or shape pattern.**	Generates a number or shape pattern that follows a given rule and **identifies explicit features of the pattern.**	**Generates** a number or shape pattern that follows a given rule.	Identifies a number or shape pattern that follows a given rule.

	Grade 4 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Properties of Operations 4.C.1-1 4.C.1-2 4.C.2 4.C.3	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • a logical/defensible approach based	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • a logical/**defensible** approach based on	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • a **logical** approach based on a conjecture and/or stated assumptions	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • an approach based on a conjecture

	Grade 4 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an **efficient** and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's responses, reasonings, and approaches, utilizing mathematical connections (when appropriate). **Provides a counter-example where applicable.**	a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • a logical progression of steps • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • justification of a conclusion • **evaluation of whether an argument or conclusion is generalizable** • evaluating**, interpreting and critiquing** the validity of other's responses, **reasonings, and approaches, utilizing mathematical connections (when appropriate).**	• a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • **evaluating the validity of other's responses, approaches and conclusions.**	and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations
Concrete Referents and Diagrams 4.C.4-1 4.C.4-2 4.C.4-3 4.C.4-4 4.C.4-5 4.C.7-1 4.C.7-2 4.C.7-3 4.C.7-4	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response based on operations using concrete referents such as diagrams--including number lines (whether provided in the prompt or constructed by the student) and connecting the diagrams to a written (symbolic) method, which may include: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an **efficient** and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-**organized** and complete response based on operations using concrete referents such as diagrams--including number lines (**whether provided in the prompt or constructed by the student**) and connecting the diagrams to a written (symbolic) method, which may include: • a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • a logical progression of steps • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • **evaluation of whether an argument or**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates **a complete response** based on operations using concrete referents such as diagrams--including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include: • **a logical approach based on a conjecture and/or stated assumptions** • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations. • **evaluating** the validity of other's responses, **approaches and conclusions**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates **an incomplete** response based on operations using concrete referents such as diagrams – including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include: • a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses.

	Grade 4 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning, and **providing a counter-example where applicable.**	**conclusion is generalizable** • evaluating, **interpreting, and critiquing** the validity of other's responses, approaches, and **reasoning.**		
Distinguish Correct Explanation/ Reasoning from that which is Flawed 4.C.5-1 4.C.5-2 4.C.5-3 4.C.5-4 4.C.5-5 4.C.5-6 4.C.6-1 4.C.6-2 4.C.6-3	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response by: • presenting and defending solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately • **evaluating** explanation/reasoning; if there is a flaw in the argument • presenting **and defending** corrected reasoning Response may include: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • **an efficient** and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates **a well-organized** and complete response by: • presenting and **defending** solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems • presenting corrected reasoning Response may include: • a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • **a logical progression of steps** • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • **evaluation of whether an argument or conclusion is generalizable** • evaluating**, interpreting and critiquing**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response by**:** • presenting solutions to **multi-step** problems in the form of valid chains of reasoning**,** using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying and **describing the flaw in reasoning or describing errors in solutions to multi-step problems** • **presenting corrected reasoning** Response may include: • **a logical approach based on a conjecture and/or stated assumptions** • **a logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • **evaluating** the validity of other's responses, **approaches and conclusions.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response by: • presenting solutions to scaffolded two-step problems in the form of valid chains of reasoning, sometimes using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying an error in reasoning Response may include: • a conjecture based on faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses.

	Grade 4 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	the validity of other's responses, approaches and reasoning, and **providing a counter-example where applicable.**	the validity of other's responses, approaches and **reasoning**.		

	Grade 4 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly and quantitatively, using appropriate tools strategically, looking for the making use of structure, and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling 4.D.1 4.D.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions or making assumptions and using approximations to simplify a real-world situation • **analyzing and/or creating constraints, relationships and goals** • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • **justifying and defending models which lead to a conclusion** • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • improving the model if it has not served its purpose • writing **a concise** arithmetic expression or equation to describe a situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions or **making assumptions** and using approximations to simplify a real-world situation • **mapping relationships between important quantities by selecting appropriate tools to create models** • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in the context **of the** situation • reflecting on whether the results make sense • modifying **and/or improving** the model if it has not served its purpose • writing an arithmetic expression or equation to describe a situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships between important quantities by using provided tools to create models** • analyzing relationships mathematically **between important quantities** to draw conclusions • **interpreting mathematical results in a simplified context reflecting on whether the results make sense** • **modifying the model if it has not served its purpose** • writing an arithmetic expression or equation to describe a situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities • using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an arithmetic expression or equation to describe a situation

Grade 5 Mathematics Performance Level Descriptors

	Grade 5 Math : Sub-Claim A The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Addition and Subtraction Operations with Decimals 5.NBT.7-1 5.NBT.7-2	Adds or subtracts two decimals to hundredths using concrete models, drawings or strategies based on place value, properties of operations and/or the relationship between addition and subtraction. **Applies this concept to a real-world context**, and relates the strategy to a written method and explain the reasoning used.	**Adds or subtracts two decimals to hundredths using concrete models, drawings or strategies based on place value**, properties of operations and/or the relationship between addition and subtraction.	Adds or subtracts (without regrouping) two decimals to hundredths using concrete models, drawings or strategies based on place value and/or the relationship between addition and subtraction.	Adds or subtracts (without regrouping) two decimals to hundredths **(both decimals presented with the same number of decimal places)** using concrete models, drawings or strategies based on place value and/or the relationship between addition and subtraction.
Adding and Subtracting in Context with Fractions 5.NF.2-1 5.NF.2-2 5.NF.A.Int.1	**Describes a model to represent** word problems involving addition and subtraction of fractions and mixed numbers referring to the same whole in cases of unlike denominators by using visual fraction models or equations. **Assesses and justifies reasonableness using benchmark fractions and number sense of fractions**.	Solves word problems involving addition and subtraction of fractions and mixed numbers referring to the same whole **in cases of unlike denominators** by using visual fraction models or equations.	Solves word problems involving addition and subtraction of fractions **and mixed numbers** using only denominators of 2, 4, 5 or 10 **or benchmark fractions with unlike denominators, referring to the same whole by using visual fraction models or equations.**	Solves word problems involving addition and subtraction of fractions using only denominators of 2, 4, 5 or 10.
Fractions with Unlike Denominators 5.NF.1-1 5.NF.1-2 5.NF.1-3 5.NF.1-4 5.NF.1-5	Adds and subtracts **three or more** fractions and adds and subtracts two mixed numbers with unlike denominators in such a way as to produce an equivalent sum or difference with like denominators.	Adds and subtracts two fractions or mixed numbers with unlike denominators **in such a way as to produce an equivalent sum or difference with like denominators.**	Adds or subtracts two fractions or **mixed numbers** with unlike denominators using only fractions with denominators of 2, 4, 5 or 10 in such a way as to produce an equivalent sum or difference with like denominators.* *below grade level.	Adds or subtracts two fractions with unlike denominators using only fractions with denominators of 2, 4, 5 or 10 in such a way as to produce an equivalent sum or difference with like denominators.* *below grade level.
Multiplication and Division Operations with Decimals 5.NBT.7-3 5.NBT.7-4 5.NBT.Int.1	Multiplies tenths by tenths or tenths by hundredths and divides in problems involving tenths and/or hundredths using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction.	Multiplies tenths by tenths **or tenths by hundredths** and divides in problems involving tenths **and/or hundredths** using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction.	Multiplies tenths by tenths **and divides** in problems involving tenths using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction.	Multiplies tenths by tenths in problems involving tenths using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction.

	Grade 5 Math : Sub-Claim A The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Performs exact and approximate multiplications and divisions by mentally applying place value strategies when appropriate. Relates the strategy to a written method.	**Relates the strategy to a written method.**		
Multiply with Whole Numbers 5.NBT.5 5.Int.1 5.Int.2	Solves two-step **unscaffolded** word problems involving multiplication and multiplies **four**-digit by **two-digit** whole numbers **using the standard algorithm.** **Performs exact and approximate multiplications and divisions by mentally applying place value strategies when appropriate.** Accurately multiplies multi-digit whole numbers using the standard algorithm **and assesses reasonableness of the product.**	Solves two-step scaffolded word problems involving multiplication **of a three-digit by a one-digit whole number.** **Accurately** multiplies multi-digit whole numbers using the standard algorithm.	Solves one-step word problems involving multiplication **of a three-digit by a one-digit whole number**. **Multiplies multi-digit whole numbers using the standard algorithm with limited accuracy.**	Solves one-step word problems involving multiplication.
Quotients and Dividends 5.NBT.6	Divides whole numbers up to four-digit dividends and **two-digit** divisors using strategies based on place value, the properties of operations and/or the relationship between multiplication and division. **Illustrates and explains the calculations by using equations, rectangular arrays, and area models.** **Checks reasonableness of answers by using multiplication or estimation.**	Divides whole numbers up to **four-digit** dividends and one-digit divisors which are multiples of ten using strategies based on place value, the properties of operations and/or the relationship between multiplication and division.	**Divides** whole numbers up to three-digit dividends and one-digit divisors which are multiples of ten **using strategies based on place value, the properties of operations and/or the relationship between multiplication and division.**	Correctly identifies the quotient of whole numbers up to three-digit dividends and one-digit divisors which are multiples of ten.
Multiplying and Dividing with Fractions 5.NF.4a-1 5.NF.4a-2	**Describes a model to represent and/**or solve real-world problem**s,** by multiplying a mixed number by a fraction, a fraction by a fraction and a whole number by a fraction; dividing a fraction by a whole	Multiplies a fraction or a whole number by a fraction and divides a fraction by a whole number – or whole number by a fraction – using visual fraction models and **creating context for the mathematics,**	Multiplies a fraction or a whole number by a fraction **and divide a fraction by a whole number or whole number by a fraction** using visual fraction models.	Multiplies a fraction or a whole number by a fraction using visual fraction models.

	Grade 5 Math : Sub-Claim A The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
5.NF.4b-1 5.NF.6-1 5.NF.6-2 5.NF.7a 5.NF.7b 5.NF.7c	number and a whole number by a fraction using visual fraction models and creating context for the mathematics **and equations**, including rectangular areas; and interpreting the product and/or quotient.	**including rectangular areas.**		
Interpreting Fractions 5.NF.3-1 5.NF.3-2	Solves word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers. Interprets the fraction as division of the numerator by the denominator. **Identifies a simple model representing the** situation**.** **Describes a model to represent the situation.**	Solves word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers. **Interprets the fraction as division of the numerator by the denominator.**	Solves word problems involving division of whole numbers leading to answers in the form of fractions **or mixed numbers** by using manipulatives or visual models to identify between which two whole numbers the answer lies.	Solves word problems involving division of whole numbers leading to answers in the form of fractions by using manipulatives or visual models to identify between which two whole numbers the answer lies.
Recognizing Volume 5.MD.3 5.MD.4	Recognizes volume as an attribute of solid figures and understands volume is measured using cubic units and can be found by packing a solid figure with unit cubes and counting them. **Represents the volume of a solid figure as "n" cubic units.** **Writes an equation that illustrates the unit cube pattern.**	Recognizes volume as an attribute of solid figures and understands volume is measured using cubic units and can be found by packing a solid figure with unit cubes and counting them.	Recognizes volume as an attribute of solid figures **and with a visual model understands that volume is measured using cubic units and can be found by packing a solid figure with unit cubes and counting them.**	Recognizes volume as an attribute of solid figures.
Finding Volume 5.MD.5b 5.MD.5c	Solves real-world and mathematical problems by applying the formulas for volume, relating volume to the operations of multiplication and addition, and recognizing volume is additive by finding the volume of solid figures of two **or more** non-overlapping parts.	Given a visual model, solves real-world and mathematical problems by applying the formulas for volume, **relating volume to the operations of multiplication and addition, and recognizing volume is additive by finding the volume of solid figures of two non-overlapping parts.**	Given a visual model **and the formulas for finding volume**, **solves real-world and mathematical problems by applying the formulas for volume (*V* = *l* x *w* x *h* and *V* = *B* x *h*).**	Given a visual model, solves volume problems by counting unit cubes.
Read, Write and Compare Decimals	Reads, writes and compares decimals **to any place** using numerals, number names, expanded form and symbols (>, <, =);	Reads, writes and compares decimals to the **hundredths** using numerals, number names, expanded form and symbols (>, <,	**Reads, writes and compares** decimals to the hundredths using numerals, number names, expanded form and symbols (>, <,	Identifies the correct comparison of decimals to the hundredths using numerals, number names, expanded form

	Grade 5 Math : Sub-Claim A The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
5.NBT.3a 5.NBT.3b 5.NBT.4	rounds to any place and **chooses appropriate context given a rounded number.**	=), and **rounds to any place.**	=), **and rounds to any place with scaffolding**.	and symbols (>, <, =).
Place Value 5.NBT.1 5.NBT.2-2 5.NBT.A.Int.1	In any multi-digit number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left and uses whole number exponents to denote powers of 10 and **uses symbols to compare two powers of 10 expressed exponentially (compare 10^2 to 10^5).**	In any multi-digit number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right or 1/10 of what it represents in the place to its left and **uses whole number exponents to denote powers of 10.**	In any multi-digit number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right or **1/10 of what it represents in the place to its left** by using manipulatives or visual models.	In any multi-digit number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right by using manipulatives or visual models.
Multiplication Scaling 5.NF.5a	Interprets multiplication scaling by comparing the size of the product to the size of one factor on the basis of the size of the second factor without performing the indicated multiplication, **focusing on one factor being a fraction greater than or less than one.**	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor without performing the indicated multiplication **where one factor is a fraction less than one.**	**Interprets** multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor by performing the indicated multiplication where one factor is a fraction less than one using manipulatives or visual models.	Identifies multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor by performing the indicated multiplication where one factor is a fraction less than one using manipulatives or visual models.
Write and Interpret Numerical Expressions 5.OA.1 5.OA.2-1 5.OA.2-2	Uses parentheses, brackets, or braces **with no greater depth than two,** to write and **evaluate** numerical expressions. **Interprets numerical expressions without evaluating them.**	Uses parentheses, brackets, or braces to **write numerical expressions.** Interprets simple numerical expressions without evaluating them.	Uses parentheses, **brackets, or braces** to write simple numerical expressions.	Uses parentheses to write simple numerical expressions.

	Grade 5 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Graphing on the Coordinate Plane 5.G.1 5.G.2 5.OA.3	Represents real-world and mathematical problems by locating and graphing points in the first quadrant of a coordinate plane and interprets coordinate values of points in the context of the situation**.**	Represents real-world and mathematical problems by locating **and** graphing points in the first quadrant of a coordinate plane.	Represents real-world and mathematical problems by locating **or graphing** points in the first quadrant of a coordinate plane.	Represents real-world mathematical problems by locating points in the first quadrant of a coordinate plane.
Two-Dimensional Figures	Classifies two-dimensional figures in a hierarchy based on properties.	Classifies two-dimensional figures in a **hierarchy** based on properties.	**Classifies** two-dimensional figures based on properties.	Identifies two-dimensional figures based on properties.

	Grade 5 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
5.G.3 5.G.4	Understands that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. **Uses appropriate tools to determine similarities and differences between categories and subcategories.**	Understands that shared attributes categorize two-dimensional figures.	**Understands that shared attributes categorize two-dimensional figures.**	
Conversions 5.MD.1-1 5.MD.1-2	Converts among different-sized standard measurement units within a given measurement system and uses these conversions to solve real-world, **multi-step** problems. **Chooses the appropriate measurement unit based on the given context.**	Converts among different-sized standard measurement units within a given measurement system **and uses these conversions to solve real-world**, single-step problems.	**Converts** among different-sized standard measurement units within a given measurement system **and solves single-step problems by using manipulatives or visual models.**	Identifies the correct conversion among different-sized standard units within a given measurement system.
Data Displays 5.MD.2-2	Uses operations on fractions with denominators of 2, 4, and 8 to solve problems involving information in line plots and **interprets the solution in relation to the data.**	Uses operations on fractions with denominators of 2 and 4 to solve problems involving information in line plots.	Uses operations on fractions with like denominators of 2 **and 4** to solve problems involving information in line plots.	Uses operations on fractions with like denominators of 2 to solve problems involving information in line plots.

	Grade 5 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Properties of Operations 5.C.1-1 5.C.1-2 5.C.1-3 5.C.2-1 5.C.2-2 5.C.2-3 5.C.2-4	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a well-organized and complete written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response may include:	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **well-organized** and complete written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response may include:	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a complete written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response may include: • a **logical** approach based on a	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an **incomplete** written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response may include: • an approach based on a conjecture

	Grade 5 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• a logical/defensible approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an **efficient** and logical progression of steps with appropriate justification • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's responses, reasonings, and approaches, utilizing mathematical connections (when appropriate). **Provides a counter-example where applicable.**	• a logical/**defensible** approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • a logical progression of steps • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • **evaluation of whether an argument or conclusion is generalizable** • evaluating, **interpreting and critiquing** the validity of other's responses, **reasonings, and approaches, utilizing mathematical connections (when appropriate).**	conjecture and/or stated assumptions • a logical, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • **evaluating the validity of other's responses, approaches and conclusions.**	and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations
Place Value 5.C.3	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response based on place value system including: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an efficient and logical progression of steps with appropriate justification • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates a **well-organized** and complete response based on place value system including: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • a logical progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • **evaluation of whether an argument or conclusion is generalizable** • evaluating**,** interpreting and critiquing the validity of other's responses,	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete response** based on place value system including: • a logical approach based on a conjecture and/or stated assumptions • a logical, but incomplete, progression of steps • minor calculation errors • some use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • **evaluating the validity of other's responses, approaches and conclusions.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on place value system which may include: • an approach based on a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations

	Grade 5 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	the validity of other's responses, approaches and reasoning, and **providing a counter-example where applicable.**	approaches and reasoning.		
Concrete Referents and Diagrams 5.C.4-1 5.C.4-2 5.C.4-3 5.C.4-4 5.C.5-1 5.C.5-2 5.C.5-3 5.C.6	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response based on operations using concrete referents such as diagrams--including number lines (whether provided in the prompt or constructed by the student) and connecting the diagrams to a written (symbolic) method, which may include: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an **efficient** and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning, and **providing a counterexample where applicable**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates a **well-organized a**nd complete response based on operations using concrete referents such as diagrams--including number lines (**whether provided in the prompt or constructed by the student**) and connecting the diagrams to a written (symbolic) method, which may include: • a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • a logical progression of steps • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • **evaluation of whether an argument or conclusion is generalizable** • evaluating, **interpreting, and critiquing** the validity of other's responses, approaches, and **reasoning.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates **a complete response** based on operations using concrete referents such as diagrams--including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include: • **a logical approach based on a conjecture and/or stated assumptions** • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations. • **evaluating** the validity of other's responses, **approaches and conclusions.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on operations using concrete referents such as diagrams – including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include: • a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses
Distinguish Correct Explanation/ Reasoning from that which is Flawed	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response by: • analyzing and defending solutions to	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates **a well-organized** and complete response by: • analyzing and **defending** solutions to	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response by**:** • analyzing solutions to **multi-step**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response by: • analyzing solutions to scaffolded two-

	Grade 5 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
5.C.7-1 5.C.7-2 5.C.7-3 5.C.7-4 5.C.8-2	multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately • **evaluating** explanation/reasoning if there is a flaw in the argument • presenting **and defending** corrected reasoning Response may include: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • **an efficient** and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's • responses, approaches and reasoning, and **providing a counter-example where applicable**	multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems • presenting corrected reasoning Response may include: • a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • **a logical progression of steps** • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • **evaluation of whether an argument or conclusion is generalizable** • evaluating**, interpreting and critiquing** the validity of other's responses, approaches and **reasoning**	problems in the form of valid chains of reasoning**,** using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying and **describing the flaw in reasoning or describing errors in solutions to multi-step problems** • **presenting corrected reasoning** Response may include: • **a logical approach based on a conjecture and/or stated assumptions** • **a logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • **evaluating** the validity of other's responses, **approaches and conclusions.**	step problems in the form of valid chains of reasoning, sometimes using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying an error in reasoning Response may include: • a conjecture based on faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses

	Grade 5 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling 5.D.1 5.D.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word

	Grade 5 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	problems by: • using stated assumptions or making assumptions and using approximations to simplify a real-world situation • analyzing and/or creating constraints, relationships and goals • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • justifying and defending models which lead to a conclusion • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • improving the model if it has not served its purpose • writing **a concise** arithmetic expression or equation to describe a situation	problems by: • using stated assumptions or **making assumptions** and using approximations to simplify a real-world situation • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • modifying and/or improving the model if it has not served its purpose • writing an arithmetic expression or equation to describe a situation	problems by: • using stated assumptions and approximations to simplify a real-world situation • illustrating relationships between important quantities by using provided tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in a simplified context • reflecting on whether the results make sense • modifying the model if it has not served its purpose • writing an arithmetic expression or equation to describe a situation	problems by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities • using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an arithmetic expression or equation to describe a situation

Grade 6 Mathematics Performance Level Descriptors

	Grade 6 Math : Sub-Claim A The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Multiplying and Dividing with Fractions 6.NS.1-2	Solves word problems involving **division of fractions by fractions.**	Divides fractions **with unlike denominators** and solves word problems with prompting embedded within the problem.	Divides fractions with common denominators **and solves word problems with prompting embedded within the problem.**	Divides fractions with common denominators.
Ratios 6.RP.1 6.RP.2 6.RP.3a 6.RP.3b 6.RP.3c-1 6.RP.3c-2 6.RP.3d	Uses ratio and rate reasoning to solve real-world and mathematical problems, including ratio, unit rate, percent and unit conversion problems. Uses **and connects a variety of representations** and strategies to solve these problems. Finds missing values in tables and plots values on the coordinate plane.	Uses ratio and rate reasoning to solve **real-world** and mathematical problems, including ratio, unit rate, percent and unit conversion problems using a limited variety of representations and strategies. Finds missing values in tables and locates **and** plots values on the coordinate plane.	**Uses ratio and rate reasoning** to solve mathematical problems, including ratio, unit rate, percent and unit conversion problems using a limited variety of representations and strategies. **Finds missing values in tables and locates or plots values on the coordinate plane.**	Solves problems including ratio, unit rate, percent and unit conversion problems using a limited variety of representations and strategies.
Rational Numbers 6.NS.5 6.NS.6a 6.NS.6b-1 6.NS.6b-2 6.NS.6c-1 6.NS.6c-2 6.NS.7a 6.NS.7b 6.NS.7c-1 6.NS.7c-2 6.NS.7d 6.NS.8	Understands that positive and negative numbers describe mathematical or real-world quantities which have opposite values or directions and can be represented on a number line and compared with or without the use of a number line. Understands **and interprets** the absolute value of a rational number. Plots ordered pairs on a coordinate plane to solve real-world and mathematical problems. Understands **(or recognizes) that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.** **Distinguishes comparisons of absolute value from statements about order.**	Understands that positive and negative numbers describe mathematical or real-world quantities which have opposite values or directions and can be represented on a number line **and compared with or without the use of a number line.** **Understands** the absolute value of a rational number. Plots ordered pairs on a coordinate plane to solve **real-world and** mathematical problems.	Understands that positive and negative numbers describe mathematical or real-world quantities which have opposite values or directions and can be represented on a number line. Determines the absolute value of a rational number. **Locates or plots ordered pairs on a coordinate plane to solve mathematical problems.**	Understands that positive and negative numbers describe mathematical or real-world quantities which have opposite values or directions and can be represented on a number line. Determines the absolute value of a rational number.

	Grade 6 Math : Sub-Claim A The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Expressions and Inequalities 6.EE.1-1 6.EE.1-2 6.EE.2a 6.EE.2b 6.EE.2c-1 6.EE.2c-2	**Writes,** reads and evaluates numerical and algebraic expressions, including those that contain whole number exponents.	Reads and **evaluates** numerical and algebraic expressions, including those that contain whole number exponents. **Writes numerical expressions and some algebraic expressions, including those that contain whole number exponents.**	**Reads numerical and algebraic expressions including those that contain whole number exponents**.	
6.EE.4	Identifies parts of algebraic and numerical expressions using mathematical terms **and views one or more parts of an expression as a single entity**. Identifies equivalent expressions using properties of operations.	Identifies parts of algebraic and numerical expressions using mathematical terms. **Identifies equivalent expressions using properties of operations.**	Identifies parts of algebraic **and** numerical expressions using mathematical terms.	Identifies parts of an algebraic or numerical expression using mathematical terms.
Equations and Inequalities 6.EE.5-1 6.EE.5-2 6.EE.6 6.EE.7 6.EE.8 6.EE.9	Uses variables to represent numbers and writes expressions and single-step equations to solve real-world and mathematical problems **and understand their solutions.** **Expresses a relationship between dependent and independent variables** and relates tables and graphs to equations. Writes and graphs inequalities to represent a constraint or condition in a real-world or mathematical problem. **Understands that there are an infinite number of solutions for an inequality.**	Uses variables to represent numbers and writes expressions and single-step equations to solve **real-world** or mathematical problems. Relates tables and graphs to the equations. **Writes** and graphs inequalities to represent a constraint or condition in a **real-world** or mathematical problem.	Uses variables to represent numbers and writes expressions without exponents, and single-step equations to solve mathematical problems. **Relates tables and graphs to the equations.** **Graphs inequalities to represent a constraint or condition in a mathematical problem.**	Uses variables to represent numbers and writes expressions without exponents, and single-step equations to solve mathematical problems

	Grade 6 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Factors and Multiples	Finds greatest common factors and least common multiples.	Finds greatest common factors and least common multiples.	Identifies greatest common factors **and** least common multiples.	Identifies greatest common factors or least common multiples.

	Grade 6 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
6.NS.4-1 6.NS.4-2	Uses the distributive property to **express** a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.	**Uses the distributive property to rewrite a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.**		
Geometry 6.G.1 6.G.2-1 6.G.2-2 6.G.3 6.G.4	Solves real-world and mathematical problems involving area of polygons by composing into rectangles or decomposing into triangles and other shapes. Determines measurements of polygons in the coordinate plane. Determines and uses nets of three-dimensional figures to find surface area. Determines volume of right rectangular prisms with fractional edge lengths by packing them with unit cubes and using formulas. **Uses volume formulas to find unknown measurements.** **Understands the concepts of area and volume to solve unscaffolded problems.**	Solves **real-world** and mathematical problems involving area of polygons by either composing into rectangles or decomposing into triangles and other shapes. Determines measurements of polygons in the coordinate plane. **Determines** and uses nets of three-dimensional figures to find surface area. Determines volume of right rectangular prisms with fractional edge lengths by packing them with unit cubes and using formulas.	Solves mathematical problems involving area of polygons by either composing into rectangles **or decomposing into triangles and other shapes.** **Determines measurements of polygons in the coordinate plane.** **Uses nets of three-dimensional figures to find surface area.** **Determines volume of right rectangular prisms with fractional edge lengths by packing them with unit cubes and using formulas.**	Solves mathematical problems involving area of polygons by composing into rectangles.
Statistics and Probability 6.SP.1 6.SP.2 6.SP.3 6.SP.4 6.SP.5	Recognizes a statistical question and understands that a set of collected data has a distribution which can be described by its center, spread and overall shape. Understands the purpose of center and variability and that it can be summarized with a single number. **Displays** numerical data in plots on a number line, including dot plots, histograms and box plots, and **determines**	Recognizes a statistical question and understands that a set of collected data has a distribution which can be described by its center, spread and overall shape. Understands the purpose of center and that it can be summarized with a single number.	**Recognizes a statistical question** and understands that a set of collected data has a distribution which can be described by its center, spread and overall shape. Understands **the purpose of center** and that it can be summarized with a single number.	Understands that a set of collected data has a distribution which can be described by its center, spread and overall shape. Understands that the center of a set of data can be summarized with a single number.

	Grade 6 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	which display is the most appropriate. **Summarizes numerical data sets in relation to their context, such as by reporting the number of observations, describing the nature of the attributes under investigation and using measures of center and variability.** **Determines which measures of center and variability are the most appropriate for a set of data.**			
Operations with Multi-Digit Numbers 6.NS.2 6.NS.3-1 6.NS.3-2 6.NS.3-3 6.NS.3-4 6.Int.1	Solves **two**-step word problems and other problems by dividing multi-digit numbers and adding, subtracting, multiplying and dividing multi-digit decimals **and assesses reasonableness of the result using different methods.**	Solves one-step **word** problems and other problems with some level of accuracy by dividing multi-digit numbers and adding, subtracting, multiplying and dividing multi-digit decimals.	Solves one-step problems by dividing multi-digit numbers and adding, subtracting, multiplying and dividing multi-digit decimals.	Solves one-step problems with **limited accuracy** by dividing multi-digit numbers and adding, subtracting, multiplying and dividing multi-digit decimals.

	Grade 6: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Properties of Operations 6.C.1.1 6.C.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on the properties of operations and the relationship between addition and subtraction or between multiplication and division, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates a complete response based on the properties of operations and the relationship between addition and subtraction or between multiplication and division, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response based on the properties of operations and the relationship between addition and subtraction or between multiplication and division, including: • **a logical** approach based on a conjecture and/or stated assumptions • **a logical**, but incomplete, progression of steps • **minor** calculation errors	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on the properties of operations and the relationship between addition and subtraction or between multiplication and division, which may include: • a faulty approach based on a conjecture and/or stated assumptions • an incomplete or illogical progression of steps

	Grade 6: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting, and critiquing the validity and **efficiency** of other's responses, approaches and reasoning, and **providing counter-examples where applicable**.	• **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating, **interpreting and critiquing** the validity of other's responses, approaches and reasoning.	• **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions.**	• major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion
Concrete Referents and Diagrams 6.C.3 6.C.4 6.C.5	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on concrete referents provided in the prompt or constructed by the student such as: diagrams that are connected to a written (symbolic) method, number line diagrams or coordinate plane diagrams, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting and critiquing the validity and efficiency of other's responses, approaches and reasoning, and **provides a counter-example where applicable.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates a complete response based on concrete referents provided in the prompt or constructed by the student such as: diagrams that are connected to a written (symbolic) method, number line diagrams or coordinate plane diagrams, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete justification of a conclusion** • **evaluating**, interpreting and critiquing **the validity of other's** responses, **approaches and** reasoning	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response based on concrete referents provided in the prompt or **in simple cases, constructed by the student** such as: diagrams **that are connected to a written (symbolic) method**, number line diagrams or coordinate plane diagrams, including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some use** of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on concrete referents provided in the prompt such as: diagrams, number line diagrams or coordinate plane diagrams, which may include: • a faulty approach based on a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion
Distinguish Correct	In connection with the content knowledge, skills, and abilities described	In connection with the content knowledge, skills, and abilities described	In connection with the content knowledge, skills, and abilities described	In connection with the content knowledge, skills, and abilities described

	Grade 6: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Explanation/ Reasoning from that which is Flawed 6.C.6 6.C.7 6.C.8.1 6.C.8.2 6.C.9	in Sub-claims A and B, the student clearly constructs and communicates a complete response to a given equation, multi-step problem, proposition or conjecture, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting and critiquing the validity and efficiency of other's responses, approaches and reasoning, and **providing a counter-example where applicable.** • identifying and describing errors in solutions and presents correct solutions. • **distinguishing correct explanation/reasoning from that which is flawed. If there is a flaw, presents correct reasoning.**	in Sub-claims A and B, the student clearly constructs and communicates a complete response to a given equation, multi-step problem, proposition or conjecture, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating**, interpreting and critiquing** the validity of other's responses, approaches and **reasoning.** • identifying and describing error in solutions and **presents correct solutions.**	in Sub-claims A and B, the student constructs and communicates a **complete** response to a given equation, multi-step problem, proposition or conjecture, including: • a **logical** approach based on a conjecture and/or stated assumptions • **a logical, but incomplete, progression of steps** • minor calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusion.** • **identifying and describing errors in solutions.**	in Sub-claims A and B, the student constructs and communicates an incomplete response to a given equation, multi-step problem, proposition or conjecture, including: • an approach based on a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion

	Grade 6: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling 6.D.1	In connection with the content knowledge, skills, and abilities described	In connection with the content knowledge, skills, and abilities described	In connection with the content knowledge, skills, and abilities described	In connection with the content knowledge, skills, and abilities described

	Grade 6: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
6.D.2 6.D.3	in Sub-claims A and B, the student **d**evises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and making assumptions and approximations to simplify a real-world situation • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • writing a complete, clear and correct algebraic expression or equation to describe a situation • applying proportional reasoning • writing/using functions to describe how one quantity of interest depends on another • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • reflecting on whether the results make sense • improving the model if it has not served its purpose • interpreting mathematical results in the context of the situation • **analyzing and/or creating limitations, relationships and interpreting goals within the model** • **analyzing, justifying and defending models which lead to a conclusion**	in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and **making assumptions** and **approximations** to simplify a real-world situation • **mapping relationships** between important quantities by **selecting appropriate** tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • writing **a complete, clear, and correct** algebraic expression or equation to describe a situation • applying proportional reasoning • writing/using functions to describe how one quantity of interest depends on another • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • reflecting on whether the results make sense • **improving** the model if it has not served its purpose • interpreting mathematical results in **the context of the situation**	in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships** between important quantities by using provided tools to create models • analyzing relationships mathematically **between important quantities** to draw conclusions • writing an incomplete algebraic expression or equation to describe a situation • applying proportional reasoning • **writing/**using functions to describe how one quantity of interest depends on another • using **reasonable** estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • **reflecting on whether the results make sense** • **modifying the model if it has not served its purpose** • **interpreting mathematical results in a simplified context**	in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities by using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an incomplete algebraic expression or equation to describe a situation • applying proportional reasoning • using functions to describe how one quantity of interest depends on another • using unreasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity

Grade 7 Mathematics Performance Level Descriptors

	Grade 7 Math : Sub-Claim A The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Proportional Relationships 7.RP.1 7.RP.2a 7.RP.2b 7.RP.2c 7.RP.2d 7.RP.3-1 7.RP.3-2	**Analyzes** and uses proportional relationships to solve real-world and mathematical problems, including **multi-step** ratio/percent problems. Computes unit rates of quantities associated with ratios of fractions. Decides whether two quantities are in a proportional relationship and identifies the constant of proportionality (unit rate) in tables, equations, diagrams, verbal descriptions and graphs. Interprets a point (*x, y*) on the graph of a proportional relationship in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where *r* is the unit rate. Represents proportional relationships by equations and uses them to solve mathematical and real-world problems, including multi-step ratio and percent problems. **Determines when it is appropriate to use unit rates and understands its limitations.**	**Analyzes** and uses proportional relationships to solve real-world and mathematical problems, including simple ratio/percent problems. Computes unit rates of quantities associated with ratios of fractions. Decides whether two quantities are in a proportional relationship and identifies the constant of proportionality (unit rate) in tables, equations, diagrams, verbal descriptions and graphs. **Interprets a point (*x, y*) on the graph** of a proportional relationship **in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where *r* is the unit rate.** **Represents proportional relationships by equations** and uses them to solve mathematical and real-world problems, including simple ratio and percent problems.	**Uses** proportional relationships to solve **real-world** and mathematical problems, including simple ratio/percent problems. **Computes unit rates of quantities associated with ratios of fractions.** **Decides** whether two quantities are in a proportional relationship and **identifies the constant of proportionality (unit rate) in tables, equations, diagrams, verbal descriptions and graphs.** **Uses equations representing a proportional relationship to solve mathematical and real-world problems, including ratio and percent problems.**	Identifies proportional relationships to solve mathematical problems, including ratio/percent problems. Identifies whether two quantities are in a proportional relationship.
Operations with Fractions 7.NS.1a 7.NS.1b-1 7.NS.1b-2 7.NS.1c-1 7.NS.1d 7.NS.2a-1	Performs operations on positive and negative rational numbers in multi-step mathematical and real-world problems. Represents addition and subtraction on a horizontal or vertical number line and recognizes situations in which opposite quantities combine to make zero.	Performs operations on positive and negative rational numbers in **multi-step** mathematical and real-world problems. Represents addition and subtraction on a horizontal or vertical number line and recognizes situations in which opposite quantities combine to make zero.	Performs operations on positive and negative rational numbers in mathematical and **real-world** problems. Represents addition and subtraction on a horizontal or vertical number line **and recognizes situations in which opposite quantities combine to make zero.**	Performs operations on positive and negative rational numbers in mathematical problems. Represents addition and subtraction on a horizontal or vertical number line.

	Grade 7 Math : Sub-Claim A The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
7.NS.2a-2 7.NS.2b-1 7.NS.2b-2 7.NS.2c 7.NS.3 7.EE.3	Determines reasonableness of a solution and **interprets solutions in real-world contexts.** **Using the properties of operations, justifies the steps taken to solve multi-step mathematical and real-world problems involving rational numbers.**	**Determines reasonableness of a solution.**		
Expressions, Equations and Inequalities 7.EE.1 7.EE.2 7.EE.4a-1 7.EE.4a-2 7.EE.4b	Applies properties of operations as strategies to add, subtract, factor and expand linear expressions. Solves **multi-step** linear equations with rational coefficients. In mathematical or real-world contexts, uses variables to represent quantities, construct and solve equations and inequalities, and graph **and interpret** solution sets. **Rewrites an expression in different forms.** **Describes the relationship between equivalent quantities that are expressed algebraically in different forms in a problem context and explains their equivalence in light of the context of the problem.**	Applies properties of operations as strategies to add, subtract, **factor** and expand linear expressions. Solves two-step linear equations with rational coefficients. In a mathematical or **real-world** context, uses variables to represent quantities, construct and solve equations and inequalities, and graph solution sets.	Applies properties of operations as strategies to add, subtract **and expand** linear expressions. Solves **two-step** linear equations with rational coefficients. **In a mathematical context, uses variables to represent quantities, construct and solve equations and inequalities, and graph solution sets.**	Applies properties of operations as strategies to add and subtract linear expressions. Solves one-step linear equations with rational coefficients.

	Grade 7 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Representing Geometric Figures	Draws geometric figures – freehand, with a ruler and protractor or with technology – and describes their attributes.	Draws geometric figures – freehand, with a ruler and protractor or with technology – and describes their attributes.	Draws geometric figures – freehand, with a ruler and protractor, or with technology – and describes some of their attributes.	Draws geometric figures – freehand, with a ruler and protractor, or with technology – and describes some of their attributes.

	Grade 7 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
7.G.2 7.G.3	Constructs triangles with given angle and side conditions and notices when those conditions determine a unique triangle, more than one triangle or no triangle. Describes two-dimensional figures that result from slicing three-dimensional figures by a plane **which may or may not be** parallel or perpendicular to a base or face.	Constructs triangles with given angle and side conditions. **Describes the two-dimensional figures that result from slicing three-dimensional figures by a plane parallel or perpendicular to a base or face.**	**Constructs triangles with given angle and side conditions.**	
Drawings and Measurement 7.G.1 7.G.4-1 7.G.4-2 7.G.5 7.G.6	Solves mathematical and real-world problems involving circumference, area, surface area and volume of two-and three-dimensional objects, **including composite objects.** Solves problems involving scale drawings of geometric figures, including reproducing a scale drawing at a different scale. Represents angle relationships using equations to solve for unknown angles. **Produces a logical conclusion** about the relationship between the circumference and area of a circle.	Solves mathematical and **real-world** problems involving circumference, area, surface area and volume of two-and three-dimensional objects. Solves problems involving scale drawings of geometric figures, **including reproducing a scale drawing at a different scale.** **Represents** angle relationships **using equations to solve** for unknown angles.	Solves mathematical problems involving circumference, area, **surface area and volume** of two-**and three-**dimensional objects. Solves problems involving scale drawings of geometric figures. **Uses facts about angle relationships to determine the measure of unknown angles**.	Solves mathematical problems involving circumference and area of two-dimensional objects. Solves problems involving scale drawings of geometric figures.
Random Sampling and Comparative Inferences 7.SP.1 7.SP.2 7.SP.3 7.SP.4	Understands and uses random sampling to draw inferences about a population. Draws relevant informal comparative inferences about two populations, including assessing the degree of visual overlap of two numerical data distributions with similar variabilities.	**Understands and uses random sampling** to draw inferences about a population. Draws **relevant** informal comparative inferences about two populations.	**Draws inferences about a population from a table or graph of random samples.** **Draws informal comparative inferences about two populations.**	Compares two populations based on measures of center and measures of variability.

	Grade 7 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Generates multiple samples of the same size to gauge the variation in estimates or predictions. **Analyzes whether a sample is representative of a population.**			
Chance Processes and Probability Models 7.SP.5 7.SP.6 7.SP.7a 7.SP.7b 7.SP.8a 7.SP.8b 7.SP.8c	Understands that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. **Generates a sample space to determine** the probability of simple or compound events using methods such as organized lists, tables, tree diagrams or **simulations.** Approximates the probability of a chance event by collecting data. Develops probability models to determine the probabilities of events. Designs and uses a simulation to generate frequencies for compound events. **Designs and uses a simulation to estimate the probability of a compound event.**	Understands that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Finds probabilities when given sample spaces for simple **and compound** events using methods such as organized lists, tables and **tree diagrams.** **Develops a model to approximate the probability of a chance event and predicts approximate frequencies when given the probability or by observing frequencies in data generated from the process.**	Understands that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. **Finds probabilities when given sample spaces for simple events using methods such as organized lists and tables.**	Understands that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.

	Grade 7 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Properties of Operations 7.C.1.1 7.C.1.2 7.C.2	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on the properties of	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates a complete response based on the properties of	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response based on the properties of	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on the

	Grade 7 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	operations and the relationship between addition and subtraction or between multiplication and division, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • **generalization of an argument or conclusion** evaluating, interpreting, and critiquing the validity of other's responses, approaches, conclusions and reasoning, and **correcting and providing counter-examples where applicable.**	operations and the relationship between addition and subtraction or between multiplication and division, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating**, interpreting and critiquing** the validity of other's **responses,** approaches, conclusions, and **reasoning.**	operations and the relationship between addition and subtraction or between multiplication and division, including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical,** but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions**	properties of operations and the relationship between addition and subtraction or between multiplication and division, including: • a faulty approach based on a conjecture and/or stated assumptions • an incomplete or illogical progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion
Concrete Referents and Diagrams 7.C.3 7.C.4	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on concrete referents provided in the prompt or constructed by the student such as diagrams that are connected to a written (symbolic) method, number line diagrams or coordinate plane diagrams, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • generalization of an argument or conclusion	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a **complete** response based on concrete referents provided in the prompt or **constructed by the student** such as: diagrams that are connected to a written (symbolic) method, number line diagrams or coordinate plane diagrams, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating, **interpreting and critiquing** the validity of other's responses,	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on concrete referents provided in the prompt or in **simple cases, constructed by the student** such as: diagrams **that are connected to a written (symbolic) method,** number line diagrams or coordinate plane diagrams, including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluation the validity of other's**	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on concrete referents provided in the prompt such as: diagrams, number line diagrams or coordinate plane diagrams, which may include: • a faulty approach based on a conjecture and/or stated assumptions • an illogical and incomplete progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion

	Grade 7 Math: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• evaluating, interpreting and critiquing the validity and efficiency of other's responses, approaches, conclusions and reasoning, and **providing a counterexample where applicable.**	approaches, conclusions and **reasoning.**	**approaches and conclusions.**	
Distinguish Correct Explanation/ Reasoning from that which is Flawed 7.C.5 7.C.6.1 7.C.7.1 7.C.7.2 7.C.7.3 7.C.7.4 7.C.8	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response to a given equation, multi-step problem, proposition or conjecture, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting and critiquing the validity and **efficiency** of other's responses, approaches, conclusions and reasoning, and **provides a counterexample where applicable.** • identifying and describing errors in solutions and presents correct solutions • **distinguishing correct explanation/reasoning from that which is flawed. If there is a flaw, presents correct reasoning.**	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response to a given equation, multi-step problem, proposition or conjecture, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating**, interpreting and critiquing** the validity of other's responses, approaches, conclusions and **reasoning.** • identifying and describing errors in solutions and **presents correct solutions.**	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response to a given equation, multi-step problem, proposition or conjecture, including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical,** but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions.** • **identifying and describing errors in solutions.**	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response to a given equation, multi-step problem, proposition or conjecture, including: • a faulty approach based on a conjecture and/or stated assumptions • an illogical and incomplete progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion

	Grade 7 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling 7.D.1 7.D.2 7.D.3 7.D.4	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and making assumptions and approximations to simplify a real-world situation • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • writing a complete, clear and correct algebraic expression or equation to describe a situation • applying proportional reasoning • writing/using functions to describe how one quantity of interest depends on another • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • reflecting on whether the results make sense • improving the model if it has not served its purpose	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and **making assumptions** and **approximations** to simplify a real-world situation • **mapping** relationships between important quantities by **selecting appropriate** tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • writing a **complete**, **clear and correct** algebraic expression or equation to describe a situation • applying proportional reasoning • writing/using functions to describe how one quantity of interest depends on another • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships** between important quantities by using provided tools to create models • analyzing relationships mathematically **between important quantities** to draw conclusions • writing an incomplete algebraic expression or equation to describe a situation • applying proportional reasoning • **writing**/using functions to describe how one quantity of interest depends on another • using **reasonable** estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an incomplete algebraic expression or equation to describe a situation • applying proportional reasoning using functions to describe how one quantity of interest depends on another
	• interpreting mathematical results in the context of the situation **• analyzing and/or creating constraints, relationships and goals** **• analyzing, justifying and defending models which lead to a conclusion**	• reflecting on whether the results make sense • **improving** the model if it has not served its purpose • interpreting mathematical results in the **context of the situation**	**• reflecting on whether the results make sense** **• modifying the model if it has not served its purpose** **• interpreting mathematical results in a simplified context**	• using unreasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity

Grade 8 Mathematics Performance Level Descriptors

	Grade 8 Math : Sub-Claim A The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Expressions and Equations 8 EE.1 8 EE.2	Evaluates and generates equivalent numerical expressions using and applying properties of integer exponents. Solves equations of the form $x^2 = p$ and $x^3 = p$, representing solutions **using √ or $\sqrt[3]{}$ symbols.**	Evaluates and **generates equivalent** numerical expressions using and **applying** properties of integer exponents. **Solves** equations of the form $x^2 = p$, where p is a perfect square, **and solves equations of the form $x^3 = p$, where p is a a perfect cube.**	Evaluates numerical expressions using properties of integer exponents. **Partially solves equations of the form $x^2 = p$, where p is a positive rational number and a perfect square less than or equal to 100, by representing only the positive solution of the equation.**	Evaluates numerical expressions using properties of integer exponents.
Scientific Notation 8.EE.3 8.EE.4-1 8.EE.4-2	Using scientific notation, estimates very large and very small quantities and determines how many times as large one number is in relation to another. Performs operations with numbers expressed in scientific notation. Interprets scientific notation that has been generated by technology. Chooses appropriate units for measuring very large or very small quantities. **Interprets scientific notation in context.**	Using scientific notation, estimates very large and **very small quantities.** Performs operations with numbers expressed in scientific notation.	Using scientific notation, estimates very large quantities. **Performs operations with numbers expressed in scientific notation.**	Using scientific notation, estimates very large quantities.
Proportional Relationships and Linear Equations 8.EE.5-1 8.EE.5-2 8.EE.6-1 8.F.3-1	Graphs linear relationships in the form $y=mx+b$, including proportional relationships. Interprets the unit rate as the slope of the graph of a proportional relationship and applies these concepts to solve real-world problems. Compares two different proportional relationships represented in different ways. Interprets $y=mx+b$ as defining a linear	Graphs linear relationships, in the form $y=mx+b$, including proportional relationships. Interprets the unit rate as the slope of the graph of a proportional relationship and **applies these concepts to solve real-world problems**. **Compares** two different proportional relationships represented in different ways.	Graphs linear relationships, in the form $y=mx+b$, **including proportional relationships.** **Interprets the unit rate as the slope of the graph of a proportional relationship.** **Makes some comparisons between two different proportional relationships represented in different ways**.	Graphs linear relationships, in the form $y=mx+b$.

	Grade 8 Math : Sub-Claim A The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	function. Uses similar triangles to show that the slope is the same between any two distinct points on a non-vertical line in the coordinate plane.			
Solving Linear Equations 8.EE.7b 8.EE.C.Int. 1	Solves **mathematical and real-world problems** linear equations in one variable, with rational number coefficients, including those that require use of the distributive property and combining like terms.	Solves linear equations in one variable, with rational number coefficients, including those that require use of the distributive property **and** combining like terms.	Solves linear equations in one variable, with rational number coefficients, **including those that require use of the distributive property or combining like terms.**	Solves linear equations in one variable, with rational number coefficients.
Simultaneous Linear Equations 8.EE.8a 8.EE.8b-1 8.EE.8b-2 8.EE.8b-3 8.EE.8c	Analyzes and solves mathematical and **real-world** problems leading to pairs of simultaneous linear equations graphically, algebraically and by **inspection.** **Understands the relationship between the graphic representation and the algebraic solution to the system.** **Verifies a solution utilizing multiple methods to prove accuracy.**	**Analyzes** and solves mathematical problems leading to pairs of simultaneous linear equations graphically and **algebraically.**	Solves mathematical problems leading to pairs of simultaneous linear equations graphically and by **inspection**.	Solves mathematical problems leading to pairs of simultaneous linear equations graphically, where the graph is provided.
Functions 8.F.1-1 8.F.1-2 8.F.2 8.F.3-2	Understands that a function is a rule assigning to each input exactly one output, which can be graphed as a set of ordered pairs. Compares properties of two functions represented in different ways. Identifies **and proves** functions that are non-linear**.**	Understands that a function is a rule that assigns to each input exactly one output and can be graphed as a set of ordered pairs. **Compares properties of two functions represented in different ways.**	Understands that a function is a rule that assigns to each input exactly one output **and can be graphed as a set of ordered pairs.**	Understands that a function is a rule that assigns to each input exactly one output.
Congruence and Similarity 8.G.1a 8.G.1b	Describes the effect of dilations, translations, rotations and reflections on two-dimensional figures with and without coordinates, determines	Describes the effect of **dilations**, translations, rotations and reflections on two-dimensional figures **with** coordinates, and determines whether two given figures	Describes the effect of translations, rotations **and** reflections on two-dimensional figures without coordinates and determines whether two given figures	Describes the effect of translations, rotations or reflections on two-dimensional figures without coordinates and determines whether two given figures

	Grade 8 Math : Sub-Claim A The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
8.G.1c 8.G.2 8.G.3 8.G.4	whether two given figures are congruent or similar through one or more transformations and **describes the sequence of transformations to justify congruence or similarity of two figures.**	are congruent **or similar through one or more transformations.**	are congruent.	are congruent.
Pythagorean Theorem 8.G.7-1 8.G.7-2 8.G.8	Applies the Pythagorean Theorem in real world and mathematical problems in two and three dimensions and to find the distance between two points in a coordinate system. **Recognizes situations to apply the Pythagorean Theorem in multi-step problems.**	Applies the Pythagorean Theorem in a simple planar case and **to find the distance between two points in a coordinate system.**	Applies the Pythagorean Theorem in solving **for any side** of the right triangle in a simple planar case without coordinates.	Applies the Pythagorean Theorem in solving for the hypotenuse of a right triangle in a simple planar case without coordinates.

	Grade 8 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Rational Numbers 8.NS.1 8.NS.2	Distinguishes between rational and irrational numbers, understands that these numbers have decimal expansions and approximates their locations on a number line, and converts between terminating decimals or **decimals that repeat eventually** and fractional representations of rational numbers.	Distinguishes between rational and irrational numbers, understands that these numbers have decimal expansions and approximates their locations on a number line, and **converts between terminating decimals or repeating decimals of the form (0.aaa…) and fractional representations of rational numbers.**	Distinguishes between rational and irrational numbers and **understands that these numbers have decimal expansions** and approximates their locations on a number line.	Distinguishes between rational and irrational numbers and approximates their locations on a number line.
Modeling with Functions 8.F.4 8.F.5-1 8.F.5-2	Constructs a function to model a linear relationship between two quantities described with or without a context. Given a description of a relationship or two (*x,y*) values in a table of values or a graph, determines the rate of change and initial value of the function. Analyzes **and** describes the functional relationship between two quantities.	Constructs a function to model a linear relationship between two quantities described **with or without a context.** **Given two (*x,y*) values in a table of values or a graph,** determines the rate of change and initial value of the function. Analyzes the graph of a linear function to describe the functional relationship between two quantities.	**Constructs** a function to model a linear relationship between two quantities in a table or a graph. Determines the rate of change **and** initial value of the function from a table or graph that contains the initial value. **Analyzes the graph of a linear function to describe the functional relationship between two quantities.**	Identifies a function to model a linear relationship between two quantities in a table or a graph. Determines the rate of change or initial value of the function from a table or graph that contains the initial value.

	Grade 8 Math: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Sketches a graph of a function when given a written description.	**Sketches the graph of a function when given a written description.**		
Volume 8.G.9	Identifies the formulas for the volume of cones, cylinders and spheres, and uses them to find the volume **or dimensions** of solids in mathematical and real-world problems. **Applies these formulas to multiple composite mathematical solids.**	Identifies the formulas for the volume of cones, cylinders and spheres, and uses them to find the volume of solids in mathematical and **real-world** problems.	Identifies the formulas for the volume of cones, cylinders and spheres, and **uses them to find the volume of solids in mathematical problems.**	Identifies the formulas for the volume of cones, cylinders and spheres.
Bivariate Data 8.SP.1 8.SP.2 8.SP.3 8.SP.4	Analyzes and describes the patterns of association that can be seen in bivariate data by constructing, displaying and interpreting scatter plots and two-way tables. Uses the equation of a linear model to solve problems in context. Informally fits a straight line to a scatter plot that suggests a linear association and **assesses the model fit.** **Compares linear models used to fit the same set of data to determine which is a better fit.**	**Analyzes** and describes the patterns of association that can be seen in bivariate data by **constructing, displaying and** interpreting scatter plots and two-way tables. Uses the equation of a linear model to solve problems in context. **Informally fits a straight line to** a scatter plot that suggests a linear association.	Describes the patterns of association that can be seen in bivariate data by interpreting scatter plots and two-way tables. **Uses a given equation of a linear model to solve problems in context.** **Identifies a line of best fit for a scatter plot that suggests a linear association.**	Describes the patterns of association that can be seen in bivariate data by interpreting scatter plots and two-way tables.

	Grade 8: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Graphs and Equations 8.C.1.1 8.C.1.2 8.C.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on the principle that a graph of an equation in two variables is the set of all its solutions and a given	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on the principle that a graph of an equation in two variables is the set of all its solutions and a given	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response based on the principle that a graph of an equation in two variables is the set of all its solutions and a given	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on the principle that a graph of an equation in two variables is the set of all its solutions

	Grade 8: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	equation or system of equations including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting, and critiquing the validity and efficiency of other's responses, approaches and reasoning, conclusions and **reasoning correcting and providing a counterexample where applicable.**	equation or system of equations including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating, **interpreting and critiquing** the validity of other's responses, approaches, conclusions and **reasoning**	equation or system of equations including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical,** but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions**	and a given equation or system of equations including: • a faulty approach based on a conjecture and/or stated assumptions • an illogical or incomplete progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion
Reasoning 8.C.3.1 8.C.3.2 8.C.3.3 8.C.4.1 8.C.6	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on a chain of reasoning to justify or refute algebraic, function or linear-equation propositions or conjectures including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting and critiquing	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on a chain of reasoning to justify or refute algebraic, function or linear-equation propositions or conjectures including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating, **interpreting and critiquing** the validity of other's responses, approaches, conclusions and **reasoning**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response based on a chain of reasoning to justify or refute algebraic, function or linear-equation propositions or conjectures including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on a chain of reasoning to justify or refute algebraic, function or linear-equation propositions or conjectures including: • a faulty approach based on a conjecture and/or stated assumptions • an illogical and incomplete progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion.

	Grade 8: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	the validity of other's responses, approaches, conclusions and reasoning, **correcting and providing a counterexample where applicable**			
Geometric Reasoning 8.C.5.1 8.C.5.2 8.C.5.3	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on applying geometric reasoning in a coordinate setting and/or use coordinates to draw geometric conclusions including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting and critiquing the validity and **efficiency** of other's responses, approaches and reasoning, **correcting and providing a counterexample where applicable** • identifying and describing errors in solutions and presenting correct solutions • **distinguishing correct explanation/reasoning from that which is flawed. If there is a flaw, presents correct reasoning.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on applying geometric reasoning in a coordinate setting and/or use coordinates to draw geometric conclusions including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating, **interpreting and critiquing** the validity of other's responses, approaches, conclusions and **reasoning** • identifying and describing errors in solutions and **presenting correct solutions**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response based on applying geometric reasoning in a coordinate setting and/or use coordinates to draw geometric conclusions including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions** • **identifying and describing errors in solutions**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on applying geometric reasoning in a coordinate setting and/or use coordinates to draw geometric conclusions including: • a faulty approach based on a conjecture and/or stated assumptions • an illogical and incomplete progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion

	Grade 8: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for and making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling 8.D.1 8.D.2 8.D.3 8.D.4	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and making assumptions and approximations to simplify a real-world situation • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • writing a complete, clear and correct algebraic expression or equation to describe a situation • applying proportional reasoning • writing/using functions to describe how one quantity of interest depends on another	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and **making assumptions** and **approximations** to simplify a real-world situation • **mapping** relationships between important quantities by **selecting appropriate** tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • writing a **complete, clear and correct** algebraic expression or equation to describe a situation • applying proportional reasoning • writing/using functions to describe how one quantity of interest depends on another	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships between important quantities by using provided tools to create models** • analyzing relationships mathematically **between important quantities** to draw conclusions • writing an incomplete algebraic expression or equation to describe a situation • applying proportional reasoning • **writing**/using functions to describe how one quantity of interest depends on another	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an incomplete algebraic expression or equation to describe a situation
	• using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • reflecting on whether the results make sense • improving the model if it has not served its purpose • interpreting mathematical results in the context of the situation analyzing and/or creating constraints, relationships and goals analyzing, justifying and defending models which lead to a conclusion	• using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • reflecting on whether the results make sense • **improving** the model if it has not served its purpose interpreting mathematical results in the **context of the situation**	• using **reasonable** estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • **reflecting on whether the results make sense** • **modifying the model if it has not served its purpose** **interpreting mathematical results in a simplified context**	• applying proportional reasoning • using functions to describe how one quantity of interest depends on another using unreasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity

Algebra I Performance Level Descriptors

	Algebra I: Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Expressions A-SSE.1-1 A-SSE.1-2 A-SSE.2-1 A-SSE.2-4 A.APR.1-1	Writes and **analyzes** equivalent numerical and polynomial expressions in one variable, using addition, subtraction, multiplication and factoring, **including multi-step problems.** Interprets parts of **complicated** exponential and quadratic expressions that represent a quantity in terms of its context.	Writes equivalent numerical and polynomial expressions in one variable, using addition, subtraction, multiplication **and factoring**. **Interprets parts of exponential and quadratic expressions that represent a quantity in terms of its context.**	Writes equivalent numerical and polynomial expressions in one variable, using addition, subtraction and multiplication. Identifies components of exponential **and quadratic** expressions.	Writes equivalent numerical and polynomial expressions in one variable, using addition, subtraction and multiplication. Identifies components of exponential expressions.
Interpreting Functions F-IF.1 F-IF.2 F-IF.A.Int.1 F-IF.4-1 F-IF.5-1 F-IF.5-2	Determines if a given relation is a function. Evaluates with, uses and **interprets** with function notation within a context. Given a context, writes **and analyzes** a linear **or quadratic** function. For linear and quadratic functions that model contextual relationships, determines **and interprets** key features, graphs the function **and solves problems.** Determines the domain and relates it to the quantitative relationship it describes for a linear, quadratic, exponential (limited to domains in the integers), **square root, cube root, piece-wise, step** and absolute value functions.	Determines if a given relation is a function. Evaluates with and uses function notation **within a context.** Given a context, writes a linear function. For linear and quadratic functions that model contextual relationships, determines key features **and graphs the function.** Determines the domain **and relates it to the quantitative relationship it describes for** linear, quadratic **and exponential (limited to domains in the integers)** functions.	Determines if a given relation is a function. Evaluates with and uses function notation. Given a context, writes a linear function. For linear **and quadratic** functions that model contextual relationships, determines key features. **Determines the domain of linear and quadratic functions.**	Determines if a given relation is a function. Evaluates with and uses function notation. Given a context, writes a linear function. Given the graph of linear functions that model contextual relationships, determines key features.
Rate of Change F-IF.6-1a F-IF.6-1b F-IF.6-6a F-IF.6-6b	Calculates and interprets the average rate of change of linear, exponential, quadratic, **square root, cube root and piecewise-defined functions (presented symbolically or as a table)** over a specified interval, and estimates the rate	Calculates the average rate of change of linear, exponential and quadratic functions (presented symbolically or as a table) over a specified interval **and estimate the rate of change from a graph.**	Calculates the average rate of change of linear, exponential and quadratic functions (presented **symbolically** or as a table) over a specified interval.	Calculates the average rate of change of linear, exponential and quadratic functions (presented symbolically or as a table) over a specified interval.

	Algebra I: Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	of change from a graph. **Compares rates of change associated with different intervals.**			
Solving Algebraically A-REI.3 A-REI.4a-1 A-REI.4b-1 A.REI.4b-2 A-CED.4-1 A-CED.4-2 HS-Int.1 HS-Int.2 HS-Int.3-2	Algebraically solves linear equations, linear inequalities and quadratics in one variable (at complexity appropriate to the course), including those with coefficients represented by letters. **Utilizes structure and rewriting as strategies for solving.**	Algebraically solves linear equations, linear inequalities and quadratics in one variable (at complexity appropriate to the course), **including those with coefficients represented by letters.**	Algebraically solves linear equations, linear inequalities and **quadratics** in one variable (at complexity appropriate to the course).	Algebraically solves linear equations and linear inequalities in one variable (at complexity appropriate to the course).
Solving Graphically A-CED.3-1 A-REI.10 A-REI.11-1a A-REI.11-1b A-REI.12	Graphs **and analyzes** the solution sets of equations, linear inequalities and systems of linear inequalities. Finds the solutions to two polynomial functions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. **Writes a system of linear inequalities given a context.**	Graphs the solution sets of equations, linear inequalities **and systems of linear equations and linear inequalities.** Finds the solutions to two polynomial functions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.	Graphs the solution sets of equations and linear inequalities. **Finds the solutions to two polynomial functions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.**	Graphs the solution sets of equations and linear inequalities. Given the graph, identify the solutions of a system of two polynomial functions.

	Algebra I: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Number Systems N-RN.B-1	Identifies rational and irrational numbers. Calculates sums and products of two rational and/or irrational numbers **and determines whether and generalizes when the sums and products are rational**	Identifies rational and irrational numbers. **Calculates sums and products of two rational and/or irrational numbers.**	Identifies rational and irrational numbers.	Identifies rational and irrational numbers.

	Algebra I: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	or irrational.			
Equivalent Expressions and Functions A-SSE.3a A-SSE.3b A-SSE.3c-1 F.IF.8a	Determines equivalent forms of quadratic **and exponential (with integer domain)** expressions and functions to reveal and explain **their properties.**	**Determines** equivalent forms of quadratic expressions and functions. Uses equivalent forms **to reveal and explain** zeros, **extreme values** and symmetry.	Identifies equivalent forms of quadratic expressions and functions. **Identifies zeros and symmetry**.	Identifies equivalent forms of quadratic expressions and functions **in cases where suitable factorizations are provided.**
Interpreting Graphs of Functions A-APR.3-1 F-IF.7a-1 F-IF.7a-2 F-IF.7b	Graphs linear, quadratic, cubic (in which linear and quadratic factors are available), **square root, cube root and piecewise-defined functions, showing key features.** **Determines a function, given a graph with key features identified.**	Graphs linear, quadratic **and cubic (in which linear and quadratic factors are available)** functions, showing key features.	Graphs linear **and quadratic functions**, showing key features.	Graphs linear functions, showing key features.
Function Transformations F-BF.3-1 F-BF.3-4	Identifies the effects of **multiple** transformations on graphs of linear and quadratic functions and finds the value of *k* given a transformed graph. **Experiments with cases using technology.** **Given the equation of a transformed linear or quadratic function, creates an appropriate graph.**	Identifies the effects of a single transformation on graphs of linear and quadratic functions, including $f(x)+k$, $kf(x)$, **$f(kx)$ and $f(x+k)$, and finds the value of *k* given a transformed graph.**	Identifies the effects of a single transformation on graphs of linear and quadratic functions, limited to $f(x)+k$ **and $kf(x)$.**	Identifies the effects of a single transformation on graphs of linear and quadratic functions, limited to $f(x)+k$.
Multiple Representations of Functions A-REI.6-1 F-LE.2-1 F-LE.2-2 F-IF.9-1 F-Int.1-1 S-ID.Int.1 S-ID.Int.2 HS-Int.1 HS-Int.2	Writes **and analyzes** systems of linear equations in multi-step contextual problems. Represents linear and exponential (with domain in the integers) functions symbolically, in real-life scenarios, graphically, with a verbal description, as a sequence and with input- output pairs to solve mathematical and contextual problems.	Writes systems of linear equations in multi-step contextual problems. **Represents** linear and exponential (with domain in the integers) functions symbolically, graphically and with input-output pairs to solve mathematical problems. Compares the properties of two functions	Writes systems of linear equations in **multi-step** contextual problems. Given a symbolic representation, real-life scenario, graph, verbal description, sequence or input-output pairs for linear **and exponential** functions **(with domains in the integers)**, solves mathematical problems. Compares the properties of two functions	Writes systems of linear equations in simple contextual problems. Given a symbolic representation, real-life scenario, graph, verbal description, sequence or input-output pairs for linear functions, solves mathematical problems. Compares the properties of two linear

	Algebra I: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
HS-Int.3-1 HS-Int.3-2	Compares the properties of two functions represented in multiple ways, limited to linear, exponential (with domains in the integers), quadratic, square root and, absolute value cube root, piecewise and step.	represented in different ways, limited to linear quadratic, and, **exponential (with domains in the integers).**	represented in different ways, limited to linear **and quadratic**.	functions represented in different ways.
Summarizing Representing and Interpreting Data S-ID.5 S-ID.Int.1 S-ID.Int.2	Determines appropriate representations of categorical and quantitative data, summarizing and interpreting the data and characteristics of the representations. **Describes and interprets possible associations and trends in the data.**	**Determines appropriate** representations of categorical and quantitative data, summarizing the data and characteristics of the representations.	Given representations of categorical and quantitative data, **summarizes the data** and characteristics of the representations.	Given representations of categorical and quantitative data, describes the characteristics of the representations.

	Algebra I: Sub-Claim C In connection with content, the student expresses course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Reasoning HS.C.2.1 HS.C.5.5 HS.C.5.6 HS.C.5.10.1 HS.C.6.1 HS.C.8.1 HS.C.9.1 HS.C.10.1 HS.C.12.1 HS.C.16.2 HS.C.18.1	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a **complete response** based on: • the principle that a graph of an equation in two variables is the set of all its solutions • reasoning about linear and exponential growth • properties of rational numbers or irrational numbers • transformations of functions • a chain of reasoning to justify or refute algebraic, function, or linear-equation propositions or conjectures • a given equation or system of equations • the number or nature of solutions by:	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a response based on: • the principle that a graph of an equation in two variables is the set of all its solutions • reasoning about linear and exponential growth • properties of rational numbers of rational numbers or irrational numbers • transformations of functions • a chain of reasoning to justify or refute algebraic, function, or linear-equation propositions or conjectures • a given equation or system of equations • the number or nature of solutions by:	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **partial response** based on: • the principle that a graph of an equation in two variables is the set of all its solutions • reasoning about linear and exponential growth • properties of rational numbers or irrational numbers • transformations of functions • a chain of reasoning to justify or refute algebraic, function, or linear-equation propositions or conjectures • a given equation or system of equations • the number or nature of solutions by:	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on: • the principle that a graph of an equation in two variables is the set of all its solutions • reasoning about linear and exponential growth • properties of rational numbers or irrational numbers • transformations of functions • a chain of reasoning to justify or refute algebraic, function or linear-equation propositions or conjectures • a given equation or system of equations • the number or nature of solutions by:
	• using a logical approach based on a conjecture and/or stated assumptions,	• using a logical approach based on a conjecture and/or stated assumptions,	• using a **logical** approach based on a conjecture and/or stated assumptions	• using an approach based on a conjecture and/or stated or faulty

	Algebra I: Sub-Claim C In connection with content, the student expresses course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	utilizing mathematical connections (when appropriate)providing an **efficient and** logical progression of steps or chain of reasoning with appropriate justification • performing precise calculations • using correct grade-level vocabulary, symbols and labels • providing a justification of a conclusion • **determining whether an argument or conclusion is generalizable** • evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate) – and **providing a counter-example where applicable**	**utilizing mathematical connections (when appropriate)** • providing a **logical** progression of steps or chain of reasoning **with appropriate justification** • **performing precise calculations** • using **correct** grade-level vocabulary, symbols and labels • providing a **justification** of a conclusion • **evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning - utilizing mathematical connections (when appropriate)**	• providing a **logical, but incomplete,** progression of steps or chain of reasoning • **performing minor** calculation errors • using **some** grade-level vocabulary, symbols and labels • providing a partial justification of a conclusion based on own calculations • **evaluating the validity of others' approaches and conclusions**	assumptions • providing an incomplete or illogical progression of steps or chain of reasoning • making an intrusive calculation error • using limited grade-level vocabulary, symbols and labels • providing a partial justification of a conclusion based on own calculations

	Algebra I: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling HS.D.1-1 HS.D.2-5 HS.D.2-6 HS.D.2-8 HS.D.2-9 HS.D.3-1a HS.D.3-3a	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using state assumptions and making assumption and approximations to simplify a real-world situation (includes micro-models) • mapping relationships between important quantities • selecting appropriate tools to create	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions **and making assumptions** and approximations to simplify a real-world situation**(include micro-models)** • **mapping relationships between important quantities** • **selecting appropriate tools to create**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using state assumptions and approximations to simplify a real-world situation • **illustrating relationships between important quantities** • using provided tools to create models • analyzing relationship mathematically	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities • using provided tools to create models • analyzing relationships mathematically to draw conclusions

	Algebra I: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	models • analyzing relationships mathematically between important quantities to draw conclusion • **analyzing and/or creating constraints, relationships and goals** • **interpreting mathematical results in the context of the situation** • reflecting on whether the results make sense	**models** • **analyzing relationships mathematically between important quantities to draw conclusions**	**between important quantities** to draw conclusions • interpreting mathematical results in a simplified context	• writing an algebraic expression or equation to describe a situation • applying proportional reasoning and percentages
	• improving the model if it has not served its purpose • writing a complete, clear and correct algebraic expression or equation to describe a situation • applying proportional reasoning and percentages **justifying and defending models which lead to a conclusion** • using functions **in any form** to describe how one quantity of interest depends on another • using statistics • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	• interpreting mathematical results **in the context of the situation** • reflecting on whether the results make sense • **improving** the model if it has not served its purpose • writing **a complete, clear and correct** algebraic expression or equation to describe a situation • applying proportional reasoning and percentages • writing and using functions **in any form** to describe how one quantity of interest depends on another • using statistics • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	• **reflecting on whether the results make sense** • **modifying the model if it has not served its purpose** • writing an algebraic expression or equation to describe a situation • applying proportional reasoning and percentages • **writing and** using functions to describe how one quantity of interest depends on another • using statistics • using **reasonable** estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	• using functions to describe how one quantity of interest depends on another • using statistics • using estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity

Geometry Performance Level Descriptors

	Geometry: Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Congruence Transformations G-CO.6 G-CO.C	**Determines and** uses **appropriate** geometric theorems and properties of rigid motions, lines, angles, triangles and parallelograms to solve problems and prove statements about angle measurement, triangles, distance, line properties and congruence.	Uses given geometric theorems and properties of rigid motions, lines, angles, triangles and parallelograms to solve routine problems and **prove statements** about angle measurement, triangles, distance, line properties and congruence.	Uses given geometric theorems and properties of rigid motions, lines, angles, triangles and parallelograms to solve routine problems and **reason about angle measurement, triangles, distance, line properties and congruence**.	Uses given geometric theorems and properties of rigid motions, lines, angles, triangles and parallelograms to solve routine problems.
Similarity G-SRT.1a G-SRT.1b G-SRT.2 G-SRT.5	Uses transformations **and congruence and similarity criteria for triangles to prove** relationships among geometric figures and to solve problems.	**Uses** transformations to **determine** relationships **among** simple geometric figures **and to solve problems.**	**Identifies** transformation relationships in simple geometric figures.	Identifies transformation relationships in simple geometric figures in cases where an image is provided.
Similarity in Trigonometry G-SRT.6 G-SRT.7-2 G-SRT.8	Uses trigonometric ratios, the Pythagorean Theorem and the relationship between sine and cosine to solve right triangles in applied problems. **Uses similarity transformations with right triangles to define trigonometric ratios for acute angles.**	Uses trigonometric ratios, the Pythagorean Theorem **and the relationship between sine and cosine to solve right triangles in applied problems.**	Uses trigonometric ratios and the Pythagorean Theorem to determine the unknown side lengths **and angle measurements** of a right triangle.	Uses trigonometric ratios and the Pythagorean Theorem to determine the unknown side lengths of a right triangle.
Modeling and Applying G-SRT.7-2 G-SRT.8 G-GPE.6 G-Int.1	Uses geometric relationships in the coordinate plane to solve problems involving area, perimeter and ratios of lengths. Applies geometric concepts **and trigonometric ratios** to describe, model and solve applied problems **(including design problems)** related to the Pythagorean Theorem, **density,** geometric shapes, their measures and properties.	Uses geometric relationships in the coordinate plane to solve problems involving area, perimeter **and ratios of lengths.** Applies geometric concepts to describe, model and solve applied problems related to the Pythagorean Theorem, geometric shapes, their measures and properties.	Uses provided geometric relationships in the coordinate plane to solve problems involving area and perimeter. Applies geometric concepts to describe, model and solve applied problems related to **the Pythagorean Theorem**, geometric shapes, their measures and properties.	Uses provided geometric relationships in the coordinate plane to solve problems involving area and perimeter. Applies geometric concepts to describe, model and solve applied problems related to geometric shapes, their measures, and properties.

	Geometry: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Transformations G-CO.1 G-CO.3 G-CO.5	Given a figure and **a sequence of** transformations, draws the transformed figure. **Uses precise geometric terminology to** specify a sequence of transformations that will carry a figure onto **itself or** another.	Given a figure and a transformation, draws the transformed figure. **Specifies a sequence of transformations that will carry a figure onto another.**	Given a figure and a transformation, **draws** the transformed figure.	Given a figure and a transformation, **identifies** a transformed figure.
Geometric Constructions G-CO.D	Understands geometric constructions: copying a segment, copying an angle, bisecting an angle, bisecting a segment, including the perpendicular bisector of a line segment. Given a line and a point not on the line, **uses a variety of tools and methods** to construct perpendicular and parallel lines. **Uses a variety of tools and methods to** construct equilateral triangles, squares, and hexagons inscribed in circles.	Understands geometric constructions: copying a segment, copying an angle, bisecting an angle, bisecting a segment, including the perpendicular bisector of a line segment. **Given a line and a point not on the line, constructs perpendicular and parallel lines.**	Understands basic geometric constructions: copying a segment, copying an angle, **bisecting an angle, bisecting a segment, including the perpendicular bisector of a line segment.**	Understands basic geometric constructions: copying a segment, and copying an angle.
Applying Geometric Properties and Theorems G-C.2 G-C.B G-GPE.1-1 G-GPE.1-2	Applies properties and theorems of angles, segments and arcs in circles to solve problems **and model relationships.** Completes the square to find the center and radius of a circle given by an equation.	Applies properties and theorems of angles, segments and arcs in circles to solve problems. **Completes the square to find the center and radius of a circle given by an equation.**	Applies properties and theorems of angles, segments and **arcs in circles** to solve problems.	Applies properties and theorems of angles and segments to solve problems.
Geometric Formulas G-GMD.1 G-GMD.3 G-GMD.4	**Uses volume formulas to solve mathematical and contextual problems that involve cylinders, pyramids, cones and spheres.** Uses dissection arguments, **Cavalieri's principle and informal limit arguments to support** the formula for the	Using formulas, determines the volume of cylinders, pyramids, cones and spheres. **Gives an informal argument for the formula for the circumference of a circle and area of a circle, including dissection arguments.**	Using formulas, determines the volume of cylinders, pyramids, cones and spheres. Identifies the shapes of two-dimensional cross-sections of three-dimensional objects,.	Using formulas, determines the volume of cylinders, pyramids, cones and spheres. Identifies the shapes of two-dimensional cross-sections of three-dimensional objects, when cross sections are parallel or perpendicular to a base/face.

	Geometry: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	circumference of a circle, area of a circle, **volume of a cylinder, pyramid, and cone.** Identifies the shapes of two-dimensional cross-sections of three-dimensional objects **and identifies three-dimensional objects generated by rotations of two-dimensional objects.**	Identifies the shapes of two-dimensional cross-sections of three-dimensional objects.		

	Geometry: Sub-Claim C In connection with content, the student expresses course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Reasoning HS.C.13.1 HS.C.13.2 HS.C.13.3 HS.C.14.1 HS.C.14.2 HS.C.14.3 HS.C.14.5 HS.C.14.6 HS.C.15.14 HS.C.18.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a **complete response** based on: • a chain of reasoning to justify or refute algebraic and/or geometric propositions or conjectures • geometric reasoning in a coordinate setting, OR • a response to a multi-step problem, by: • using a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • providing an **efficient and** logical progression of steps or chain of reasoning with appropriate justification • performing precise calculation • using correct grade- level vocabulary, symbols and labels • providing a justification of a conclusion	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a response based on: • a chain of reasoning to justify or refute algebraic and/or geometric propositions or conjectures • geometric reasoning in a coordinate setting, OR • a response to a multi-step problem, by: • using a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • providing a **logical** progression of steps or chain of reasoning **with appropriate justification** • **performing precise calculations** • using **correct** grade-level vocabulary, symbols and labels • providing a justification of a conclusion	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **partial response** based on: • a chain of reasoning to justify or refute algebraic and/or geometric propositions or conjectures • geometric reasoning in a coordinate setting, OR • a response to a multi-step problem, by: • using a **logical** approach based on a conjecture and/or stated assumptions • **providing a logical, but incomplete, progression of steps** or chain of reasoning • **performing minor calculation errors** • using **some** grade-level vocabulary, symbols and labels • providing a partial justification of a conclusion based on own calculations	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on: • a chain of reasoning to justify or refute algebraic and/or geometric propositions or conjectures • geometric reasoning in a coordinate setting, OR • a response to a multi-step problem, by : • using an approach based on a conjecture and/or stated or faulty assumptions • providing an incomplete or illogical chain of reasoning, or progression of steps • making an intrusive calculation error • using limited grade-level vocabulary, symbols and labels • providing a partial justification of a conclusion based on own calculations

	Geometry: Sub-Claim C In connection with content, the student expresses course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• **determining whether an argument or conclusion is generalizable** • evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate) – **and providing a counter example where applicable**.	• **evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate).**	• evaluating the validity of others' approaches and conclusions	

	Geometry: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling HS.D.1-2 HS.D.2-1 HS.D.2-2 HS.D.2-11 HS.D.3-2a HS.D.3-4a	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and making assumptions and approximations to simplify a re-world situation (includes micro-models) • mapping relationships between important quantities • selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusion • **analyzing and/or creating constraints, relationships and goals** • **interpreting mathematical results in the context of the situation**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions **and making assumptions** and approximations to simplify a real-world situation **(includes micro-models)** • **mapping relationships between** important quantities • **selecting appropriate tools to create models** • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results **in the context of the situation** • reflecting on whether the results make sense	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships between** important quantities • using provided tools to create models • analyzing relationships mathematically **between important quantities** to draw conclusions • **interpreting mathematical results in a simplified context** • **reflecting on whether the results make sense** • **modifying the model if it has not served its purpose**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities • using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an algebraic expression or equation to describe a situation • applying proportional reasoning and percentages • applying common geometric principles and theorems

	Geometry: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
		• **improving** the model if it has not served its purpose		
	• reflecting on whether the results make sense • improving the model if it has not served its purpose • writing a complete, clear and correct algebraic expression or equation to describe a situation • applying proportional reasoning and percentages justifying and defending models which lead to a conclusion • applying geometric principles and theorems • writing and using functions in any form to describe how one quantity of interest depends on another • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	• writing **a complete, clear and correct** algebraic expression or equation to describe a situation • applying proportional reasoning and percentages • applying geometric principles and theorems • writing and using functions **in any form** to describe how one quantity of interest depends on another • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	• writing an algebraic expression or equation to describe a situation • applying proportional reasoning and percentages • applying geometric principles and theorems • **writing and** using functions to describe how one quantity of interest depends on another • using **reasonable** estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	• using functions to describe how one quantity of interest depends on another • using estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity

Algebra II Performance Level Descriptors

	Algebra II: Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Equivalent Expressions N-RN.2 A.Int.1 A-REI.2 A-SSE.2-3 A-SSE.2-6 A-SSE.3c-2	Uses mathematical properties and structure of polynomial, exponential, rational and **radical** expressions to create equivalent expressions **that aid in solving mathematical and contextual problems.** Rewrites exponential expressions to reveal quantities of interest that may be useful.	Uses mathematical properties and structure of polynomial, exponential and **rational** expressions to create equivalent expressions. **Rewrites exponential expressions to reveal quantities of interest that may be useful.**	Uses provided mathematical properties and structure of **polynomial** and exponential expressions to **create** equivalent expressions.	Uses provided mathematical properties and structure of exponential expressions to identify equivalent expressions.
Interpreting Functions A-APR.2 A-REI.11-2 F-IF.4-2	Uses mathematical properties and relationships to reveal key features of polynomial, exponential, rational, **trigonometric and logarithmic functions,** using them to sketch graphs **and identify characteristics of the relationship between two quantities, and applying the remainder theorem where appropriate.**	**Interprets key features of graphs and tables**, and uses mathematical properties and relationships to reveal key features of polynomial, exponential and **rational** functions, using them to sketch graphs.	**Uses provided mathematical properties and relationships to reveal key features of polynomial and exponential functions, using them to sketch graphs.**	**Given a graph** of a polynomial or exponential function, identifies key features.
Rate of Change F-IF.6-2 F-IF.6-7	Calculates and interprets the average rate of change of polynomial, exponential**, logarithmic or trigonometric functions** (presented symbolically or as a table) over a specified interval, and estimates the rate of change from a graph. **Compares rates of change associated with different intervals.**	Calculates the average rate of change of polynomial and exponential functions (presented symbolically or as a table) over a specified interval, **and estimates the rate of change from a graph.**	Calculates the average rate of change of polynomial and exponential functions (presented **symbolically** or as a table) over a specified interval.	Calculates the average rate of change of polynomial and exponential functions (presented as a table) over a specified interval.
Building Functions A-SSE.4-2 F-BF.1b-1 F-BF.2	Builds functions that model mathematical and contextual situations, including those requiring trigonometric functions, sequences and combinations of these and other functions, and uses the models to solve, interpret **and generalize about problems.**	Builds functions that model mathematical and contextual situations, **including those requiring trigonometric functions, sequences and combinations of these and other functions**, and uses the models to solve and interpret problems.	**Builds** functions that model mathematical and contextual situations, limited to those requiring arithmetic and geometric sequences, **and uses the models to solve and interpret problems.**	Identifies functions that model mathematical and contextual situations, limited to those requiring arithmetic and geometric sequences.
Statistics &	Determines why a sample survey,	**Determines whether** a sample survey,	Identifies whether a given scenario	Identifies characteristics of a sample

	Algebra II: Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Probability S-IC.3-1	experiment or observational study is most appropriate. **Given an inappropriate choice of a sample survey, experiment or observational study, identifies and supports the appropriate choice. Determines how to change the scenario to make the choice appropriate.**	experiment or observational study **is most appropriate.**	represents a sample survey, experiment or observational study.	survey, experiment or observational study.

	Algebra II: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Interpreting Functions F-IF.7c F-IF.7e-1 F-IF.7e-2 F-IF.8b F-IF.9-2 F-Int.1-2	Given multiple functions **in different forms** (algebraically, graphically, numerically and by verbal description), writes multiple equivalent versions of the functions, and identifies **and compares** key features. Graphs exponential, polynomial, **trigonometric, and logarithmic functions,** showing key features.	Given functions represented algebraically, graphically, numerically and by verbal description, writes **multiple** equivalent versions of the functions and identifies key features. Graphs **exponential** and polynomial functions, showing key features.	Given functions represented algebraically, graphically, numerically and by verbal description, **writes equivalent versions** of the functions, and identifies key features. **Graphs polynomial functions, showing key features.**	Given functions represented algebraically, graphically, numerically and by verbal description, identifies key features of the functions.
Equivalent Expressions N-CN.1 N-CN.2 A-APR.6	Uses commutative, associative and distributive properties to perform operations with complex numbers. Rewrites simple rational expressions using inspection **or long division.**	Uses commutative, associative and **distributive** properties to perform operations with complex numbers. **Rewrites simple rational expressions using inspection.**	Uses commutative and associative properties to add and subtract complex numbers **and multiply a complex number by a real number.**	Uses commutative and associative properties to add and subtract complex numbers.
Function Transformations F-BF.3-2 F-BF.3-3 F-BF.3-5	Identifies the effects of **multiple** transformations on graphs of polynomial, exponential, logarithmic and trigonometric functions, and determines if the resulting function is even or odd.	Identifies the effects of a single transformation on graphs of polynomial, exponential, logarithmic and trigonometric function - including $f(x)$+k, $kf(x)$, **$f(kx)$, and $f(x+k)$ –** and determines if the resulting function is even or odd.	Identifies the effects of a single transformation on graphs of polynomial, exponential, **logarithmic and trigonometric** functions - **limited to $f(x)+k$ and $kf(x)$ - and determines if the resulting function is even or odd.**	Identifies the effects of a single transformation on graphs of polynomial and exponential functions - limited to $f(x)+k$.
Trigonometry	Given a trigonometric value and quadrant for an angle, utilizes the structure and	Given a trigonometric value and quadrant for an angle, utilizes the structure and	Given a trigonometric value **and quadrant** for an angle, utilizes the structure and	Given a trigonometric value for an angle in quadrant 1, utilizes the structure and

	Algebra II: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
F-TF.1 F-TF.8-2	relationships of trigonometry, including relationships in the unit circle, to identify other trigonometric values for that angle, **and describes the relationship between the radian measure and the subtended arc in the circle.**	relationships of trigonometry, **including relationships in the unit circle,** to identify other trigonometric values for that angle.	relationships of trigonometry to identify other trigonometric values for that angle.	relationships of trigonometry to identify other trigonometric values for that angle.
Solving Equations and Systems N-CN.7 A-REI.4b-2 A-REI.6-2 A-REI.7 F-Int.3 F-BF.Int.2 F-LE.2-3 HS-Int.3-3	Solves **multi-step contextual word** problems involving linear, exponential, quadratic (with real or complex solutions) and trigonometric equations and systems of equations, using inverses where appropriate. Constructs linear and exponential function models in multi-step contextual problems.	Solves problems involving linear, exponential, quadratic (with real or complex solutions) and **trigonometric equations** and systems of equations, using inverses where appropriate. Constructs linear and exponential function models in multi-step contextual problems with mathematical prompting.	Solves problems involving linear, exponential and quadratic (with real solutions) equations and **systems of equations, using inverses where appropriate.** Constructs linear and **exponential** function models in multi-step contextual problems with mathematical prompting.	Solves problems involving linear, exponential and quadratic (with real solutions) equations. Constructs linear function models in multi-step contextual problems with mathematical prompting.
Data – Univariate and Bivariate S-ID.4 S-ID.6a-1 S-ID.6a-2	Uses the means and standard deviations of data sets to fit them to normal distributions. Fits exponential and **trigonometric functions** to data in order to solve multi-step contextual problems. **Determines when models fitted to data are inappropriate.**	Uses the means and standard deviations of data sets to fit them to normal distributions. **Fits** exponential functions **to data** in order to solve multi- step contextual problems.	Uses the means and standard deviations of data sets to fit them to normal distributions. **Uses fitted exponential functions to solve multi-step contextual problems.**	Identifies the mean and standard deviation of a given normal distribution.
Inference S-IC.2 S-IC.Int.1	Uses sample data to make, **justify, and critique inferences and conclusions** about the corresponding population. **Decides if specified models are consistent with results from given data-generating processes.**	**Uses** sample data to make inferences about the corresponding population.	Identifies when sample data can be used to make inferences about the corresponding population.	Identifies when sample data can be used to make inferences about the corresponding population.
Probability S-CP.Int.1	Recognizes, determines and uses conditional probability and independence in **multi-step contextual** problems, using	Recognizes, determines **and uses** conditional probability and independence in contextual problems**, using appropriate**	Recognizes and determines **conditional probability** and independence in contextual problems.	Recognizes and determines independence in contextual problems.

	Algebra II: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	appropriate set language and appropriate representations, including two-way frequency tables. **Applies the Addition Rule of probability.**	**set language and appropriate representations, including two-way frequency tables.**		

	Algebra II: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statement.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Reasoning HS.C.3.1 HS.C.3.2 HS.C.4.1 HS.C.5.4 HS.C.5.11 HS.C.6.2 HS.C.6.4 HS.C.7.1 HS.C.8.2 HS.C.8.3 HS.C.9.2 HS.C.11.1 HS.C.12.2 HS.C.16.3 HS.C.17.2 HS.C.17.3 HS.C.17.4 HS.C.17.5 HS.C.18.4 HS.C.CCR	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a **complete response** based on: • a response to a given equation or system of equations • a chain of reasoning to justify or refute algebraic, function or number system propositions or conjectures • a response based on data • a response based on the graph of an equation in two variables, the principle that a graph is a solution set or the relationship between zeros and factors of polynomials • a response based on trigonometric functions and the unit circle • a response based on transformations of functions OR • a response based on properties of exponents by:	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a response based on: • a response to a given equation or system of equations • a chain of reasoning to justify or refute algebraic, function or number system propositions or conjectures, • a response based on data • a response based on the graph of an equation in two variables, the principle that a graph is a solution set or the relationship between zeros and factors of polynomials • a response based on trigonometric functions and the unit circle • a response based on transformations of functions OR • a response based on properties of exponents by:	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **partial response** based on: • a response to a given equation or system of equations • a chain of reasoning to justify or refute algebraic, function or number system propositions or conjectures • a response based on data • a response based on the graph of an equation in two variables, the principle that a graph is a solution set or the relationship between zeros and factors of polynomials • a response based on trigonometric functions and the unit circle • a response based on transformations of functions OR • a response based on properties of exponents by:	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on: • a response to a given equation or system of equations • a chain of reasoning to justify or refute algebraic, function or number system propositions or conjectures • a response based on data • a response based on the graph of an equation in two variables, the principle that a graph is a solution set or the relationship between zeros and factors of polynomials • a response based on trigonometric functions and the unit circle • a response based on transformations of functions OR • a response based on properties of exponents by :
	• using a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate)	• using a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections**	• using a **logical** approach based on a conjecture and/or stated assumptions • providing a **logical, but incomplete,**	• using an approach based on a conjecture and/or stated or faulty assumptions

	Algebra II: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statement.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• providing an **efficient and** logical progression of steps or chain of reasoning with appropriate justification • performing precise calculations • using correct grade- level vocabulary, symbols and labels • providing a justification of a conclusion • **determining whether an argument or conclusion is generalizable** • evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate) – and **providing a counter-example** where applicable	**(when appropriate)** • providing a **logical** progression of steps or chain of reasoning **with appropriate justification** • **performing precise calculations** • using **correct** grade- level vocabulary, symbols and labels • providing a **justification** of a conclusion • evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate)	progression of steps or chain of reasoning • **performing minor calculation errors** • using **some** grade-level vocabulary, symbols and labels • providing a partial justification of a conclusion based on own calculations • **evaluating the validity of others' approaches and conclusions.**	• providing an incomplete or illogical progression of steps or chain of reasoning • making an intrusive calculation error • using limited grade-level vocabulary, symbols and labels • providing a partial justification of a conclusion based on own calculations

	Algebra II: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling HS.D.2-4 HS.D.2-7 HS.D.2-10 HS.D.2-13 HS.D.3-5a HS.D.3-6 HS.D.CCR	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • mapping relationship between important quantities • selecting appropriate tools to create the appropriate model • analyzing relationships mathematically between important quantities (either given or created) to draw conclusion	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • **mapping** relationships between important quantities • selecting appropriate tools to create **the appropriate** model • analyzing relationships mathematically between important quantities **(either given or created)** to draw conclusions	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships between important quantities** • using provided tools to create **appropriate but inaccurate** model • analyzing relationships mathematically **between important given quantities to draw conclusions**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • identifying important given quantities • using provided tools to create inaccurate model • analyzing relationships mathematically to draw conclusions • writing an expression, equation or function to describe a situation

	Algebra II: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • improving the model if it has not served its purpose • writing a complete, clear and correct expression, equation or function to describe a situation	• interpreting mathematical results **in the context of the situation** • reflecting on whether the results make sense • **improving** the model if it has not served its purpose • writing a **complete, clear and correct** expression, equation or function to describe a situation	• interpreting **mathematical results in a simplified context** • **reflecting on whether the results make sense** • **modifying the model if it has not served its purpose** • writing an expression, equation or function to describe a situation.	• using securely held content incompletely reporting a conclusion, with some inaccuracy within the reporting • indiscriminately using data from a data source
	• **analyzing and/or creating constraints, relationships and goals** • **justifying and defending models which lead to a conclusion** • using geometry to solve design problems • using securely held content, accurately reporting **and justifying the conclusion** • identifying and using relevant data from a data source • making an appropriate evaluation or recommendation	using geometry to solve design problems using securely held content, **briefly, but accurately** reporting the conclusion **identifying and using relevant data** from a data source making an **appropriate** evaluation or recommendation	using geometry to solve design problems using securely held content, incompletely reporting a conclusion **selecting and using some relevant data** from a data source making an evaluation or recommendation	using securely held content incompletely reporting a conclusion, with some inaccuracy within the reporting indiscriminately using data from a data source

Integrated Math I Performance Level Descriptors

	Math I: Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Expressions and Equations A.SSE.1-1 A.Int.1 A.CED.4-1 A.REI.3 A.SSE.3c-1 A.SSE.3c-2	Manipulates linear formulas and equations **to highlight a quantity of interest in context.** **Interprets** components of contextual exponential expressions and solves equations that require seeing structure.	Manipulates linear formulas and equations for a specified variable. Identifies components of contextual exponential expressions **and solves equations that require seeing structure.**	Manipulates linear formulas and equations to solve for a specified variable requiring one step. **Identifies components of contextual exponential expressions.**	Manipulates linear formulas and equations to solve for a specified variable requiring one step.
Rate of Change F.IF.6-3a F.IF.6-3b F.IF.6-8	Calculates and interprets the average rate of change of linear, exponential, **square root, cube root and piecewise-defined functions (presented symbolically or as a table)** over a specified interval, and estimates the rate of change from a graph. **Compares rates of change associated with different intervals.**	Calculates the average rate of change of linear and exponential functions (presented symbolically or as a table) over a specified interval **and estimate the rate of change from a graph.**	Calculates the average rate of change of linear and exponential functions (presented **symbolically** or as a table) over a specified interval.	Calculates the average rate of change of linear and exponential functions (presented as a table) over a specified interval.
Interpreting Functions F.BF.2 F.Int.1-3 F.IF.1 F.IF.2 F.IF.A.Int.1 F.IF.4-3 F.IF.5-1 S.ID.Int.1 HS.Int.3-1	Determines if a given relation is a function. Evaluates with, uses and **interprets** with function notation within a context. Writes and uses arithmetic and geometric sequences **to model situations.** For linear functions that model contextual relationships, determines **and interprets** key features, graphs the function **and solves problems.** Determines the domain and relates it to the quantitative relationship it describes for a linear, exponential (limited to	Determines if a given relation is a function. Evaluates with and uses function notation **within a context.** Writes arithmetic and geometric sequences. For linear functions that model contextual relationships, determines key features **and graphs the function.** Determines the domain **and relates it to the quantitative relationship it describes for** linear **and exponential**	Determines if a given relation is a function. Evaluates with and uses function notation. **Writes** arithmetic sequences. **For linear functions** that model contextual relationships, determines key features. **Determines the domain of linear functions.**	Determines if a given relation is a function. Evaluates with and uses function notation. Identifies arithmetic sequences. Given the graph of linear functions that model contextual relationships, determines key features.

	Math I: Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	domains in the integers), **square root, cube root, piecewise, step and absolute value** functions.	**(limited to domains in the integers)** functions.		
Solving Graphically A.REI.10 A.REI.11-1a A.REI.11-1b A.REI.12 A.CED.3-1	Graphs **and analyzes** the solution sets of equations, linear inequalities and systems of linear inequalities. Finds the solutions to two polynomial functions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. **Writes a system of linear inequalities given a context.**	Graphs the solution sets of equations, linear inequalities **and systems of linear equations and linear inequalities.** Finds the solutions to two polynomial functions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.	Graphs the solution sets of equations and linear inequalities **Finds the solutions to two polynomial functions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.**	Graphs the solution sets of equations and inequalities. Given the graph, finds the solutions to a system of two polynomial functions.
Congruence Transformations G.CO.C G.CO.6	**Determines and** uses **appropriate** geometric theorems and properties of rigid motions, lines, angles, triangles and parallelograms to solve problems and prove statements about angle measurement, triangles, distance, line properties and congruence.	Uses given geometric theorems and properties of rigid motions, lines, angles, triangles and parallelograms to solve routine problems and **prove statements** about angle measurement, triangles, distance, line properties and congruence.	Uses given geometric theorems and properties of rigid motions, lines, angles, triangles and parallelograms to solve routine problems **and reason about angle measurement, triangles, distance, line properties and congruence.**	Uses given geometric theorems and properties of rigid motions, lines, angles, triangles and parallelograms to solve routine problems.

	Math I: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Summarizing, Representing and Interpreting Data S.ID.5	Determines appropriate representations of categorical and quantitative data, summarizing and interpreting the data and characteristics of the representations. **Describes and interprets possible associations and trends in the data.**	**Determines appropriate** representations of categorical quantitative data, summarizing the data and characteristics of the representations.	Given representations of categorical and quantitative data, **summarizes the data** and characteristics of the representations.	Given representations of categorical and quantitative data, **describes** characteristics of the data representations.
Transformations G.CO.1	Given a figure and a transformation **(or a sequence of transformations),** draws the	Given a figure and transformation, draws the transformed figure.	Given a figure and a transformation, **draws** the transformed figure.	Given a figure and a transformation, **identifies** the transformed figure.

	Math I: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
G.CO.3 G.CO.5	transformed figure. **Uses precise geometric terminology to** specify a **sequence of** transformations that will carry a figure onto **itself or** another.	**Specifies a sequence of transformations that will carry a figure onto another.**		
Solving Systems A.REI.6-1 A.REI.6-2	**Solves multi-step contextual problems that require writing,** solving **and analyzing** systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables with **real** coefficients and solutions. **Solves a given system of three linear equations and three unknowns with rational coefficients.**	Given a system of linear equations, solves contextual problems exactly and approximately, focusing on pairs of linear equations in two variables with **rational** coefficients and solutions.	Given a system of linear equations, **solves** contextual problems exactly and approximately, focusing on pairs of linear equations in two variables with integer coefficients and solutions.	Given the graph of a system of linear equations, identifies the solution to contextual problems exactly and approximately, focusing on pairs of linear equations in two variables with integer coefficients and solutions.
Contextual Problems Functions F.IF.7a-1 F.IF.9-3 F.LE.2-1 F.LE.2-2 F.LE.2-3	Represents linear and exponential (with domain in the integers) functions symbolically, **in real-life scenarios,** graphically, with a verbal description, as a sequence and with input- output pairs to solve mathematical **and contextual** problems. Compares the properties of two functions represented in multiple ways, limited to linear, exponential (with domains in the integers), **square root, cube root, piece-wise, step and absolute value**.	**Represents** linear and exponential (with domain in the integers) functions symbolically, graphically and with input-output pairs to solve mathematical problems. Compares the properties of two functions represented in different ways, limited to linear and **exponential (with domains in the integers).**	Given a symbolic representation, real-life scenario, graph, verbal description, sequence or input-output pairs for linear **and exponential** functions **(with domains in the integers),** solves mathematical problems. Compares the properties of two linear functions represented in different ways.	Given a symbolic representation, real-life scenario, graph, verbal description, sequence or input-output pairs for linear functions, solves mathematical problems. Compares the properties of two linear functions represented in different ways.

	Math I: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Reasoning HS.C.5.6 HS.C.5.10-2 HS.C.6.1	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a **complete**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a response	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **partial**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an

	Math I: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
HS.C.10.1 HS.C.14.1 HS.C.14.2 HS.C.18.1	**response** based on: • the principle that a graph of an equation in two variables is the set of all its solutions • reasoning about linear and exponential growth • properties of rational numbers or irrational numbers • transformations of functions • a chain of reasoning to justify or refute algebraic, function, or linear equation propositions or conjectures • a given equation or system of equations • the number or nature of solutions by:	based on: • the principle that a graph of an equation in two variables is the set of all its solutions • reasoning about linear and exponential growth • properties of rational numbers or irrational numbers • transformations of functions • a chain of reasoning to justify or refute algebraic, function, or linear equation propositions or conjectures • a given equation or system of equations • the number or nature of solutions by:	**response** based on: • the principle that a graph of an equation in two variables is the set of all its solutions • reasoning about linear and exponential growth • properties of rational numbers or irrational numbers • transformations of functions • a chain of reasoning to justify or refute algebraic, function, or linear equation propositions or conjectures • a given equation or system of equations • the number or nature of solutions by:	incomplete response based on: • the principle that a graph of an equation in two variables is the set of all its solutions • reasoning about linear and exponential growth • properties of rational numbers or irrational numbers • transformations of functions • a chain of reasoning to justify or refute algebraic, function, or linear equation propositions or conjectures • a given equation or system of equations • the number or nature of solutions by:
	• using a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • providing an **efficient and** logical progression of steps or chain of reasoning with appropriate justification • performing precise calculations • using correct grade-level vocabulary, symbols and labels • providing a justification of a conclusion • **determining whether an argument or conclusion is generalizable** • evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate) and **providing a counter-example where applicable.**	• using a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • providing a **logical** progression of steps or chain of reasoning **with appropriate justification** • **performing precise calculations** • using **correct** grade-level vocabulary, symbols and labels • providing a **justification** of a conclusion • **evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate).**	• using a **logical** approach based on a conjecture and/or stated assumptions • providing a **logical, but incomplete,** progression of steps or chain of reasoning • performing minor calculation errors • using **some** grade-level vocabulary, symbols and labels • providing a partial justification of a conclusion based on own calculations • **evaluating the validity of others' approaches and conclusions.**	• using an approach based on a conjecture and/or stated or faulty assumptions • providing an incomplete or illogical progression of steps or chain of reasoning • making an intrusive calculation error • using limited grade-level vocabulary, symbols and labels • providing a partial justification of a conclusion based on own calculations.

	Math I: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling HS.D.1-1 HS.D.2-5 HS.D.2-8 HS.D.3-1b HS.D.3-3b	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and making assumptions and approximations to simplify a real-world situation (includes micro-models) • mapping relationships between important quantities • selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusion • analyzing and/or **creating constraints, relationships and goals** • interpreting mathematical results in the context of the situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises and enacts a plan to apply mathematics in solving problems arising I everyday life, society and the workplace by: • using stated assumptions **and making assumptions** and approximations to simplify a real-world situation **(includes micro-models)** • **mapping relationships between important quantities** • **selecting appropriate tools to create models** • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results **in the context of the situation** • reflecting on whether the results make sense	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships between important quantities** • using provided tools to create models • analyzing relationships mathematically **between important quantities** to draw conclusions • **interpreting mathematical results in a simplified context** • **reflecting on whether the results make sense**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities • using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an algebraic expression or equation to describe a situation • applying proportional reasoning and percentages
	• reflecting on whether the results make sense • improving the model if it has not served its purpose • writing a complete, clear and correct algebraic expression or equation to describe a situation • applying proportional reasoning and percentages **justifying and defending models which lead to a conclusion** • applying geometric principals and theorems • writing and using functions **in any form** to describe how one quantity of	• **improving** the model if it has not served its purpose • writing **a complete, clear and correct** algebraic expression or equation to describe a situation • applying proportional reasoning and percentages • applying geometric principles and theorems • writing and using functions **in any form** to describe how one quantity of interest depends on another • using statistics	• **modifying the model if it has not served its purpose** • writing an algebraic expression or equation to describe a situation • applying proportional reasoning and percentages • applying geometric principles and theorems • **writing and** using functions to describe how one quantity of interest depends on another • using statistics • using **reasonable** estimates of known	• applying common geometric principles and theorems • using functions to describe how one quantity of interest depends on another • using statistics • using estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity

	Math I: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	interest depends on another • using statistics • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	• using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	quantities in a chain of reasoning that yields an estimate of an unknown quantity	

Integrated Math II Performance Level Descriptors

	Math II: Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Quadratics and Exponential Expressions A.SSE.1-2 A.SSE.2-2 A.SSE.2-5 A.SSE.3a A.SSE.3b	Interprets the structure of equivalent quadratic and exponential expression that contain **real** exponents. **Writes** equivalent expressions to reveal information by viewing one or more of their parts as a single entity, **including factoring and completing the square for quadratics.**	**Interprets the structure of equivalent quadratic and exponential expressions (with rational exponents) to reveal information by viewing at least one of their parts as a single entity.**	Identifies equivalent **quadratic and** exponential expressions with integer exponents.	Identifies equivalent exponential expressions with integer exponents.
Quadratic Equations A.REI.4a-1 A.REI.4b-1 A.REI.4b-2 A.CED.4-2 HS.Int.2	Solves quadratic equations in one variable with **real** coefficients, **using methods appropriate to the initial form,** including completing the square, inspection, taking square roots, the quadratic formula and factoring. **Recognizes when the quadratic formula give complex solutions**	**Solves** quadratic equation in one variable with rational coefficients, **using method including completing the square, inspection, taking square roots, the quadratic formula or factoring.**	Identifies solutions to quadratic equations in one variable with integer **or rational** coefficients.	Identifies solutions to quadratic equations in one variable with integer coefficients.
Graphing Exponential and Quadratic Functions F.IF.4-4 F.IF.5-2 HS.Int-1	**Writes** quadratic and exponential functions, determines key features, graphs functions and solves problems in contextual situations. Determines domains **and relates them to the quantitative relationship described** for quadratic functions.	**For quadratic and exponential functions that model contextual relationships, determines** key features **and sketches graphs of functions.** **Determines domains of quadratic functions.**	Identifies key features of quadratic and exponential functions.	**Given a graph**, identifies key features of quadratic and exponential functions.
Rate of Change F.IF.6-4 F.IF.6-9	Calculates **and interprets** the average rate of change of exponential and quadratic (presented symbolically or as a table) over a specified interval, and estimates the rate of change from a graph. **Compares rates of change associated with different intervals.**	Calculates the average rate of change of exponential and quadratic functions (presented symbolically or as a table) over a specified interval **and estimate the rate of change from a graph.**	Calculates the average rate of change of exponential and quadratic functions (presented **symbolically** or as a table) over a specified interval.	Calculates the average rate of change of exponential and quadratic functions (presented as a table) over a specified interval.
Polynomial, Rational and Radical Expressions	Adds, subtracts and multiplies **three or more** polynomials. Using the properties of exponents,	**Adds, subtracts and multiplies two polynomials.** **Using the properties of exponents,**	Identifies equivalent expressions when adding, subtracting and **multiplying** polynomials and expressions containing integer exponents.	Identifies equivalent expressions when adding and subtracting polynomials and expressions containing integer exponents.

	Math II: Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
N.RN.2 A.APR.1-1	rewrites expressions containing **radicals and** rational exponents.	**rewrites expressions** containing **rational exponents.**		
Similarity G.SRT.1a G.SRT.1b G.SRT.2 G.SRT.5	Uses transformations **and congruence and similarity criteria for triangles to prove** relationships among geometric figures and to solve problems.	**Uses** transformations to **determine** relationships **among simple** geometric figures **and to solve problems.**	Identifies transformation relationships in simple geometric figures.	Identifies transformation relationships in simple geometric figures in cases where an image is provided.
Similarity in Trigonometry G.SRT.6 G.SRT.7-2 G.SRT.8	Uses trigonometric ratios, the Pythagorean Theorem and the relationship between sine and cosine to solve right triangles in applied problems. **Uses similarity transformations with right triangles to define trigonometric ratios for acute angles.**	Uses trigonometric ratios, the Pythagorean Theorem **and the relationship between sine and cosine to solve right triangles in applied problems.**	Uses trigonometric ratios and the Pythagorean Theorem to determine the unknown side lengths and **angle measurements** of a right triangle.	Uses trigonometric ratios and the Pythagorean Theorem to determine the unknown side lengths of a right triangle.

	Math II: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Probability S.CP.Int.1	Recognizes, determines and uses conditional probability and independence in **multi- step contextual** problems, using appropriate set language and appropriate representations, including two-way frequency tables. **Applies the Addition Rule of probability.**	Recognizes, determines **and uses** conditional probability and independence in contextual problems**, using appropriate set language and appropriate representations, including two-way frequency tables.**	Recognizes and determines **conditional probability** and independence in contextual problems.	Recognizes and determines independence in contextual problems.
Statistics S.ID.6a-1 S.ID.Int.2	Represents data on scatter plots and describes how the variables are related. Fits quadratic functions to data to solve problems in the context of the data **and informally assesses the fit of functions by plotting and analyzing residuals.**	Represents data on scatter plots **and describes how the variables are related.** Informally, determines whether quadratic models are a good fit. **Fits quadratic functions to data to solve problems in the context of the data.**	Represents data on scatter plots. Informally, determines whether quadratic models are a good fit. **Uses fitted quadratic functions to solve contextual problems.**	Represents data on scatter plots. Informally, determines whether quadratic models are a good fit.
Geometric Formulas	**Uses volume formulas to solve mathematical and contextual problems**	Using formulas, determines the volume of cylinders, pyramids, cones and spheres.	Using formulas, determines the volume of cylinders, pyramids, cones and spheres.	Using formulas, determines the volume of cylinders, pyramids, cones and spheres.

	Math II: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
G.GMD.1 G.GMD.3	**that involve cylinders, pyramids, cones and spheres.** Uses dissection arguments, **Cavalieri's principle and informal limit arguments to support** the formula for the circumference of a circle, area of a circle, **volume of a cylinder**, **pyramid, and cone.**	**Gives an informal argument for the formula for the circumference of a circle and area of a circle, including dissection arguments.**		
Graphs F.IF.7a-2 F.IF.7b F.IF.7e-1 F.BF.3-1 F.BF.3-4 HS-Int.2	Graphs **and compares** exponential, quadratic, **square root, cube root, piece-wise-defined functions (including step functions and absolute value functions),** identifying intercepts, maxima and minima, end behavior and zeros. Identifies and illustrates the effect on linear and quadratic graphs of replacing f(x) by f(x)+k, kf(x), f(kx), and f(x+k) for specific values of k. Finds the values of k given the graphs.	**Graphs exponential and quadratic functions,** identifying intercepts, maxima and minima, end behavior and zeros**.** Identifies and illustrates the effect on linear and quadratic graphs of replacing f(x) by one of the following: f(x)+k, kf(x), f(kx), and f(x+k) for specific values of k. **Finds the values of *k* given the graphs.**	Identifies intercepts, maxima and minima, **end behavior** and zeros from graphs Identifies the effect on linear and quadratic graphs of replacing f(x) by one of the following f(x)+k, ***k*f(*x*), f(*kx*), and f(*x*+*k*)** for specific values of k.	Identifies intercepts, maxima and minima and zeros from graphs. Identifies the effect on linear and quadratic graphs of replacing f(x) by f(x)+k for specific values of k.
Multiple Representations of Functions A.REI.7 F.Int.1-4 F.BF.1b-1 F.IF.8a F.IF.8b F.IF.9-4 HS.Int.1	Writes quadratic or exponential functions defined by expressions in different but equivalent forms to reveal and explain different properties of the functions, including zeros, extreme values, symmetry and percent rate of change. Within a context, compares properties of two functions represented in different ways (algebraically, graphically, numerically or verbally). **Solves a simple system of linear and quadratic equations algebraically or graphically.**	**Writes quadratic or exponential functions defined by expressions in different but equivalent forms to reveal and explain different properties of the functions,** including zeros, extreme values, **symmetry** and percent rate of change. **Within a routine context,** compares properties of two functions **represented in different ways (algebraically, graphically, numerically or verbally).** **Given a graph, solves a system of a linear and quadratic equations.**	Given equivalent expressions, identifies features of **quadratic or** exponential functions, including zeros, extreme values and percent rate of change. **Compares properties of two functions within the same representation.**	Given equivalent expressions, identifies features of exponential functions, including zeros, extreme values and percent rate of change.

	Math II: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Combines standard functions using arithmetic operations.			
Number Systems N.RN.B-1 N.CN.1 N.CN.2 N.CN.7	Identifies rational, irrational and complex numbers. Uses commutative, associative and distributive properties to **perform operations with complex numbers.** Calculates sums and products of two rational and/or irrational numbers **and determines whether and generalizes when the sums and products are rational or irrational.**	Identifies rational, irrational and complex numbers. Uses commutative, associative and **distributive** properties to perform operation with complex numbers. **Calculates sums and products of two rational and/or irrational numbers.**	Identifies rational, irrational and complex numbers. Uses commutative and associative properties to add and subtract complex numbers **and to multiply a complex number by a real number.**	Identifies rational, irrational and complex numbers. Uses commutative and associative properties to add and subtract complex numbers.

	Math II: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Reasoning HS.C.2.1 HS.C.3.1 HS.C.3.2 HS.C.5.5 HS.C.8.1 HS.C.9.1 HS.C.12.1 HS.C.12.2 HS.C.14.5 HS.C.14.6 HS.C.15.14 HS.C.16.2 HS.C.18.3	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a **complete response** based on: • the principle that the graph of an equation in two variables is the set of all its solutions • reasoning about linear and exponential growth • properties of rational numbers or irrational numbers • transformations of functions • a chain of reasoning to justify or refute algebraic, function- related, or linear equation propositions or conjectures	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a response based on: • the principle that the graph of an equation in two variables is the set of all its solutions • reasoning about linear and exponential growth • properties of rational numbers or irrational numbers • transformations of functions • a chain of reasoning to justify or refute algebraic, function- related, or linear equation propositions or conjectures	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **partial response** based on: • the principle that the graph of an equation in two variables is the set of all its solutions • reasoning about linear and exponential growth • properties of rational numbers or irrational numbers • transformations of functions • a chain of reasoning to justify or refute algebraic, function- related, or linear equation propositions or conjectures	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on: • the principle that the graph of an equation in two variables is the set of all its solutions • reasoning about linear and exponential growth • properties of rational numbers or irrational numbers • transformations of functions • a chain of reasoning to justify or refute algebraic, function- related, or linear equation propositions or conjectures

	Math II: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• a given equation or system of equations by:	• a given equation or system of equations by:	• a given equation or system of equations by:	• a given equation or system of equations by:
	• using a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • providing an **efficient and** logical progression of steps or chain of reasoning with appropriate justification • performing precise calculations • using correct grade- level vocabulary, symbols and labels • providing a justification of a conclusion • determining whether an argument or conclusion is generalizable. • evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate) – and **providing a counter-example where applicable**	• using a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • providing a **logical** progression of steps or chain of reasoning **with appropriate justification** • **performing precise calculations** • using **correct** grade-level vocabulary, symbols and labels • providing a **justification** of a conclusion • **evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate).**	• **using a logical approach based on a conjecture and/or stated assumptions** • **providing a logical, but incomplete, progression of steps or chain of reasoning** • **performing minor calculation errors** • using **some** grade-level vocabulary, symbols and labels • providing a partial justification of a conclusion based on own calculations • **evaluating the validity of others' approaches and conclusions**	• using an approach based on a conjecture and/or stated or faulty assumptions • providing an incomplete or illogical progression of steps or chain of reasoning • making an intrusive calculation error • using limited grade-level vocabulary, symbols and labels • providing a partial justification of a conclusion based on own calculations

	Math II: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling HS.D.1-2 HS.D.2-1 HS.D.2-2 HS.D.2-6 HS.D.2-9 HS.D.2-11	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and making	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions **and making**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and

	Math II: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
HS.D.3-2b HS.D.3-4b	assumptions and approximations to simplify a real-world situation (includes micro-models) • mapping relationships between important quantities • selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusion • **analyzing and/or creating constraints, relationships and goals** • interpreting mathematical results in the context of the situation	**assumptions** and approximations to simplify a real-world situation **(includes micro-models)** • **mapping relationships between** important quantities • **selecting appropriate** tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results **in the context of the situation**	approximations to simplify a real-world situation • **illustrating relationships between** important quantities • using provided tools to create models • analyzing relationships mathematically **between important quantities** to draw conclusions • **interpreting mathematical results in a simplified context**	approximations to simplify a real-world situation • identifying important quantities • using provided tools to create models • analyzing relationships mathematically to draw conclusions

Integrated Math III Performance Level Descriptors

	Math III: Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Equivalent Expressions A-SSE.2-3 A-SSE.2-6	Uses the structure of polynomial, exponential and rational expressions to create equivalent expressions **that aid in solving mathematical problems.**	Uses the structure of polynomial, exponential **and rational** expressions to create equivalent expressions.	Uses the structure of **polynomial** and exponential expressions to create equivalent expressions.	Uses the structure of exponential expressions to create equivalent expressions.
Interpreting Functions A-APR.2 A-APR.3-1 F-IF.4-5	Uses mathematical properties and relationships to reveal key features of polynomial, rational, trigonometric and logarithmic functions to sketch graphs **and identify characteristics of the relationship between two quantities.** Identifies zeros and sketches graphs of quadratics and cubics, **applying the remainder theorem where appropriate.**	**Interprets key features of graphs and tables**, and uses mathematical properties and relationships to reveal key features of polynomial and rational functions to sketch graphs. Identifies zeros **and sketches graphs** of easily factorable quadratics and cubics.	**Uses provided mathematical properties and relationships to reveal key features of polynomial functions to sketch graphs.** Identifies zeros of easily factorable quadratics and **cubics.**	Given a graph of a polynomial function, identifies key features. Identifies zeros of easily factorable quadratics.
Rate of Change F-IF.6-5 F-IF.6-10	Calculates and interprets the average rate of change of polynomial, **logarithmic or trigonometric functions** (presented symbolically or as a table) over a specified interval, and estimates the rate of change from a graph. **Compares rates of change associated with different intervals.**	Calculates the average rate of change of polynomial functions (presented symbolically or as a table) over a specified interval, **and estimates the rate of change from a graph.**	Calculates the average rate of change of polynomial functions (presented **symbolically** or as a table) over a specified interval.	Calculates the average rate of change of polynomial functions (presented as a graph or table) over a specified interval.
Solving Equations A-SSE.4-2 A-REI.2 A-REI.11-2 A.Int.1	Solves mathematical equations directly and indirectly using structure, technology, graphs, formulas, tables of values and successive approximations, **and gives examples of how extraneous solutions may arise.**	Solves mathematical equations directly and indirectly using structure, technology, graphs, formulas, tables of values and successive approximations**, and identifies extraneous solutions.**	Solves mathematical equations directly **and indirectly using structure**, technology, graphs, formulas, tables of values and successive approximations.	Solves mathematical equations directly using technology, graphs, formulas, tables of values and successive approximations.
Modeling with Geometry G-GPE.6 G-Int.1	Uses geometric relationships in the coordinate plane to solve problems involving area, perimeter and ratios of lengths. Applies geometric concepts **and**	Uses geometric relationships in the coordinate plane to solve problems involving area, perimeter **and ratios of lengths.** Applies geometric concepts to describe,	Uses provided geometric relationships and the coordinate plane to solve problems involving area and perimeter. Applies geometric concepts to describe, model and solve applied problems related	Uses provided geometric relationships and the coordinate plane to solve problems involving area and perimeter. Applies geometric concepts to describe, model and solve applied problems related

	Math III: Sub-Claim A The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	trigonometric ratios to describe, model and solve applied problems **(including design problems)** related to the Pythagorean theorem, **density,** geometric shapes, their measures and properties.	model and solve applied problems related to the Pythagorean theorem, geometric shapes, their measures and properties.	to the **Pythagorean theorem**, geometric shapes, their measures and properties.	to geometric shapes, their measures and properties.
Statistics & Probability S-IC.3-1	Determines **why** a sample survey, experiment or observational study is most appropriate. **Given an inappropriate choice of a sample survey, experiment or observational study, identifies and supports the appropriate choice, and determines how to change the scenario to make the choice appropriate.**	**Determines whether** a sample survey, experiment or observational study **is most appropriate.**	Identifies whether a given scenario represents a sample survey, experiment or observational study.	Identifies characteristics of a sample survey, experiment or observational study.

	Math III: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Interpreting Functions F-IF.7c F-IF.7e-2 F-IF.9-5 F-Int.1-5	Given multiple functions **in different forms** (algebraically, graphically, numerically and by verbal description), writes multiple equivalent versions of the functions, and identifies **and compares** key features. Graphs polynomial **trigonometric functions, and logarithmic functions**, showing key features.	Given functions represented algebraically, graphically, numerically and by verbal description, writes **multiple** equivalent versions of the functions and identifies key features. Graphs polynomial functions, showing key features.	Given functions represented algebraically, graphically, numerically and by verbal description, **writes equivalent versions of the functions**, and identifies key features. **Graphs polynomial functions, showing key features.**	Given functions represented algebraically, graphically, numerically and by verbal description, identifies key features.
Expressions and Equations A-APR.6 F-Int.3 F-BF.Int.2 HS.Int.3-3	Solves **multi-step** contextual word problems involving polynomial and trigonometric equations, using inverses where appropriate. Constructs linear, quadratic and exponential function models in multi-step contextual problems.	Solves problems involving polynomial and **trigonometric equations**, using inverses where appropriate. Constructs linear, **quadratic and** exponential function models in multi-step contextual problems with mathematical prompting.	Solves problems involving polynomial equations, **using inverses where appropriate**. Constructs linear **and exponential** function models in multi-step contextual problems with mathematical prompting.	Solves problems involving polynomial equations. Constructs linear function models in multi-step contextual problems with mathematical prompting.

	Math III: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Rewrites simple rational expressions using inspection **or long division.**	**Rewrites simple rational expressions using inspection.**		
Function Transformations F-BF.3-2 F-BF.3-3 F-BF.3-5	Identifies the effects of **multiple** transformations on graphs of polynomial, exponential, logarithmic and trigonometric functions, and determines if the resulting function is even or odd. *(Identical to Original Level 4)*	Identifies the effects of a single transformation on graphs of polynomial, exponential, logarithmic and trigonometric functions – including $f(x)$+k, $kf(x)$, **$f(kx)$, and $f(x+k)$,** and determines if the resulting function is even or odd.	Identifies the effects of a single transformation on graphs of polynomial, exponential, **logarithmic and trigonometric** functions limited to $f(x)+k$ and **$kf(x)$, and determines if the resulting function is even or odd.**	Identifies the effects of a single transformation on graphs of polynomial and exponential functions. limited to $f(x)+k$.
Trigonometry F-TF.1 F-TF.8-2	Given a trigonometric value and quadrant for an angle, utilizes the structure and relationships of trigonometry, including relationships in the unit circle, to identify other trigonometric values for that angle, **and describes the relationship between the radian measure and the subtended arc in the circle.**	Given a trigonometric value and quadrant for an angle, utilizes the structure and relationships of trigonometry, **including relationships in the unit circle,** to identify other trigonometric values for that angle.	Given a trigonometric value **and quadrant** for an angle, utilizes the structure and relationships of trigonometry to identify other trigonometric values for that angle.	Given a trigonometric value for an angle in quadrant 1, utilizes the structure and relationships of trigonometry to identify other trigonometric values for that angle.
Data – Univariate and Bivariate S-ID.4 S-ID.6a-2	Uses the means and standard deviations of data sets to fit them to normal distributions. Fits **trigonometric functions** to data in order to solve multi-step contextual problem. **Determines when models fitted to data are inappropriate.**	Uses the means and standard deviations of data sets to fit them to normal distributions. **Uses fitted trigonometric functions to solve a multi-step contextual problem.**	**Uses** the means and standard deviations of data sets to **fit them to normal distributions**.	Identify the mean and standard deviation for a given normal distribution.
Inference S-IC.2 S-IC.Int.1	Uses sample data to make, **justify and critique** inferences and **conclusions** about the corresponding population. **Decides if specified models are consistent with results from given data-generating processes.**	**Uses** sample data to make inferences about the corresponding population.	Identifies when sample data can be used to make inferences about the corresponding population.	Identifies when sample data can be used to make inferences about the corresponding population.
Properties and Theorems	Applies properties and theorems of angles, segments and arcs in circles to	Applies properties and theorems of angles, segments and arcs in circles to	Applies properties and theorems of angles, segments and **arcs in circles** to	Applies provided properties and theorems of angles and segments to

	Math III: Sub-Claim B The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
G-C.2 G-C.B G-GPE.1-1 G-GPE.1-2 G-GMD.4	solve problems **and model relationships.** Completes the square to find the center and radius of a circle given by an equation. Identifies the shapes of two-dimensional cross-sections of three-dimensional objects **and identifies three-dimensional objects generated by rotations of two-dimensional objects.**	solve problems. **Completes the square to find the center and radius of a circle given by an equation.** Identifies the shapes of two--dimensional cross-sections of three-dimensional objects.	solve problems. Identifies the shapes of two- dimensional cross-sections of three-dimensional objects.	solve problems. Identifies the shapes of two- dimensional cross-sections of three-dimensional objects **when the cross-section is parallel or perpendicular to the base.**
Geometric Constructions G-CO.D	Makes geometric constructions: copying a segment, copying an angle, bisecting an angle, bisecting a segment, including the perpendicular bisector of a line segment. Given a line and a point not on the line, **uses a variety of tools and methods** to construct perpendicular and parallel lines, **equilateral triangles, squares and regular hexagons inscribed in circles.**	Makes geometric constructions: copying a segment, copying an angle, bisecting an angle, bisecting a segment, including the perpendicular bisector of a line segment. **Given a line and a point not on the line, constructs perpendicular and parallel lines.**	Makes basic geometric constructions: copying a segment, copying an angle, **bisecting an angle, bisecting a segment, including the perpendicular bisector of a line segment.**	Makes basic geometric constructions: copying a segment, copying an angle.

	Math III: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Reasoning HS.C.4.1 HS.C.5.4 HS.C.5.11 HS.C.6.2 HS.C.6.4 HS.C.7.1 HS.C.8.2 HS.C.8.3 HS.C.9.2 HS.C.11.1	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a **complete response** based on: • a given equation or system of equations • a chain of reasoning to justify or refute algebraic, function, or number system related propositions or conjectures, • data	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a response based on: • a given equation or system of equations • a chain of reasoning to justify or refute algebraic, function, or number system related propositions or conjectures • data • the graph of an equation in two	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **partial response** based on: • a given equation or system of equations • a chain of reasoning to justify or refute algebraic, function, or number system related propositions or conjectures • data • the graph of an equation in two	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on: • a given equation or system of equations • a chain of reasoning to justify or refute algebraic, function, or number system related propositions or conjectures • data • the graph of an equation in two

	Math III: Sub-Claim C In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
HS.C.13.1 HS.C.13.2 HS.C.13.3 HS.C.14.3 HS.C.16.3 HS.C.17.2 HS.C.17.3 HS.C.17.4 HS.C.17.5 HS.C.18.4 HS.C.CCR	• the graph of an equation in two variables, the principle that a graph is a solution set or the relationship between zeros and factors of polynomials • trigonometric functions and the unit circle • transformations of functions, OR • properties of exponents, by: • using a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • providing an efficient and logical progression of steps or chain of reasoning with appropriate justification • performing precise calculations • using correct grade-level vocabulary, symbols and labels • providing a justification of a conclusion • **determining whether an argument or conclusion is generalizable** • evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate) – and **providing a counter- example where applicable**	variables, the principle that a graph is a solution set or the relationship between zeros and factors of polynomials • trigonometric functions and the unit circle • transformations of functions, OR • properties of exponents, by: • using a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • **providing a logical progression of steps or chain of reasoning with appropriate justification** • performing **precise calculations** • using **correct** grade-level vocabulary, symbols and labels • providing a **justification** of a conclusion • **evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate).**	variables, the principle that a graph is a solution set or the relationship between zeros and factors of polynomials • trigonometric functions and the unit circle • transformations of functions, OR • properties of exponents by: • using a **logical** approach based on a conjecture and/or stated assumptions • providing a **logical, but incomplete,** progression of steps or chain of reasoning • performing minor calculation errors • using **some** grade-level vocabulary, symbols and labels • providing a partial justification of a conclusion based on own calculations • **evaluating the validity of others' approaches and conclusions**	variables, the principle that a graph is a solution set or the relationship between zeros and factors of polynomials • trigonometric functions and the unit circle • transformations of functions, OR • properties of exponents by : • using an approach based on a conjecture and/or stated or faulty assumptions • providing an incomplete or illogical progression of steps or chain of reasoning • making an intrusive calculation error • using limited grade-level vocabulary, symbols and labels • providing a partial justification of a conclusion based on own calculations

	Math III: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling HS.D.2-4 HS.D.2-7 HS.D.2-10 HS.D.2-13 HS.D.3-5b HS.D.3-6 HS.D.CCR	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • mapping relationships between important quantities • selecting appropriate tools to create the appropriate model • analyzing relationships mathematically between important quantities (either given or created) to draw conclusions • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • **mapping** relationships between important quantities • selecting appropriate tools to create **the appropriate** model • analyzing relationships mathematically between important quantities **(either given or created)** to draw conclusions • interpreting mathematical results **in the context of the situation** • reflecting on whether the results make sense	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships between important quantities** • using provided tools to create **appropriate but inaccurate** model • analyzing relationships mathematically **between important given quantities to draw conclusions** • **interpreting mathematical results in a simplified context** • **reflecting on whether the results make sense**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • identifying important given quantities • using provided tools to create inaccurate model • analyzing relationship mathematically to draw conclusions
	• improving the model if it has not served its purpose • writing a complete, clear and correct expression, equation or function to describe a situation • **analyzing and/or creating constraints, relationships and goals** • **justifying and defending models which lead to a conclusion** • using geo. to solve design problems • using securely held content, accurately reporting **and justifying the conclusion** • identifying and using relevant data from a data source • making an appropriate evaluation or recommendation.	• **improving** the model if it has not served its purpose • writing a **complete, clear and correct** expression, equation or function to describe a situation • using geometry to solve design problems • using securely held content, **briefly, but accurately** reporting the conclusion • **identifying and using relevant data** from a data source • making an **appropriate** evaluation or recommendation.	• **modifying the model if it has not served its purpose** • writing an expression, equation or function to describe a situation • using geometry to solve design problems • using securely held content, incompletely reporting a conclusion • **selecting and using some relevant data** from a data source • making an evaluation or recommendation.	• writing an expression, equation or function to describe a situation • using securely held content, incompletely reporting a conclusion, with some inaccuracy within the reporting • indiscriminately using data from a data source.

Appendix C

CMAS Science and Social Studies Prepared Graduate Competencies and Grade Level Expectations

Grade 4 Social Studies
Standards, Prepared Graduate Competencies, and Grade Level Expectations

1	History
PGC 1	Develop an understanding of how people view, construct, and interpret history
GLE 1	Organize and sequence events to understand the concepts of chronology and cause and effect in the history of Colorado
PGC 2	Analyze key historical periods and patterns of change over time within and across nations and cultures
GLE 2	The historical eras, individuals, groups, ideas and themes in Colorado history and their relationships to key events in the United States
2	**Geography**
PGC1	Develop spatial understanding, perspectives, and personal connections to the world
GLE 1	Use several types of geographic tools to answer questions about the geography of Colorado
PGC 2	Examine places and regions and the connections among them
GLE 2	Connections within and across human and physical systems are developed
3	**Economics (PFL)**
PGC 1	Understand the allocation of scarce resources in societies through analysis of individual choice, market interaction, and public policy
GLE 1	People respond to positive and negative incentives
PGC 2	Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)
GLE 2	The relationship between choice and opportunity cost (PFL)
4	**Civics**
PGC 1	Analyze and practice rights, roles, and responsibilities of citizens
GLE 1	Analyze and debate multiple perspectives on an issue
PGC 2	Analyze the origins, structure, and functions of governments and their impacts on societies and citizens
GLE 2	The origins, structure, and functions of the Colorado government

Grade 7 Social Studies
Standards, Prepared Graduate Competencies, and Grade Level Expectations

1	History
PGC 1	Develop an understanding of how people view, construct, and interpret history
GLE 1	Seek and evaluate multiple historical sources with different points of view to investigate a historical question and to formulate and defend a thesis with evidence
PGC 2	Analyze key historical periods and patterns of change over time within and across nations and cultures
GLE 2	The historical eras, individuals, groups, ideas and themes within regions of the Eastern Hemisphere and their relationships with one another
2	**Geography**
PGC1	Develop spatial understanding, perspectives, and personal connections to the world
GLE 1	Use geographic tools to gather data and make geographic inferences and predictions
PGC 2	Examine places and regions and connections among them
GLE 2	Regions have different issues and perspectives
3	**Economics (PFL)**
PGC 1	Understand the allocation of scarce resources in societies through analysis of individual choice, market interaction, and public policy
GLE 1	Supply and demand influence price and profit in a market economy
PGC 2	Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)
GLE 2	The distribution of resources influences economic production and individual choices (PFL)
4	**Civics**
PGC 1	Analyze and practice rights, roles, and responsibilities of citizens
GLE 1	Compare how various nations define the rights, responsibilities, and roles of citizens
PGC 2	Analyze the origins, structure, and functions of governments and their impacts on society and citizens
GLE 2	Different forms of government and international organizations and their influence in the world community

Grade 5 Science
Standards, Prepared Graduate Competencies, and Grade Level Expectations

1	Physical Science
PGC 1	Apply an understanding of atomic and molecular structure to explain the properties of matter, and predict outcomes of chemical and nuclear reactions
GLE 1	Mixtures of matter can be separated regardless of how they were created; all weight and mass of the mixture are the same as the sum of weight and mass of its parts
2	**Life Science**
PGC1	Analyze how various organisms grow, develop and differentiate during their lifetimes based on an interplay between genetics and their environment
GLE 1	All organisms have structures and systems with separate functions
PGC 2	Analyze how the relationship between structure and function in living systems at a variety of organizational levels, and recognize living systems' dependence on natural selection
GLE 2	Human body systems have basic structures, functions, and needs
3	**Earth Systems Science**
PGC 1	Describe how humans are dependent on the diversity of resources provided by Earth and Sun
GLE 1	Earth and sun provide a diversity of renewable and nonrenewable resources
PGC 2	Evaluate evidence that Earth's geosphere, atmosphere, hydrosphere, biosphere interact as a complex system
GLE 2	Earth’s surface changes constantly through a variety of processes and forces
GLE 3	Weather conditions change because of the uneven heating of Earth’s surface by the Sun’s energy. Weather changes are measured by differences in temperature, air pressure, wind, and water in the atmosphere and type of precipitation

Grade 8 Science
Standards, Prepared Graduate Competencies, and Grade Level Expectations

1	Physical Science
PGC 1	Observe, explain, and predict natural phenomena governed by Newton's laws of motion, acknowledging the limitations of their application to very small or very fast objects
GLE 1	Identify and calculate the direction and magnitude of forces that act on an object, and explain the results in the object's change of motion
PGC 2	Apply an understanding that energy exists in various forms, and its transformation and conservation occur in processes that are predictable and measurable
GLE 2	There are different forms of energy, and those forms of energy can be changed from one form to another— but total energy is conserved
GLE 4	Recognize that waves such as electromagnetic, sound, seismic, and water have common characteristics and unique properties
PGC 3	Apply an understanding of atomic and molecular structure to explain the properties of matter, and predict outcomes of chemical and nuclear reactions
GLE 3	Distinguish between physical and chemical changes, noting that mass is conserved during any change
2	**Life Science**
PGC1	Explain and illustrate with examples how living systems interact with the biotic and abiotic environment
GLE 1	Human activities can deliberately or inadvertently alter ecosystems and their resiliency
PGC 2	Analyze how various organisms grow, develop, and differentiate during their lifetimes based on an interplay between genetics and their environment
GLE 2	Organisms reproduce and transmit genetic information (genes) to offspring, which influences individuals' traits in the next generation
3	**Earth Systems Science**
PGC 1	Evaluate evidence that Earth's geosphere, atmosphere, hydrosphere, and biosphere interact as a complex system
GLE 1	Weather is a result of complex interactions of Earth's atmosphere, land and water, that are driven by energy from the sun, and can be predicted and described through complex models
GLE 2	Earth has a variety of climates defined by average temperature, precipitation, humidity, air pressure, and wind that have changed over time in a particular location
PGC 2	Describe and interpret how Earth's geologic history and place in space are relevant to our understanding of the processes that have shaped our planet
GLE 3	The solar system is comprised of various objects that orbit the Sun and are classified based on their characteristics
GLE 4	The relative positions and motions of Earth, Moon, and Sun can be used to explain observable effects such as seasons, eclipses, and Moon phases

High School Science
Standards, Prepared Graduate Competencies, and Grade Level Expectations

1	Physical Science
PGC 1	Observe, explain, and predict natural phenomena governed by Newton's laws of motion, acknowledging the limitations of their application to very small or very fast objects
GLE 1	Newton's laws of motion and gravitation describe the relationships among forces acting on and between objects, their masses, and changes in their motion – but have limitations
PGC 2	Apply an understanding that energy exists in various forms, and its transformation and conservation occur in processes that are predictable and measurable
GLE 2	Matter has definite structure that determines characteristic physical and chemical properties
GLE 3	Matter can change form through chemical or nuclear reactions abiding by the laws of conservation of mass and energy
GLE 4	Atoms bond in different ways to form molecules and compounds that have definite properties
PGC 3	Apply an understanding of atomic and molecular structure to explain the properties of matter, and predict outcomes of chemical and nuclear reactions
GLE 5	Energy exists in many forms such as mechanical, chemical, electrical, radiant, thermal, and nuclear, that can be quantified and experimentally determined
GLE 6	When energy changes form, it is neither created not destroyed; however, because some is necessarily lost as heat, the amount of energy available to do work decreases
2	**Life Science**
PGC1	Explain and illustrate with examples how living systems interact with the biotic and abiotic environment
GLE 1	Matter tends to be cycled within an ecosystem, while energy is transformed and eventually exits an ecosystem
GLE 2	The size and persistence of populations depend on their interactions with each other and on the abiotic factors in an ecosystem
PGC 2	Analyze the relationships between structure and function in living systems at a variety of organizational levels, and recognize living systems' dependence on natural selection
GLE 3	Cellular metabolic activities are carried out by biomolecules produced by organisms
GLE 4	The energy for life primarily derives from the interrelated processes of photosynthesis and cellular respiration. Photosynthesis transforms the sun's light energy into the chemical energy of molecular bonds. Cellular respiration allows cells to utilize chemical energy when these bonds are broken.
GLE 5	Cells use passive and active transport of substances across membranes to maintain relatively stable intracellular environments
GLE 6	Cells, tissues, organs, and organ systems maintain relatively stable internal environments, even in the face of changing external environments
PGC3	Analyze how various organisms grow, develop, and differentiate during their lifetimes based on an interplay between genetics and their environment
GLE 7	Physical and behavioral characteristics of an organism are influenced to varying degrees by heritable genes, many of which encode instructions for the production of proteins

GLE 8	Multicellularity makes possible a division of labor at the cellular level through the expression of select genes, but not the entire genome.
PGC4	Explain how biological evolution accounts for the unity and diversity of living organisms
GLE 9	Evolution occurs as the heritable characteristics of populations change across generations and can lead populations to become better adapted to their environment
3	**Earth Systems Science**
PGC 1	Describe and interpret how Earth's geologic history and place in space are relevant to our understanding of the processes that have shaped our planet
GLE 1	The history of the universe, solar system and Earth can be inferred from evidence left from past events
GLE 2	As part of the solar system, Earth interacts with various extraterrestrial forces and energies such as gravity, solar phenomena, electromagnetic radiation, and impact events that influence the planet's geosphere, atmosphere, and biosphere in a variety of ways
PGC 2	Evaluate evidence that Earth's geosphere, atmosphere, hydrosphere, and biosphere interact as a complex system
GLE 3	The theory of plate tectonics helps explain geological, physical, and geographical features of Earth
GLE 4	Climate is the result of energy transfer among interactions of the atmosphere, hydrosphere, geosphere, and biosphere
GLE 6	The interaction of Earth's surface with water, air, gravity, and biological activity causes physical and chemical changes
GLE 7	Natural hazards have local, national and global impacts such as volcanoes, earthquakes, tsunamis, hurricanes, and thunderstorms
PGC 3	Describe how humans are dependent on the diversity of resources provided by Earth and Sun
GLE 5	There are costs, benefits, and consequences of exploration, development, and consumption of renewable and nonrenewable resources

Appendix D

CMAS Mathematics, ELA, and CSLA Assessed Standards

Grade 3 ELA and CSLA
Reading, Writing, and Communicating Standards

Colorado Academic Standards	Domain	Standard Descriptor
3.2.1.a.i 3.2.1.a.iii 3.2.1.a.v	Reading: Literature	Key Ideas & Details
3.2.1.b.i 3.2.1.b.iii 3.2.1.b.iv	Reading: Literature	Craft & Structure
3.2.1.c.i 3.2.1.c.iii	Reading: Literature	Integration of Knowledge & Ideas
3.2.2.a.i 3.2.2.a.ii 3.2.2.a.iii	Reading: Informational Text	Key Ideas & Details
3.2.2.b.i 3.2.2.b.ii 3.2.2.b.iii	Reading: Informational Text	Craft & Structure
3.2.2.c.i 3.2.2.c.ii 3.2.2.c.iii	Reading: Informational Text	Integration of Knowledge & Ideas
3.2.3.c 3.2.3.c.i 3.2.3.c.ii 3.2.3.c.iv 3.2.3.c.v 3.2.3.d 3.2.3.d.i 3.2.3.d.ii 3.2.3.d.iii 3.2.3.3	Language	Conventions of Standard English Knowledge of Language Vocabulary Acquisition and Use

Grade 4 ELA and CSLA
Reading, Writing, and Communicating Standards

Colorado Academic Standards	Domain	Standard Descriptor
4.2.1.a.i 4.2.1.a.iii 4.2.1.a.iv	Reading: Literature	Key Ideas & Details
4.2.1.b.i 4.2.1.b.ii 4.2.1.b.iii	Reading: Literature	Craft & Structure
4.2.1.c.i 4.2.1.c.ii	Reading: Literature	Integration of Knowledge & Ideas
4.2.2.a.i 4.2.2.a.ii 4.2.2.a.iii	Reading: Informational Text	Key Ideas & Details
4.2.2.b.i 4.2.2.b.ii 4.2.2.c.iii	Reading: Informational Text	Craft & Structure
4.2.2.c.i 4.2.2.c.ii 4.2.2.c.iii	Reading: Informational Text	Integration of Knowledge & Ideas
4.2.3.c 4.2.3.c.i 4.2.3.c.ii 4.2.3.c.vii 4.2.3.d 4.2.3.d.i 4.2.3.d.ii 4.2.3.d.iii 4.2.3.e	Language	Conventions of Standard English Knowledge of Language Vocabulary Acquisition and Use

Grade 5 ELA
Reading, Writing, and Communicating Standards

Colorado Academic Standards	Domain	Standard Descriptor
5.2.1.b.i 5.2.1.b.ii 5.2.1.b.iii	Reading: Literature	Key Ideas & Details
5.2.1.c.i 5.2.1.c.iii 5.2.1.c.iv	Reading: Literature	Craft & Structure
5.2.1.d.i 5.2.1.d.ii	Reading: Literature	Integration of Knowledge & Ideas
5.2.2.a.i 5.2.2.a.ii 5.2.2.a.iii	Reading: Informational Text	Key Ideas & Details
5.2.2.b.i 5.2.2.b.ii 5.2.2.b.iii	Reading: Informational Text	Craft & Structure
5.2.2.c.i 5.2.2.c.ii 5.2.2.c.iii	Reading: Informational Text	Integration of Knowledge & Ideas
5.2.3.b 5.2.3.b.i 5.2.3.b.ii 5.2.3.b.iii 5.2.3.d 5.2.1.c.i 5.2.3.d.ii 5.2.1.c.ii 5.2.3.h	Language	Conventions of Standard English Knowledge of Language Vocabulary Acquisition and Use

Grade 6 ELA
Reading, Writing, and Communicating Standards

Colorado Academic Standards	Domain	Standard Descriptor
6.2.1.a.i 6.2.1.a.ii 6.2.1.a.iii	Reading: Literature	Key Ideas & Details
6.2.1.b.i 6.2.1.b.ii 6.2.1.b.iii	Reading: Literature	Craft & Structure
6.2.1.c.i 6.2.1.c.ii	Reading: Literature	Integration of Knowledge & Ideas
6.2.2.a.i 6.2.2.a.ii 6.2.2.a.iii	Reading: Informational Text	Key Ideas & Details
6.2.2.b.i 6.2.2.b.ii 6.2.2.b.iii	Reading: Informational Text	Craft & Structure
6.2.2.c.i 6.2.2.c.ii 6.2.2.c.iii	Reading: Informational Text	Integration of Knowledge & Ideas
6.2.3.a 6.2.3.a.i 6.2.3.a.iii 6.2.3.a.v 6.2.3.a.vi 6.2.3.b 6.2.3.b.i 6.2.3.b.ii 6.2.3.b.iii 6.2.3.c	Language	Conventions of Standard English Knowledge of Language Vocabulary Acquisition and Use
6.2.1.N.5 6.2.2.N.3	Literacy in History/Social Studies	Key Ideas and Details Craft and Structure Integration of Knowledge and Ideas Range of Reading and Level of Text Complexity
6.2.1.N.4 6.2.2.N.2	Literacy in Science & Technical Subjects	Key Ideas and Details Craft and Structure Integration of Knowledge and Ideas Range of Reading and Level of Text Complexity

Grade 7 ELA
Reading, Writing, and Communicating Standards

Colorado Academic Standards	Domain	Standard Descriptor
7.2.1.a.i 7.2.1.a.ii 7.2.1.a.iii	Reading: Literature	Key Ideas & Details
7.2.1.b.i 7.2.1.b.ii 7.2.1.b.iii	Reading: Literature	Craft & Structure
7.2.1.c.i 7.2.1.c.ii	Reading: Literature	Integration of Knowledge & Ideas
7.2.2.a.i 7.2.2.a.ii 7.2.2.a.iii	Reading: Informational Text	Key Ideas & Details
7.2.2.b.i 7.2.2.b.ii 7.2.2.b.iv	Reading: Informational Text	Craft & Structure
7.2.2.c.i 7.2.2.c.ii 7.2.2.c.iii	Reading: Informational Text	Integration of Knowledge & Ideas
7.2.3.a 7.2.3.a.i 7.2.3.a.iii 7.2.3.a.iv 7.2.3.a.v 7.2.3.b 7.2.3.b.i 7.2.3.b.iii 7.2.3.b.iv 7.2.3.c	Language	Conventions of Standard English Knowledge of Language Vocabulary Acquisition and Use
7.2.1.N.3 7.2.2.N.3	Literacy in History/Social Studies	Key Ideas and Details Craft and Structure Integration of Knowledge and Ideas Range of Reading and Level of Text Complexity
7.2.1.N.2 7.2.2.N.2	Literacy in Science & Technical Subjects	Key Ideas and Details Craft and Structure Integration of Knowledge and Ideas Range of Reading and Level of Text Complexity

Grade 8 ELA
Reading, Writing, and Communicating Standards

Colorado Academic Standards	Domain	Standard Descriptor
8.2.1.a.i 8.2.1.a.ii 8.2.1.a.iii	Reading: Literature	Key Ideas & Details
8.2.1.b.i 8.2.1.b.ii 8.2.1.b.iii	Reading: Literature	Craft & Structure
8.2.1.c.i 8.2.1.c.iv	Reading: Literature	Integration of Knowledge & Ideas
8.2.2.a.i 8.2.2.a.ii 8.2.2.a.iii	Reading: Informational Text	Key Ideas & Details
8.2.2.b.i 8.2.2.b.ii 8.2.2.b.iii	Reading: Informational Text	Craft & Structure
8.2.2.c.i 8.2.2.c.ii 8.2.2.c.iii	Reading: Informational Text	Integration of Knowledge & Ideas
8.2.3.a 8.2.3.a.iv 8.2.3.a.v 8.2.3.a.vi 8.2.3.a.vii 8.2.3.b 8.2.3.b.i 8.2.3.b.ii 8.2.3.b.iii 8.2.3.c	Language	Conventions of Standard English Knowledge of Language Vocabulary Acquisition and Use
8.2.1.N.3 8.2.2.N.3	Literacy in History/Social Studies	Key Ideas and Details Craft and Structure Integration of Knowledge and Ideas Range of Reading and Level of Text Complexity
8.2.1.N.2 8.2.2.N.2	Literacy in Science & Technical Subjects	Key Ideas and Details Craft and Structure Integration of Knowledge and Ideas Range of Reading and Level of Text Complexity

Grade 9 ELA
Reading, Writing, and Communicating Standards

Colorado Academic Standards	Domain	Standard Descriptor
9.2.1.a 9.2.1.b 10.2.1.a	Reading: Literature	Key Ideas & Details
9.2.1.c 9.2.1.d 10.2.1.b	Reading: Literature	Craft & Structure
9.2.1.e.i 10.2.1.c	Reading: Literature	Integration of Knowledge & Ideas
9.2.2.a 9.2.2.d 10.2.2.a	Reading: Informational Text	Key Ideas & Details
9.2.2.b 9.2.2.f 10.2.2.e	Reading: Informational Text	Craft & Structure
9.2.2.h 10.2.2.c 10.2.2.f	Reading: Informational Text	Integration of Knowledge & Ideas
10.2.3.a 10.2.3.a.i 10.2.3.a.ii 10.2.3.a.iii 10.2.3.b 10.2.3.b.i 10.2.3.b.ii 10.2.3.c	Language	Conventions of Standard English Knowledge of Language Vocabulary Acquisition and Use
9.2.1.N.3 9.2.2.N.2 10.2.1.N.4 10.2.2.N.3	Literacy in History/Social Studies	Key Ideas and Details Craft and Structure Integration of Knowledge and Ideas Range of Reading and Level of Text Complexity
9.2.1.N.2 9.2.2.N.1 10.2.1.N.3 10.2.2.N.2	Literacy in Science & Technical Subjects	Key Ideas and Details Craft and Structure Integration of Knowledge and Ideas Range of Reading and Level of Text Complexity

Grade 3
Mathematics Standards

Colorado Academic Standards	Domain	Standard Descriptor
3.1.3.a.i 3.1.3.a.ii 3.1.3.a.iii 3.1.3.a.iv	Operations & Algebraic Thinking	Represent and solve problems involving multiplication and division.
3.1.3.b.i 3.1.3.b.ii	Operations & Algebraic Thinking	Understand properties of multiplication and the relationship between multiplication and division.
3.1.3.c.i 3.1.3.c.ii	Operations & Algebraic Thinking	Multiply and divide within 100.
3.1.3.d.i 3.1.3.d.ii 3.1.3.d.iii 3.1.3.d.iv	Operations & Algebraic Thinking	Solve problems involving the four operations, and identify and explain patterns in arithmetic.
3.1.1.a.i 3.1.1.a.ii 3.1.1.a.iii	Number & Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic. [1] [1] A range of algorithms may be used.
3.1.2.a.i 3.1.2.a.ii 3.1.2.a.iii 3.1.2.a.iii.1 3.1.2.a.iii.2 3.1.2.a.iii.3 3.1.2.a.iii.4 3.1.2.a.iii.5 3.1.2.a.iii.6	Number & Operations—Fractions[1] [1] Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.	Develop understanding of fractions as numbers.
3.4.3.a.i 3.4.3.a.ii 3.4.3.a.iii 3.4.3.a.iv 3.4.3.a.v	Measurement & Data	Solve problems involving measurement and estimation.
3.3.1.a.i 3.3.1.a.ii 3.3.1.a.iii	Measurement & Data	Represent and interpret data.
3.4.2.a.i 3.4.2.a.ii 3.4.2.a.iii	Measurement & Data	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
3.4.2.c 3.4.2.c.i 3.4.2.c.ii 3.4.2.c.iii	Measurement & Data	Geometric measurement: recognize perimeter.
3.4.1.a.i 3.4.1.a.i.1 3.4.1.a.ii	Geometry	Reason with shapes and their attributes.

Grade 4
Mathematics Standards

Colorado Academic Standards	Domain	Standard Descriptor
4.1.3.b.i 4.1.3.b.ii 4.1.3.b.iii 4.1.3.b.iv 4.1.3.b.v 4.1.3.b.vi	Operations & Algebraic Thinking	Use the four operations with whole numbers to solve problems.
4.2.1.b.i 4.2.1.b.ii 4.2.1.b.iii 4.2.1.b.iv	Operations & Algebraic Thinking	Gain familiarity with factors and multiples.
4.2.1.a	Operations & Algebraic Thinking	Generate and analyze patterns.
4.1.1.a.i 4.1.1.a.ii 4.1.1.a.iii 4.1.1.a.iv	Number & Operations in Base Ten	Generalize place value understanding for multi-digit whole numbers.
4.1.3.a.i 4.1.3.a.ii 4.1.3.a.iii 4.1.3.a.iv	Number & Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.
4.1.2.a.ii 4.1.2.a.iii	Number & Operations - Fractions	Extend understanding of fraction equivalence and ordering.
4.1.2.b.i 4.1.2.b.i.2 4.1.2.b.i.3 4.1.2.b.ii 4.1.2.b.ii.1 4.1.2.b.ii.2 4.1.2.b.ii.3	Number & Operations - Fractions	Build fractions from unit fractions.
4.1.1.b.i 4.1.1.b.ii 4.1.1.b.iii	Number & Operations - Fractions	Understand decimal notation for fractions, and compare decimal fractions.
4.4.1.a.i 4.4.1.a.ii 4.4.1.a.iii 4.4.1.a.iv 4.4.1.a.v	Measurement & Data	Solve problems involving measurement and conversion of measurements.
4.3.1.a 4.3.1.b	Measurement & Data	Represent and interpret data.
4.4.1.b.i 4.4.1.b.ii 4.4.1.b.iii 4.4.1.b.iv	Measurement & Data	Geometric measurement: understand concepts of angle and measure angles.
4.4.2.a 4.4.2.b 4.4.2.c 4.4.2.d	Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Grade 5
Mathematics Standards

Colorado Academic Standards	Domain	Standard Descriptor
5.1.2.d.i 5.1.2.d.ii	Operations & Algebraic Thinking	Write and interpret numerical expressions.
5.2.1.a 5.2.1.b 5.2.1.c 5.2.1.d	Operations & Algebraic Thinking	Analyze patterns and relationships.
5.1.1.a 5.1.1.a.i 5.1.1.a.ii 5.1.1.b 5.1.1.b.i 5.1.1.b.ii 5.1.1.c	Number & Operations in Base Ten	Understand the place value system.
5.1.2.a 5.1.2.b 5.1.2.b.i 5.1.2.b.ii 5.1.2.c	Number & Operations in Base Ten	Perform operations with multi-digit whole numbers and with decimals to hundredths.
5.1.3.a.i 5.1.3.a.ii 5.1.3.a.iii	Number & Operations - Fractions	Use equivalent fractions as a strategy to add and subtract fractions.
5.1.4.a 5.1.4.b 5.1.4.c 5.1.4.d 5.1.4.e 5.1.4.e.i 5.1.4.e.ii 5.1.4.f 5.1.4.g 5.1.4.h 5.1.4.i	Number & Operations - Fractions	Apply and extend previous understandings of multiplication and division.
5.1.1.d.i 5.1.1.d.ii	Measurement & Data	Convert like measurement units within a given measurement system.
5.3.1.a.i 5.3.1.a.ii	Measurement & Data	Represent and interpret data.
5.4.1 5.4.1.a 5.4.1.b 5.4.1.b.i 5.4.1.b.ii 5.4.1.b.iii	Measurement & Data	Geometric measurement: understand concepts of volume.
5.4.2.a 5.4.2.b	Geometry	Geometric measurement: understand concepts of volume.
5.4.2.c.i 5.4.2.c.ii	Geometry	Classify two-dimensional figures into categories based on their properties.

Grade 6
Mathematics Standards

Colorado Academic Standards	Domain	Standard Descriptor
6.1.1.a 6.1.1.b 6.1.1.c 6.1.1.c.i 6.1.1.c.ii 6.1.1.c.iii 6.1.1.c.iv 6.1.1.c.viii	Ratios & Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.
6.1.2.f 6.1.2.g 6.1.2.h	The Number System	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
6.1.2.a 6.1.2.b 6.1.2.c 6.1.2.d 6.1.2.e 6.1.3.a 6.1.3.a.i	The Number System	Compute fluently with multi-digit numbers and find common factors and multiples.
6.1.3.b.i 6.1.3.b.ii 6.1.3.b.iii 6.1.3.b.iv 6.1.3.b.vi 6.1.3.c 6.1.3.c.i 6.1.3.c.ii 6.1.3.c.iii 6.1.3.c.iv 6.1.3.d	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.
6.2.1.a 6.2.1.b 6.2.1.b.i 6.2.1.b.ii 6.2.1.b.iii 6.2.1.b.iv 6.2.1.c 6.2.1.d	Expressions & Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.
6.2.2.a 6.2.2.b 6.2.2.c 6.2.2.c.i 6.2.2.d 6.2.2.e 6.2.2.f 6.2.2.g.i 6.2.2.g.ii	Expressions & Equations	Reason about and solve one-variable equations and inequalities.

6.2.2.g.i 6.2.2.g.ii 6.2.2.g.iii	Expressions & Equations	Represent and analyze quantitative relationships between dependent and independent variables.
6.4.1.a.i 6.4.1.a.ii 6.4.1.b.i 6.4.1.b.ii 6.4.1.b.iii 6.4.1.c 6.4.1.c.ii 6.4.1.d.i 6.4.1.d.ii 6.4.1.d.iii	Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.
6.3.1.a 6.3.1.b 6.3.1.c	Statistics & Probability	Develop understanding of statistical variability.
6.3.1.d.i 6.3.1.d.ii 6.3.1.d.ii.1 6.3.1.d.ii.2 6.3.1.d.ii.3 6.3.1.d.ii.4	Statistics & Probability	Summarize and describe distributions.

Grade 7
Mathematics Standards

Colorado Academic Standards	Domain	Standard Descriptor
7.1.1.b 7.1.1.c 7.1.1.c.i 7.1.1.c.ii 7.1.1.c.iii 7.1.1.c.iv 7.1.1.d	Ratios & Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.
7.1.2.a 7.1.2.a.i 7.1.2.a.ii 7.1.2.a.iii 7.1.2.a.iv 7.1.2.a.v 7.1.2.a.vi 7.1.2.a.vii 7.1.2.a.viii 7.1.2.b 7.1.2.b.i 7.1.2.b.ii 7.1.2.b.iii 7.1.2.b.iv 7.1.2.b.v 7.1.2.b.vi 7.1.2.c	The Number System	Apply and extend previous understandings of operations with fractions.
7.2.1.a.i 7.2.1.a.ii	Expressions & Equations	Use properties of operations to generate equivalent expressions.
7.2.2.a 7.2.2.b 7.2.2.c 7.2.2.c.ii 7.2.2.c.iii 7.2.2.c.iv	Expressions & Equations	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
7.4.1.a.i 7.4.1.a.ii 7.4.1.a.iii 7.4.1.a.iv	Geometry	Draw construct, and describe geometrical figures and describe the relationships between them.
7.4.2.a 7.4.2.b 7.4.2.c 7.4.2.d	Geometry	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
7.3.1.a.i 7.3.1.a.iii 7.3.1.a.iv	Statistics & Probability	Use random sampling to draw inferences about a population.
7.3.1.b.i 7.3.1.b.ii	Statistics & Probability	Draw informal comparative inferences about two populations.

7.3.2.a 7.3.2.b 7.3.2.c 7.3.2.c.i 7.3.2.c.ii 7.3.2.c.iii 7.3.2.d 7.3.2.d.i 7.3.2.d.ii 7.3.2.d.iii 7.3.2.d.iv	Statistics & Probability	Investigate chance processes and develop, use, and evaluate probability models.

Grade 8
Mathematics Standards

Colorado Academic Standards	Domain	Standard Descriptor
8.1.1.b.i 8.1.1.b.ii 8.1.1.c	The Number System	Know that there are numbers that are not rational, and approximate them by rational numbers.
8.1.1.d 8.1.1.g 8.1.1.h 8.1.1.h.i 8.1.1.h.ii	Expressions & Equations	Expressions and equations work with radicals and integer exponents.
8.2.1.b 8.2.1.c 8.2.1.d 8.2.1.e	Expressions & Equations	Understand the connections between proportional relationships, lines, and linear equations.
8.2.2.a 8.2.2.a.i 8.2.2.a.ii 8.2.2.b 8.2.2.b.i 8.2.2.b.ii 8.2.2.b.iii	Expressions & Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.
8.2.3.a.i 8.2.3.a.ii 8.2.3.a.iii 8.2.3.a.iv	Functions	Define, evaluate, and compare functions.
8.2.3.b.i 8.2.3.b.ii 8.2.3.b.iii 8.2.3.b.iv 8.2.3.b.v	Functions	Use functions to model relationships between quantities.
8.4.1.a 8.4.1.b 8.4.1.c 8.4.1.d 8.4.1.e 8.4.1.f 8.4.1.g	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.
8.4.2.a 8.4.2.b 8.4.2.c	Geometry	Understand and apply the Pythagorean Theorem.
8.4.2.d	Geometry	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.
8.3.1.a 8.3.1.b 8.3.1.c 8.3.1.d 8.3.1.e 8.3.1.e.i 8.3.1.e.ii	Statistics & Probability	Investigate patterns of association in bivariate data.

Algebra I
Mathematics Standards

Colorado Academic Standards	Domain	Standard Descriptor
HS.1.1.a HS.1.1.a.i HS.1.1.a.ii HS.1.1.b HS.1.1.b.i HS.1.1.b.ii HS.1.1.b.iii	Number and Quantity – The Real Number System	Extend the properties of exponents to rational exponents. Use properties of rational and irrational numbers.
HS.2.3.a HS.2.3.a.i HS.2.3.a.i.1 HS.2.3.a.i.2 HS.2.3.a.ii HS.2.3.b HS.2.3.b.i.1 HS.2.3.b.i.2 HS.2.3.b.i.3 HS.2.3.b.ii	Algebra – Seeing Structure in Expressions	Interpret the structure of expressions. Write expressions in equivalent forms to solve problems.
HS.2.3.c HS.2.3.c.i HS.2.3.d HS.2.3.d.i HS.2.3.d.ii HS.2.3.e HS.2.3.e.i HS.2.3.f HS.2.3.g	Algebra – Arithmetic with Polynomials & Rational Expressions	Perform arithmetic operations on polynomials. Understand the relationship between zeros and factors of polynomials. Use polynomial identities to solve problems. Rewrite rational expressions.
HS.2.4.a HS.2.4.a.i HS.2.4.a.ii HS.2.4.a.iii HS.2.4.a.iv	Algebra – Creating Equations	Create equations that describe numbers or relationships.
HS.2.4.b HS.2.4.b.i HS.2.4.b.ii HS.2.4.c HS.2.4.c.i HS.2.4.c.ii HS.2.4.c.ii.1 HS.2.4.c.ii.2 HS.2.4.c.ii.3 HS.2.4.d HS.2.4.d.i HS.2.4.d.ii HS.2.4.d.iii HS.2.4.e HS.2.4.e.i HS.2.4.e.ii	Algebra – Reasoning with Equations & Inequalities	Understand solving equations as a process of reasoning and explain the reasoning. Solve equations and inequalities in one variable. Solve systems of equations. Represent and solve equations and inequalities graphically.

HS.2.4.e.iii		
HS.2.1.a HS.2.1.a.i HS.2.1.a.ii HS.2.1.a.iii HS.2.1.b HS.2.1.b.i HS.2.1.b.ii HS.2.1.b.iii HS.2.1.c HS.2.1.c.i HS.2.1.c.ii HS.2.1.c.iii HS.2.1.c.iv HS.2.1.c.v HS.2.1.c.vi HS.2.1.c.vi.1 HS.2.1.c.vi.2 HS.2.1.c.vi.3	Functions – Interpreting Functions	Understand the concept of a function and use function notation. Interpret functions that arise in applications in terms of the context. Analyze functions using different representations.
HS.2.1.d HS.2.1.d.i HS.2.1.d.i.1 HS.2.1.d.i.2 HS.2.1.d.ii HS.2.1.e HS.2.1.e.i HS.2.1.e.iii	Functions – Building Functions	Build a function that models a relationship between two quantities. Build new functions from existing functions.
HS.2.2.a HS.2.2.a.i HS.2.2.a.i.1 HS.2.2.a.i.2 HS.2.2.a.i.3 HS.2.2.a.ii HS.2.2.a.iii HS.2.2.a.iv HS.2.2.b HS.2.2.b.i	Functions – Linear, Quadratic, & Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems. Interpret expressions for functions in terms of the situation they model.
HS.3.1 HS.3.1.a.i HS.3.1.a.ii HS.3.1.a.iii HS.3.1.a.iv HS.3.1.b.i HS.3.1.b.ii HS.3.1.b.ii.1 HS.3.1.b.ii.2 HS.3.1.b.ii.3 HS.3.1.c.i HS.3.1.c.ii HS.3.1.c.iii	Statistics & Probability – Interpreting Categorical & Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable Summarize, represent, and interpret data on two categorical and quantitative variables Interpret linear models

Geometry
Mathematics Standards

Colorado Academic Standards	Domain	Standard Descriptor
HS.4.1 HS.4.1.a.i HS.4.1.a.ii HS.4.1.a.iii HS.4.1.a.iv HS.4.1.a.v HS.4.1.a.vi HS.4.1.a.vii HS.4.1.a.viii HS.4.1.b.i HS.4.1.b.ii HS.4.1.b.iii HS.4.1.b.iv HS.4.1.c.i HS.4.1.c.ii HS.4.1.c.iii HS.4.1.d.i HS.4.1.d.ii	Geometry - Congruence	Experiment with transformations in the plane Understand congruence in terms of rigid motions Prove geometric theorems Make geometric constructions
HS.4.2.a HS.4.2.a.i HS.4.2.a.i.1 HS.4.2.a.i.2 HS.4.2.a.ii HS.4.2.a.iii HS.4.2.a.iv HS.4.2.b HS.4.2.b.i HS.4.2.b.iii HS.4.2.c HS.4.2.c.i HS.4.2.c.ii HS.4.2.c.iii	Geometry – Similarity, Right Triangles, & Trigonometry	Understand similarity in terms of similarity transformations Prove theorems involving similarity Define trigonometric ratios and solve problems involving right triangles Apply trigonometry to general triangles
HS.4.2.b.ii HS.4.2.e HS.4.2.e.i HS.4.2.e.ii HS.4.2.e.iii HS.4.2.f HS.4.2.f.i HS.4.2.f.ii	Geometry - Circles	Understand and apply theorems about circles Find arc lengths and areas of sectors of circles

HS.4.3.a HS.4.3.a.i HS.4.3.a.ii HS.4.3.a.i.1 HS.4.3.a.i.2 HS.4.3.a.i.3 HS.4.3.a.ii.1 HS.4.3.a.ii.2 HS.4.3.a.ii.3 HS.4.3.a.ii.4	Geometry – Expressing Geometric Properties with Equations	Translate between the geometric description and the equation for a conic section Use coordinates to prove simple geometric theorems algebraically
HS.4.4 HS.4.4.a.i HS.4.4.a.ii HS.4.4.b.i	Geometry – Geometric Measurement & Dimension	Explain volume formulas and use them to solve problems Visualize relationships between two-dimensional and three-dimensional objects
HS.4.5.a HS.4.5.a.i HS.4.5.a.ii HS.4.5.a.iii	Geometry – Modeling with Geometry	Apply geometric concepts in modeling situations

Algebra II
Mathematics Standards

Colorado Academic Standards	Domain	Standard Descriptor
HS.1.1.a HS.1.1.a.i HS.1.1.a.ii HS.1.1.b HS.1.1.b.i HS.1.1.b.ii HS.1.1.b.iii	Number and Quantity – The Real Number System	Extend the properties of exponents to rational exponents. Use properties of rational and irrational numbers.
HS.1.1.c HS.1.1.d HS.1.1.c.i HS.1.1.c.ii HS.1.1.d.i	Number and Quantity – The Complex Number System	Perform arithmetic operations with complex numbers. Represent complex numbers and their operations on the complex plane. Use complex numbers in polynomial identities and equations.
HS.2.3.a HS.2.3.a.i HS.2.3.a.i.1 HS.2.3.a.i.2 HS.2.3.a.ii HS.2.3.b HS.2.3.b.i.1 HS.2.3.b.i.2 HS.2.3.b.i.3 HS.2.3.b.ii	Algebra – Seeing Structure in Expressions	Interpret the structure of expressions. Write expressions in equivalent forms to solve problems.
HS.2.3.c HS.2.3.c.i HS.2.3.d HS.2.3.d.i HS.2.3.d.ii HS.2.3.e HS.2.3.e.i HS.2.3.f HS.2.3.g	Algebra – Arithmetic with Polynomials & Rational Expressions	Perform arithmetic operations on polynomials. Understand the relationship between zeros and factors of polynomials. Use polynomial identities to solve problems. Rewrite rational expressions.
HS.2.4.b HS.2.4.b.i HS.2.4.b.ii HS.2.4.c HS.2.4.c.i HS.2.4.c.ii HS.2.4.c.ii.1 HS.2.4.c.ii.2 HS.2.4.c.ii.3 HS.2.4.d HS.2.4.d.i HS.2.4.d.ii HS.2.4.d.iii HS.2.4.e HS.2.4.e.i HS.2.4.e.ii	Algebra – Reasoning with Equations & Inequalities	Understand solving equations as a process of reasoning and explain the reasoning. Solve equations and inequalities in one variable. Solve systems of equations. Represent and solve equations and inequalities graphically.

HS.2.4.e.iii		
HS.2.1.a HS.2.1.a.i HS.2.1.a.ii HS.2.1.a.iii HS.2.1.b HS.2.1.b.i HS.2.1.b.ii HS.2.1.b.iii HS.2.1.c HS.2.1.c.i HS.2.1.c.ii HS.2.1.c.iii HS.2.1.c.iv HS.2.1.c.v HS.2.1.c.vi HS.2.1.c.vi.1 HS.2.1.c.vi.2 HS.2.1.c.vi.3	Functions – Interpreting Functions	Understand the concept of a function and use function notation. Interpret functions that arise in applications in terms of the context. Analyze functions using different representations.
HS.2.1.d HS.2.1.d.i HS.2.1.d.i.1 HS.2.1.d.i.2 HS.2.1.d.ii HS.2.1.e HS.2.1.e.i HS.2.1.e.iii	Functions – Building Functions	Build a function that models a relationship between two quantities. Build new functions from existing functions.
HS.2.2.a HS.2.2.a.i HS.2.2.a.i.1 HS.2.2.a.i.2 HS.2.2.a.i.3 HS.2.2.a.ii HS.2.2.a.iii HS.2.2.a.iv HS.2.2.b HS.2.2.b.i	Functions – Linear, Quadratic, & Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems. Interpret expressions for functions in terms of the situation they model.
HS.2.2.c HS.2.1.f HS.2.1.f.i HS.2.1.f.ii HS.2.2.c.i HS.4.2.d.i HS.4.2.d.ii	Functions – Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle. Model periodic phenomena with trigonometric functions. Prove and apply trigonometric identities.
HS.3.1 HS.3.1.a.i HS.3.1.a.ii HS.3.1.a.iii HS.3.1.a.iv HS.3.1.b.i HS.3.1.b.ii HS.3.1.b.ii.1	Statistics & Probability – Interpreting Categorical & Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable Summarize, represent, and interpret data on two categorical and quantitative variables Interpret linear models

HS.3.1.b.ii.2 HS.3.1.b.ii.3 HS.3.1.c.i HS.3.1.c.ii HS.3.1.c.iii		
HS.3.2 HS.3.2.a.i HS.3.2.a.ii HS.3.2.b.i HS.3.2.b.ii HS.3.2.b.iii HS.3.2.b.iv HS.3.2.b.vi	Statistics & Probability - Making Inferences & Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments Make inferences and justify conclusions from sample surveys, experiments, and observational studies
HS.3.3 HS.3.3.a.i HS.3.3.a.ii HS.3.3.a.iii HS.3.3.a.iv HS.3.3.a.v HS.3.3.b.i HS.3.3.b.ii	Statistics & Probability - Conditional Probability & the Rules of Probability	Understand independence and conditional probability and use them to interpret data Use the rules of probability to compute probabilities of compound events.

Integrated I
Mathematics Standards

Colorado Academic Standards	Domain	Standard Descriptor
HS.2.3.a HS.2.3.a.i HS.2.3.a.i.1 HS.2.3.a.i.2 HS.2.3.a.ii HS.2.3.b HS.2.3.b.i.1 HS.2.3.b.i.2 HS.2.3.b.i.3 HS.2.3.b.ii	Algebra – Seeing Structure in Expressions	Interpret the structure of expressions. Write expressions in equivalent forms to solve problems.
HS.2.4.a HS.2.4.a.i HS.2.4.a.ii HS.2.4.a.iii HS.2.4.a.iv	Algebra – Creating Equations	Create equations that describe numbers or relationships.
HS.2.4.b HS.2.4.b.i HS.2.4.b.ii HS.2.4.c HS.2.4.c.i HS.2.4.c.ii HS.2.4.c.ii.1 HS.2.4.c.ii.2 HS.2.4.c.ii.3 HS.2.4.d HS.2.4.d.i HS.2.4.d.ii HS.2.4.d.iii HS.2.4.e HS.2.4.e.i HS.2.4.e.ii HS.2.4.e.iii	Algebra – Reasoning with Equations & Inequalities	Understand solving equations as a process of reasoning and explain the reasoning. Solve equations and inequalities in one variable. Solve systems of equations. Represent and solve equations and inequalities graphically.
HS.2.1.a HS.2.1.a.i HS.2.1.a.ii HS.2.1.a.iii HS.2.1.b HS.2.1.b.i HS.2.1.b.ii HS.2.1.b.iii HS.2.1.c HS.2.1.c.i HS.2.1.c.ii HS.2.1.c.iii HS.2.1.c.iv HS.2.1.c.v HS.2.1.c.vi	Functions – Interpreting Functions	Understand the concept of a function and use function notation. Interpret functions that arise in applications in terms of the context. Analyze functions using different representations.

HS.2.1.c.vi.1 HS.2.1.c.vi.2 HS.2.1.c.vi.3		
HS.2.1.d HS.2.1.d.i HS.2.1.d.i.1 HS.2.1.d.i.2 HS.2.1.d.ii HS.2.1.e HS.2.1.e.i HS.2.1.e.iii	Functions – Building Functions	Build a function that models a relationship between two quantities. Build new functions from existing functions.
HS.2.2.a HS.2.2.a.i HS.2.2.a.i.1 HS.2.2.a.i.2 HS.2.2.a.i.3 HS.2.2.a.ii HS.2.2.a.iii HS.2.2.a.iv HS.2.2.b HS.2.2.b.i	Functions – Linear, Quadratic, & Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems. Interpret expressions for functions in terms of the situation they model.
HS.4.1 HS.4.1.a.i HS.4.1.a.ii HS.4.1.a.iii HS.4.1.a.iv HS.4.1.a.v HS.4.1.a.vi HS.4.1.a.vii HS.4.1.a.viii HS.4.1.b.i HS.4.1.b.ii HS.4.1.b.iii HS.4.1.b.iv HS.4.1.c.i HS.4.1.c.ii HS.4.1.c.iii HS.4.1.d.i HS.4.1.d.ii	Geometry - Congruence	Experiment with transformations in the plane Understand congruence in terms of rigid motions Prove geometric theorems Make geometric constructions
HS.3.1 HS.3.1.a.i HS.3.1.a.ii HS.3.1.a.iii HS.3.1.a.iv HS.3.1.b.i HS.3.1.b.ii HS.3.1.b.ii.1 HS.3.1.b.ii.2 HS.3.1.b.ii.3 HS.3.1.c.i HS.3.1.c.ii HS.3.1.c.iii	Statistics & Probability – Interpreting Categorical & Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable Summarize, represent, and interpret data on two categorical and quantitative variables Interpret linear models

Integrated II
Mathematics Standards

Colorado Academic Standards	Domain	Standard Descriptor
HS.1.1.a HS.1.1.a.i HS.1.1.a.ii HS.1.1.b HS.1.1.b.i HS.1.1.b.ii HS.1.1.b.iii	Number and Quantity – The Real Number System	Extend the properties of exponents to rational exponents. Use properties of rational and irrational numbers.
HS.1.1.c HS.1.1.d HS.1.1.c.i HS.1.1.c.ii HS.1.1.d.i	Number and Quantity – The Complex Number System	Perform arithmetic operations with complex numbers. Represent complex numbers and their operations on the complex plane. Use complex numbers in polynomial identities and equations.
HS.2.3.a HS.2.3.a.i HS.2.3.a.i.1 HS.2.3.a.i.2 HS.2.3.a.ii HS.2.3.b HS.2.3.b.i.1 HS.2.3.b.i.2 HS.2.3.b.i.3 HS.2.3.b.ii	Algebra – Seeing Structure in Expressions	Interpret the structure of expressions. Write expressions in equivalent forms to solve problems.
HS.2.3.c HS.2.3.c.i HS.2.3.d HS.2.3.d.i HS.2.3.d.ii HS.2.3.e HS.2.3.e.i HS.2.3.f HS.2.3.g	Algebra – Arithmetic with Polynomials & Rational Expressions	Perform arithmetic operations on polynomials. Understand the relationship between zeros and factors of polynomials. Use polynomial identities to solve problems. Rewrite rational expressions.
HS.2.4.a HS.2.4.a.i HS.2.4.a.ii HS.2.4.a.iii HS.2.4.a.iv	Algebra – Creating Equations	Create equations that describe numbers or relationships.
HS.2.4.b HS.2.4.b.i HS.2.4.b.ii HS.2.4.c HS.2.4.c.i HS.2.4.c.ii HS.2.4.c.ii.1 HS.2.4.c.ii.2 HS.2.4.c.ii.3 HS.2.4.d	Algebra – Reasoning with Equations & Inequalities	Understand solving equations as a process of reasoning and explain the reasoning. Solve equations and inequalities in one variable. Solve systems of equations. Represent and solve equations and inequalities graphically.

HS.2.4.d.i HS.2.4.d.ii HS.2.4.d.iii HS.2.4.e HS.2.4.e.i HS.2.4.e.ii HS.2.4.e.iii		
HS.2.1.a HS.2.1.a.i HS.2.1.a.ii HS.2.1.a.iii HS.2.1.b HS.2.1.b.i HS.2.1.b.ii HS.2.1.b.iii HS.2.1.c HS.2.1.c.i HS.2.1.c.ii HS.2.1.c.iii HS.2.1.c.iv HS.2.1.c.v HS.2.1.c.vi HS.2.1.c.vi.1 HS.2.1.c.vi.2 HS.2.1.c.vi.3	Functions – Interpreting Functions	Understand the concept of a function and use function notation. Interpret functions that arise in applications in terms of the context. Analyze functions using different representations.
HS.2.1.d HS.2.1.d.i HS.2.1.d.i.1 HS.2.1.d.i.2 HS.2.1.d.ii HS.2.1.e HS.2.1.e.i HS.2.1.e.iii	Functions – Building Functions	Build a function that models a relationship between two quantities. Build new functions from existing functions.
HS.4.2.a HS.4.2.a.i HS.4.2.a.i.1 HS.4.2.a.i.2 HS.4.2.a.ii HS.4.2.a.iii HS.4.2.a.iv HS.4.2.b HS.4.2.b.i HS.4.2.b.iii HS.4.2.c HS.4.2.c.i HS.4.2.c.ii HS.4.2.c.iii	Geometry – Similarity, Right Triangles, & Trigonometry	Understand similarity in terms of similarity transformations Prove theorems involving similarity Define trigonometric ratios and solve problems involving right triangles Apply trigonometry to general triangles
HS.4.4 HS.4.4.a.i HS.4.4.a.ii HS.4.4.b.i	Geometry – Geometric Measurement & Dimension	Explain volume formulas and use them to solve problems Visualize relationships between two-dimensional and three-dimensional objects

HS.3.1 HS.3.1.a.i HS.3.1.a.ii HS.3.1.a.iii HS.3.1.a.iv HS.3.1.b.i HS.3.1.b.ii HS.3.1.b.ii.1 HS.3.1.b.ii.2 HS.3.1.b.ii.3 HS.3.1.c.i HS.3.1.c.ii HS.3.1.c.iii	Statistics & Probability – Interpreting Categorical & Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable Summarize, represent, and interpret data on two categorical and quantitative variables Interpret linear models
HS.3.3 HS.3.3.a.i HS.3.3.a.ii HS.3.3.a.iii HS.3.3.a.iv HS.3.3.a.v HS.3.3.b.i HS.3.3.b.ii	Statistics & Probability - Conditional Probability & the Rules of Probability	Understand independence and conditional probability and use them to interpret data Use the rules of probability to compute probabilities of compound events.

Integrated III
Mathematics Standards

Colorado Academic Standards	Domain	Standard Descriptor
HS.2.3.a HS.2.3.a.i HS.2.3.a.i.1 HS.2.3.a.i.2 HS.2.3.a.ii HS.2.3.b HS.2.3.b.i.1 HS.2.3.b.i.2 HS.2.3.b.i.3 HS.2.3.b.ii	Algebra – Seeing Structure in Expressions	Interpret the structure of expressions. Write expressions in equivalent forms to solve problems.
HS.2.3.c HS.2.3.c.i HS.2.3.d HS.2.3.d.i HS.2.3.d.ii HS.2.3.e HS.2.3.e.i HS.2.3.f HS.2.3.g	Algebra – Arithmetic with Polynomials & Rational Expressions	Perform arithmetic operations on polynomials. Understand the relationship between zeros and factors of polynomials. Use polynomial identities to solve problems. Rewrite rational expressions.
HS.2.4.b HS.2.4.b.i HS.2.4.b.ii HS.2.4.c HS.2.4.c.i HS.2.4.c.ii HS.2.4.c.ii.1 HS.2.4.c.ii.2 HS.2.4.c.ii.3 HS.2.4.d HS.2.4.d.i HS.2.4.d.ii HS.2.4.d.iii HS.2.4.e HS.2.4.e.i HS.2.4.e.ii HS.2.4.e.iii	Algebra – Reasoning with Equations & Inequalities	Understand solving equations as a process of reasoning and explain the reasoning. Solve equations and inequalities in one variable. Solve systems of equations. Represent and solve equations and inequalities graphically.
HS.2.1.a HS.2.1.a.i HS.2.1.a.ii HS.2.1.a.iii HS.2.1.b HS.2.1.b.i HS.2.1.b.ii HS.2.1.b.iii HS.2.1.c HS.2.1.c.i	Functions – Interpreting Functions	Understand the concept of a function and use function notation. Interpret functions that arise in applications in terms of the context. Analyze functions using different representations.

HS.2.1.c.ii HS.2.1.c.iii HS.2.1.c.iv HS.2.1.c.v HS.2.1.c.vi HS.2.1.c.vi.1 HS.2.1.c.vi.2 HS.2.1.c.vi.3		
HS.2.1.d HS.2.1.d.i HS.2.1.d.i.1 HS.2.1.d.i.2 HS.2.1.d.ii HS.2.1.e HS.2.1.e.i HS.2.1.e.iii	Functions – Building Functions	Build a function that models a relationship between two quantities. Build new functions from existing functions.
HS.2.2.a HS.2.2.a.i HS.2.2.a.i.1 HS.2.2.a.i.2 HS.2.2.a.i.3 HS.2.2.a.ii HS.2.2.a.iii HS.2.2.a.iv HS.2.2.b HS.2.2.b.i	Functions – Linear, Quadratic, & Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems. Interpret expressions for functions in terms of the situation they model.
HS.2.2.c HS.2.1.f HS.2.1.f.i HS.2.1.f.ii HS.2.2.c.i HS.4.2.d.i HS.4.2.d.ii	Functions – Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle. Model periodic phenomena with trigonometric functions. Prove and apply trigonometric identities.
HS.4.1 HS.4.1.a.i HS.4.1.a.ii HS.4.1.a.iii HS.4.1.a.iv HS.4.1.a.v HS.4.1.a.vi HS.4.1.a.vii HS.4.1.a.viii HS.4.1.b.i HS.4.1.b.ii HS.4.1.b.iii HS.4.1.b.iv HS.4.1.c.i HS.4.1.c.ii HS.4.1.c.iii HS.4.1.d.i HS.4.1.d.ii	Geometry - Congruence	Experiment with transformations in the plane Understand congruence in terms of rigid motions Prove geometric theorems Make geometric constructions

HS.4.2.b.ii HS.4.2.e HS.4.2.e.i HS.4.2.e.ii HS.4.2.e.iii HS.4.2.f HS.4.2.f.i HS.4.2.f.ii	Geometry - Circles	Understand and apply theorems about circles Find arc lengths and areas of sectors of circles
HS.4.3.a HS.4.3.a.i HS.4.3.a.ii HS.4.3.a.i.1 HS.4.3.a.i.2 HS.4.3.a.i.3 HS.4.3.a.ii.1 HS.4.3.a.ii.2 HS.4.3.a.ii.3 HS.4.3.a.ii.4	Geometry – Expressing Geometric Properties with Equations	Translate between the geometric description and the equation for a conic section Use coordinates to prove simple geometric theorems algebraically
HS.4.4 HS.4.4.a.i HS.4.4.a.ii HS.4.4.b.i	Geometry – Geometric Measurement & Dimension	Explain volume formulas and use them to solve problems Visualize relationships between two-dimensional and three-dimensional objects
HS.4.5.a HS.4.5.a.i HS.4.5.a.ii HS.4.5.a.iii	Geometry – Modeling with Geometry	Apply geometric concepts in modeling situations
HS.3.1 HS.3.1.a.i HS.3.1.a.ii HS.3.1.a.iii HS.3.1.a.iv HS.3.1.b.i HS.3.1.b.ii HS.3.1.b.ii.1 HS.3.1.b.ii.2 HS.3.1.b.ii.3 HS.3.1.c.i HS.3.1.c.ii HS.3.1.c.iii	Statistics & Probability – Interpreting Categorical & Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable Summarize, represent, and interpret data on two categorical and quantitative variables Interpret linear models
HS.3.2 HS.3.2.a.i HS.3.2.a.ii HS.3.2.b.i HS.3.2.b.ii HS.3.2.b.iii HS.3.2.b.iv HS.3.2.b.vi	Statistics & Probability - Making Inferences & Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments Make inferences and justify conclusions from sample surveys, experiments, and observational studies