

2020 Colorado Academic Standards

Family and Community Guides



8th Grade

To support families, communities, and teachers in realizing the goals of the Colorado Academic Standards (CAS), this guide provides an overview of the learning expectations for preschool. This guide offers some learning experiences students may engage in at school that may also be supported at home.



The comprehensive health standards in grades six through eight focus on enhancing and strengthening skills in the areas of physical, social, and emotional wellness and using those individual skills in family, school, and community environments. In each grade, the standards ask students to deepen their understanding of ways to set and maintain healthy relationships and continue to investigate healthy eating/living habits, positive communication strategies, effective decision making, and ways to ensure personal and community safety.

Expectations for 8th Grade Students:

- **Physical and Personal Wellness:** Demonstrate the ability to make healthy food choices; promote and enhance health through disease prevention; explain the physical, emotional, mental and social benefits of sexual abstinence and develop strategies to resist pressures to become sexually active; explain the signs and symptoms of HIV/AIDS, other sexually transmitted diseases (STDs) and unintended pregnancy, and how certain behaviors place a person at greater risk.
- **Social and Emotional Wellness:** Analyze the factors that influence mental and emotional health; access valid school and community resources to help with mental and emotional health concerns.
- **Prevention and Risk Management:** Analyze influences that impact an individual's use or non-use of alcohol, tobacco, other drugs and violence; access valid sources and information, and demonstrate decision-making skills to be drug-free; advocate for a positive, respectful school and community environment that support pro-social behaviors.

Throughout 8th Grade You May Find Students:

- Demonstrating the ability to make healthy food choices in a variety of settings.
- Analyzing how certain behaviors place one at greater risk for HIV/AIDS, sexually transmitted diseases (STDs), and unintended pregnancy.
- Demonstrating verbal and nonverbal refusal skills in high-pressure situations.
- Analyzing the internal and external influences that impact one's social and emotional health and the decision to seek help when needed.
- Explaining when it is necessary and where to seek appropriate help for mental and emotional health problems.
- Applying decision-making skills to avoid using marijuana, illegal drugs, abuse of prescription drugs, alcohol, and tobacco.
- Examining messages perpetuated through the media and culture and their possible effects on behavior.
- Analyzing the factors that influence violent and nonviolent behavior.
- Demonstrating ways to advocate for a positive, respectful school and community environment that supports pro-social behavior.



The dance standards in the middle school years focus on basic to intermediate level dance knowledge, as well as technique and performance skills in more specialized dance studies. In each grade, students investigate and demonstrate competence and confidence in performing various dance styles and genres, gain an awareness of fitness and the healthy body's potential for movement, refine critical thinking skills such as describing and interpreting, and creatively problem-solve through dance making.

Expectations for 8th Grade Students:

- **Movement, Technique, and Performance (Perform/Present):** Demonstrate correlations between dance movement, anatomy, and kinesiology (body mechanics); begin to develop proper health and nutritional habits for dance.
- **Create, Compose, and Choreograph (Create):** Make connections between choreographic intent (idea/s the dance is trying to convey) and the end product; create movement using imagery and symbolism.
- **Historical and Cultural Context (Know/Comprehend):** Experience a variety of dance forms from around the world; recognize historical dance figures that represent a particular era.
- **Reflect, Connect, and Respond (Critique/Evaluate/Refine):** Respond choreography through written, oral and/or technology; understand how to read and/or write a formal dance critique.

Throughout 8th Grade You May Find Students:

- Utilizing healthy/safe practices by developing body and mental wellness, warming up muscles before performing, moving within a comfortable range of motion when creating, rehearsing, and performing dance.
- Selecting appropriate content and intent when choreographing a dance work.
- Creating movement that represents a particular idea and using the movement in a new way.
- Experiencing various dance forms from different world dance traditions and cultures.
- Appropriately evaluating the creative process using multiple ways to communicate (verbal, written, and/or technology).



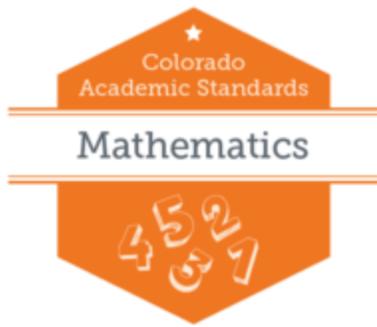
The drama and theatre arts standards in the middle school years focus on drama knowledge and skills, and theatre elements, to ensure a solid foundation for more specialized theatrical study in later years. In each grade, students investigate and perform various drama techniques and theatrical genres (scripted /improvisational works), examine character and setting scenarios, determine how to develop ideas as a playwright, develop the ability to describe personal preferences for dramatic and theatrical works, and respectfully critique individual/personal as well as peer performances.

Expectations for 8th Grade Students:

- **Create (Create) Refine:** Use a variety of movement and vocal techniques, incorporating a character's background and situation, to develop roles or characters; adapt issue-specific themes found in history, culture, dramatic literature, and personal experience to improvise, write, and create scenes and scripts; make and justify choices on design selection and elements (scenery, lights, costumes, props, sounds, makeup, special effects, media, publicity) to support scripted and unscripted material.
- **Perform (Perform/Present):** Integrate the components of the character development process (analyzing physical, social qualities of character), with confidence and clarity of focus, and contribute as a collaborative and responsible member of an ensemble; demonstrate an understanding of the relationships among the technical theatre elements and acting roles, and incorporate production elements (props and costumes) creatively in a performance situation, while demonstrating a strong understanding of theatre text.
- **Critically Respond (Know/Comprehend and Critique/Evaluate/Refine/Reflect):** Evaluate the nature of different dramatic forms and performance styles and recognize societal and cultural themes within a dramatic text; identify and discuss artistic challenges and successful outcomes encountered during the creative and rehearsal processes; research the contribution of various historical and contemporary drama and theatre practitioners and groups.

Throughout 8th Grade You May Find Students:

- Analyzing characters and roles, and performing them using the voice, body, and ingenuity; exploring the styles, skills, and techniques of theatre.
- Describing the varieties of drama/theatre forms such as plays, puppetry, and musicals; developing the imagination through a variety of theatre technologies.
- Demonstrating a character's motivation by using multiple techniques.
- Justifying the necessary historical or relevant data to produce technical elements for a scripted or non-scripted play.
- Explaining the ways dramatic and theatrical works have reflected or brought about social change; receiving and acting upon coaching, feedback, and constructive criticism as an actor, designer or technician.



The mathematics standards in middle school build on students' understanding of number and quantity. Students apply more formal statistics, probability, and algebra to model phenomena in the world around them. Students gain a deeper understanding of geometry and its application. Students also persevere in solving problems as they use strategies to apply their new tools and techniques.

Expectations for 8th Grade Students:

- **Number and Quantity:** Calculate using radicals ($\sqrt{2}$, $\sqrt[3]{27}$) and exponents (7^2 , 5^6); explain the difference between rational and irrational numbers and locate each on a number line.
- **Algebra and Functions:** Use scientific notation to write very large or small numbers (6.02×10^{23}); fluently solve linear equations and systems of linear equations; explain the meaning of a function in mathematics; distinguish between functions whose graphs are linear (make a straight line) and those which are not linear; use tables, graphs, and equations to show linear relationships; describe the meaning of the slope (steepness) and y-intercept of a linear relationship; identify if two variables have a relationship by informally examining graphs and tables.
- **Data, Statistics, and Probability:** Apply statistical techniques to compare how the change in one set of numbers relates to changes in a second set of numbers.
- **Geometry:** Calculate distances and areas using the Pythagorean Theorem; calculate the volume of cones, cylinders, and spheres; describe how rotating, stretching, shrinking, reflecting or sliding a shape impacts its shape and size; understand the difference between congruence and similarity; explain the concept of similarity and make connections between slope and similar triangles.

Throughout 8th Grade You May Find Students:

- Measuring classmates' height and arm-span, and making a graph to show how height and arm-span are related.
- Solving a variety of algebra equations for "x" such as $3x + 28 = 8x - 34$.
- Using graphs and tables of data to determine if the relationship between the height of a plant and the amount it is watered each day is a function.
- Renting a truck with a flat rate of \$20 and a \$0.70 per mile and identifying the y-intercept as the flat fee and slope as the per-mile charge.
- Proving why the sum of the angles in a triangle is always 180 degrees.
- Comparing the steepness of stairs and ramps for a variety of buildings (rise to run).
- Calculating the height of a kite using 150 feet of string that is directly above a pool 60 feet away from where you are standing.
- Computing the shortest distance between two points.
- Finding the height of a flag pole using shadows and similar triangles.
- Comparing when the cost of a cell phone data plan is greater than, equal to, or less than the cost of another cell phone data plan.
- Explaining why $1/7$ is rational but $\sqrt{2}$ is irrational.



The music standards in the middle school years focus on specialized musical knowledge and skills for participating in musical ensembles or classes that might include but are not limited to band, choir, orchestra, theory, music appreciation, guitar, or piano. In each middle school grade, students perform various music styles and genres (patriotic, blues, classical, country), examine the language of music through identifying and writing simple music notation, consider simple musical composition processes (such as developing a basic melody and creating lyrics or choosing various sound samples using music software programs to assemble various musical phrases), expand their ability to describe personal musical preferences, and strengthen their ability to constructively critique the music of others.

Expectations for 8th Grade Students:

- **Expression of Music (Perform/Present):** Perform accurately and expressively more complex music while following the cues of a leader or conductor; perform music with notes from the major and/or minor scales in unison or four parts; perform cues for tempo, phrasing, and expression; perform appropriate difficulty level of music during an initial reading (sight reading).
- **Creation of Music (Create):** Explore ways to write music that includes both rhythmic and melodic elements using current technology; demonstrate improvisation on an instrument or by singing; arrange music vocally or instrumentally from known musical compositions.
- **Theory of Music (Know/Comprehend):** Apply knowledge about the language of music (music notation) by reading, performing, and describing music appropriate to an instrument or voice part; apply understanding through use of appropriate music terminology of rhythmic structures (note values), meter (time signature), clef (itches) for their voice or instrument, expressive elements (loud/soft, fast/slow), form (organization of the music) and chord analysis.
- **Aesthetic Valuation of Music (Critique/Evaluate/Refine):** Apply criteria of informed musical vocabulary to evaluate musical performances; describe, using appropriate musical vocabulary, the way music is enjoyed across societal backgrounds and cultural traditions; articulate the use of instruments and voices in various types of American music ensembles.

Throughout 8th Grade You May Find Students:

- Singing in large choirs or small vocal ensembles within a specific voice type (soprano, alto, tenor, bass) and/or playing instruments expressively while exploring different musical styles (American, classical, jazz, rock, art songs); following a leader or conductor; accurately singing and playing music they read for the first time (sight reading) at appropriate difficulty level.
- Writing a short musical phrase combining text, melodic and rhythmic structures with accompaniment using a music software composition program; practicing improvisation by repeating a phrase differently; creating a new melody or harmony element to adapt a learned piece of music.
- Demonstrating comprehension of the language of music (music notation) by reading, performing, and analyzing more complex musical notation appropriate to their voice or instrument; analyzing and identifying chords and the form found in the music being performed.
- Evaluating musical performances based on a set of self-developed criteria; connecting their own musical preferences to a variety musical genres based upon particular musical elements within and across cultures; identifying instruments that can be found in an orchestra or jazz band; identifying the importance of particular vocal and/or instrumental ensembles to social and cultural music history and their impact on traditions.



The physical education standards in the middle school years focus on enhancing health-related and skill-related components of fitness and demonstrating knowledge and applying fitness principles and movement skills and strategies in a variety of physical activities. In each grade, the standards ask students to refine various movement concepts, strategies, and skills, analyze performance and provide feedback to peers, set and assess fitness goals, recognize diversity in skills of others, collaborate with students with varying abilities, and utilize safety procedures during physical activities.

Expectations for 8th Grade Students:

- **Movement Competence and Understanding:** Demonstrate competency in a variety of motor skills and movement patterns; understand and apply game strategies to physical activities and sports.
- **Physical and Personal Wellness:** Identify areas for growth and design personal goals utilizing assessment and program planning concepts; identify preferences for lifetime physical activity.
- **Emotional and Social Wellness:** Recognize diverse skill performance in self and in others and how diversity affects activities, games, and sport participation.
- **Prevention and Risk Management:** Apply rules, procedures, and safe practices to create a safe school environment with no reinforcement.

Throughout 8th Grade You May Find Students:

- Analyzing motor skills and movement patterns through a variety of skill assessments.
- Diagramming, explaining, and justifying offensive and defensive strategies in net/wall, target, invasion, and fielding/run-scoring games.
- Planning and implementing an extended personal physical fitness plan in collaboration with an instructor utilizing assessment data.
- Matching personal preferences in physical activities with each of the five components of health-related physical fitness.
- Participating with others in all types of physical activity, regardless of their race or ethnicity, gender, or culture.
- Identifying and demonstrating best practices for safe participation in all physical activities.



The reading, writing, and communicating standards in the middle school grades ask students to be critical readers of complex literary and informational texts. The standards require that students develop the writing skills necessary to convey their experience in the world, to produce thoughtful analyses of academic and real-world topics, and to develop well-reasoned arguments on relevant topics in their lives. The standards foster opportunities for students to work collaboratively with others as they develop the literacy skills to be academically successful and prepared for life after high school.

Expectations for 8th Grade Students:

- **Oral Expression and Listening:** Speak and use multimedia to clarify information, strengthen claims, and add interest while emphasizing significant points in a focused and clear manner; use relevant evidence, sound reasoning, and well-chosen details; analyze a speaker's purpose as it relates to the information provided; identify when irrelevant evidence is introduced; collaborate in discussions, listen actively to group members' contributions, and pose relevant and thoughtful questions.
- **Reading for All Purposes:** Read a variety of literary and nonfiction texts; summarize, analyze, and evaluate themes and the relationship between characters, plot, and setting in literature; analyze key ideas, people, events, and claims in nonfiction; analyze the impact of word choice on meaning and tone; explain how authors use different points of view to create mystery, humor, or conflict and use different structures to organize texts; recognize the extent to which filmed, staged, or multimedia versions stay true to an original text; cite evidence to strongly support an analysis.
- **Writing and Composition:** Use technology to shape, produce, and publish grammatically correct writing that makes an argument or analyzes a topic; craft writing that introduces what is to follow, provides information that is meaningfully organized, and offers a concluding statement that logically follows from the information presented; write narratives of real or imagined experiences by establishing a setting/context, a point of view, and by using narrative techniques such as dialogue, imagery, pacing for effect.
- **Research and Reasoning:** Conduct short research projects to answer a question and generate additional focus questions; gather information from several sources; use search terms effectively; assess the credibility of sources; follow a standard format for citation; evaluate the soundness of reasoning and the relevance/sufficiency of evidence.

Throughout 8th Grade You May Find Students:

- Engaging in inquiry around a big question like: "How can social media both alienate individuals and create community?"; conducting research that generates questions and that gathers information from texts, the Internet, and community members in order to understand that multiple points of view exist on a topic; participating in debates and collaborative discussions to make connections and synthesize information; delivering individual or group research findings to inform or persuade an audience.
- Reading novels, shorter works of literature (stories, poems, fairy tales, myths, poetry), and informational articles that all address the same topic/theme in order to understand how authors of different texts may structure and use language to uniquely explore that topic/theme; using knowledge of different types of texts to create multi-genre pieces (poems, editorials, cartoons, letters) to express their understanding of the topic under study.
- Using web-based resources to research information and interact with others (both within and beyond their own community) via blogs, wikis, and Skype; publishing writings or multimedia presentations.



The science standards at the middle school build upon the foundation for students to work as scientists by asking testable questions, collecting and analyzing different types of evidence, and by providing rationale for their interpretations through reasoning and/or argumentation. Mastery of these standards will result in students deepening their understanding of science through an application and development of scientific knowledge to the solution of practical problems.

Students will experience all three “strands” of the science standards during their secondary years: physical science, life science, and earth science. The evidence outcomes in middle school blend the core ideas they learn the course with scientific and engineering practices and crosscutting concepts to support students in developing usable knowledge across three science disciplines. Students will address the following over the course of their Middle School science experience:

- **Physical Science:** Grade level expectations in middle school physical science are focused in four areas: (1) Matter and its interactions, (2) Motion and Stability: Forces and Interactions, (3) Energy, (4) Waves and Their Applications in Technologies for Information Transfer.
- **Life Science:** Grade level expectations in middle school life science are focused in four areas: 1) From Molecules to Organisms: Structures and Processes, 2) Ecosystems: Interactions, Energy, and Dynamics, 3) Heredity: Inheritance and Variation of Traits, 4) Biological Evolution: Unity and Diversity.
- **Earth and Space Science:** Grade level expectations in middle school Earth and Space Science are focused in three areas: (1) Earth’s Place in the Universe, (2) Earth’s Systems, (3) Earth and Human Activity.

The Colorado Academic Standards for middle school science are presented as a single 6-8 band of standards, rather than broken down by grade level. This means that your child's school district and teacher are responsible for organizing the middle school science standards into courses that best suit their needs and resources.

[Read the middle school science family guide.](#)



Building on the social studies skills developed in the elementary grades, students in the middle school years begin with a study of people, cultures, and ideas in the Western Hemisphere and move from there to explorations of the Eastern Hemisphere, ending with the early history of the United States. In each grade, students investigate historical events, examine geographic features and resources, consider economic decision-making processes, and understand types of governments and civic responsibility.

Expectations for 8th Grade Students:

- **History:** Examine and interpret a variety of primary and secondary sources, from different perspectives, to formulate a hypothesis and construct a written historical argument about a topic in American history (origins of the American Revolution through Reconstruction).
- **Geography:** Use different geographic tools and data such as maps, globes, diagrams, charts such as population pyramids and climate graphs, geospatial technologies (geographic information systems, Google Earth, global positioning systems) to analyze human and physical systems; explain both conflict and cooperation over space and resources in the United States from the origins of the American Revolution through Reconstruction.
- **Economics:** Provide examples of how economic freedom and free trade are important for economic growth; explain why it is important to manage personal credit and debt. **Personal Financial Literacy:** Examine the role of consumer decisions and taxes within the market economies of early American history.
- **Civics:** Analyze the elements of continuity and change in the United States' constitutional system; summarize the role of law and the rights, roles, and responsibilities of citizens in a democracy.

Throughout 8th Grade You May Find Students:

- Gathering and analyzing primary and secondary sources (art, documents, photos, letters, diaries, propaganda, artifacts) from multiple perspectives to develop and defend an historical thesis; constructing a written argument either for or against an ideal expressed or action taken by the United States during the period of time from the Revolution to Reconstruction; analyzing the causes and effects of major historical events such as the American Revolution, slavery, abolition, and states' rights.
- Using different types of maps and other geographic tools to explain and interpret significant events in U.S. history from the American Revolution through Reconstruction (Westward Expansion, Gold Rush, population growth); addressing issues of land ownership and security from a geographic perspective; making inferences about how the location of and access to resources may lead to cooperation or conflict.
- Discussing the economic policies of the U.S. between the Revolution and Reconstruction; analyzing how policies, tariffs, taxation, and availability of resources affected the growth of the nation; analyzing the benefits and costs of credit and debt.
- Analyzing foundational documents (the Declaration of Independence, the Constitution and the Bill of Rights); discussing how the U.S. constitutional system of government evolved between the American Revolution and Reconstruction, paying particular attention to the changing definition and rights of citizens; examining the changes to the U.S. Constitution and the tensions between individual rights, state law, and national law; explaining the rule of law and the role of judicial review in the U.S. judicial system.



The visual arts standards in the middle school years build on the general art knowledge and skills developed at the elementary level. In addition, students explore and examine the role of design and technology in making, documenting, and presenting works of art. Students create, discuss, reflect on, and compare works of art—across historical periods and cultures—using materials, processes, tools, and vocabulary in more complex ways. Art careers and art-depicting issues that are important to communities are also examined. At this level, middle school art students extend their artistic vision beyond self and look at their artistic practice as part of a much larger community.

Expectations for 8th Grade Students:

- **Observe and Learn to Comprehend (Know/Comprehend):** Consider sources for and of inspiration; use historical and contemporary art to inform and support ideas and plans to create art.
- **Envision and Critique to Reflect (Critique/Evaluate/Refine):** Investigate and talk about the meaning of works of art considering multiple points of view; explain how art is personally relevant and of significance to the artist.
- **Invent and Discover to Create (Create/Present):** Develop proficiency in handling art materials, tools, processes, and technologies when planning and creating art.
- **Relate and Connect to Transfer (Connect/Apply/Transfer):** Explain the relationship between art and design in everyday life; discuss the impact art can have on the way we understand and function in the world.

Throughout 8th Grade You May Find Students:

- Describing and defending the intent and purpose of art using appropriate art vocabulary (the composition of stark contrasting colors represents the artist's intent to share a strong emotion).
- Investigating and debating quality in art and design.
- Explaining the reasons for creating a work of art; recognizing the influence of culture on artistic decisions.
- Describing and debating persuasive techniques used in print and electronic media to influence an audience.
- Creating innovative works of art that depict personal, social, cultural, and/or political viewpoints as well as other interests.
- Researching and describing real-world applications of art.



The world language standards are organized in language proficiency range levels. Language proficiency refers to the degree of skill with which a person can use a language to understand, speak, read, write, and listen in real-life situations. Colorado's standards provide guidance for the introduction of a new language (novice-low) through the minimum proficiency range deemed postsecondary and workforce ready (advanced-low).

The world languages standards in the middle school years create a roadmap to guide Grade 6-8 students in the process of learning a new language and understanding diverse cultural perspectives, as well as developing insights into their language and culture at the appropriate developmental stage. The standards reflect a performance-based discipline which emphasizes communication skills (interpersonal speaking and writing; interpretive reading, listening, and viewing and presentational speaking and writing) in a new language to navigate real-life situations. Students use the newly acquired language while making connections with other academic disciplines and investigation and interaction of cultural practices and products to better understand multiple perspectives. These standards prepare students to participate more fully in the interconnected global community and the international marketplace.

Why are world language standards organized in language proficiency range levels? Language proficiency refers to the degree of skill with which a person can use a language to understand, speak, read, write, and listen in real-life situations. Colorado's standards provide guidance for the introduction of a new language (novice-low) through the minimum proficiency range deemed postsecondary and workforce ready (advanced-low). Progression through levels of proficiency is influenced by program design such as grade levels, competency-based programs, time for language instruction, and immersion programs. Language programs in many schools districts have multiple entry points. Both the length and the type of program design impact both language acquisition and proficiency level for students.

To view the expectations for middle school students at the various proficiency ranges, go to:
<http://www.cde.state.co.us/standardsandinstruction/2020cas-wl-ms-guides>