CoAlt Science 2023 Performance Level Descriptors Grade 8 Science

Based on the 2020 Colorado Academic Standards with Extended Evidence Outcomes for Middle School Science

Emerging

Students performing at this level demonstrate an initial understanding of concepts and skills represented by the Extended Evidence Outcomes (EEOs) of the Colorado Academic Standards (CAS). They will need extensive academic supports to engage successfully in further studies in the content area.

Approaching Target

Students performing at this level demonstrate a limited understanding of concepts and skills represented by the EEOs of the CAS. They will likely need moderate academic supports to engage successfully in further studies in the content area.

At Target

Students performing at this level demonstrate a foundational understanding of concepts and skills represented by the EEOs of the CAS. They are academically prepared to engage in further studies in the content area with appropriate supports.

Advanced

Students performing at this level demonstrate a solid understanding of the concepts and skills represented by the EEOs of the CAS. They are academically well prepared to engage in further studies in the content area with appropriate supports.

Color Legend for Three-Dimensional Alignment

Colorado Essential Skills and Science and Engineering Practice

Grade Level Expectation

Cross Cutting Concept

	Physical Science					
	Emerging	Approaching Target	At Target	Advanced		
PG 1.		ange of science and enginee equire understanding struct		-		
GLE	Identify that a molecule	Identify a model of a	Create models of simple	Create models that		
1.1,	is made up of other	simple molecule, such as	molecules and more	represent differences in		
1.2	particles (atoms).	water, oxygen, methane,	complex structures, such	scale, proportion, or		
	(MS.1.1.a)	etc. (MS.1.1.a)	as water, oxygen,	quantity among simple		
	(methane, etc.	molecules and more		
			OR	complex structures, such		
			Use models to compare	as water, oxygen,		
			scale, proportion, or	methane, etc. (MS.1.1.a)		
			quantity among simple			
			molecules and more			
			complex structures such			
			as water, oxygen,			
			methane, etc. (MS.1.1.a)			
	Identify a property that	Identify a chemical	Analyze data to identify	Analyze data to identify		
	changes because of a	change based on a	the similarities and	evidence of a chemical		
	chemical change.	change in one property	differences of the	change based on the		
	(MS.1.1.b)	of one substance.	properties of a substance	similarities and		
		(MS.1.1.b)	before and after a	differences of the		
			chemical change.	properties of a substance		
			(MS.1.1.b)	before and after a change.		
				(MS.1.1.b)		
		Identify that natural	Use information to	Use information to		
		resources can be used to	identify an appropriate	identify a change in the		
		make new, synthetic	natural resource for	structure and function of a		
		materials. (MS.1.1.c)	making a new, synthetic	natural resource that is		
			material. (MS.1.1.c)	transformed to make a		
				new, synthetic material.		
				(MS.1.1.c)		
		Identify that a change in	Use a model to identify	Create a model to explain		
		temperature can cause a	what happens when	what happens when		
		change in the state of a	changes in temperature	changes in temperature		
		pure substance.	change the state of a	change the state of a pure		
		(MS.1.1.d)	pure substance.	substance. (MS.1.1.d)		
			(MS.1.1.d)			
	Identify a property of an	Identify a chemical	Use graphical displays to	Use graphical displays to		
	object that changes	change based on a	identify the similarities	identify evidence of a		
	because of a chemical	change in energy.	and differences of the	chemical change based on		
	change. (MS.1.2.a)	(MS.1.2.a)	properties of a substance	the similarities and		
			before and after a	differences of the		
			chemical change.	properties of a substance		
			(MS.1.2.a)	before and after a change		
				(MS.1.2.a)		

		Physical Sc	ience	
	Emerging	Approaching Target	At Target	Advanced
	Identify that atoms have	Use a model to identify	Use a model to identify	Create a model to
	mass. (MS.1.2.b)	that the number or the	that the number or the	demonstrate how the
		mass of atoms does not	mass of atoms does not	number or the mass of
		change in a chemical	change in a chemical	atoms does not change in
		reaction. (MS.1.2.b)	reaction, they are just	a chemical reaction, they
			rearranged. (MS.1.2.b)	are just rearranged.
				(MS.1.2.b)
		Identify a device that	Explain the operation of	Propose the design, a test,
		releases or absorbs	a device that releases or	or a modification of a
		thermal energy by	absorbs thermal energy	device that releases or
		chemical processes.	by chemical processes.	absorbs thermal energy by
		(MS.1.2.c)	(MS.1.2.c)	chemical processes.
				(MS.1.2.c)
PG 2.	Students can use the full r	ange of science and enginee	ering practices to make sens	e of natural phenomena
	and solve problems that r	equire understanding intera	ctions between objects and	within systems of objects.
GLE	Identify a force as what	Identify a solution that	Identify a solution that	Design a solution to
1.3,	makes objects move,	reduces the force of	reduces the force of	reduce the force of impact
1.4	change direction, or	impact in a collision of	impact in a collision of	in a collision of two
	become damaged.	two objects in which one	two objects in motion.	objects in motion or in
	(MS.1.3.a)	is in motion, and one is	(MS.1.3.a)	which one is in motion,
		stationary. (MS.1.3.a)		and one is stationary.
				(MS.1.3.a)
	Identify a force as what	Use an investigation to	Use an investigation to	Plan an investigation that
	makes objects move or	predict that objects with	predict that the motion	provides evidence that the
	change direction.	greater mass will impact	of objects with less mass	motion of objects with
	(MS.1.3.b)	with greater force than	will change more than	less mass will change
		objects with less mass	the motion of objects	more than the motion of
		moving at the same	with more mass when	objects with more mass
		speed. (MS.1.3.b)	acted upon by an	when acted upon by an
			equivalent force.	equivalent force.
			(MS.1.3.b)	(MS.1.3.b)
	Identify that	Identify a factor that	Use an investigation to	Ask questions about
	electromagnetic forces	affects the strength of	determine factors that	evidence gathered from
	can act at a distance.	electromagnetic forces.	affect the strength of	an investigation about
	(MS.1.4.a)	(MS.1.4.a)	electromagnetic forces.	factors that affect the
			(MS.1.4.a)	strength of
				electromagnetic forces.
				OR
				Plan an investigation to
				determine factors that
				affect the strength of
				electromagnetic forces.
				(MS.1.4.a)

		Physical Sci	ence	
	Emerging	Approaching Target	At Target	Advanced
	Identify that gravitational	Identify mass or distance	Identify a model or visual	Construct a graph, model,
	forces can act at a	as a factor that affects	representation that	or visual representation to
	distance. (MS.1.4.b)	the gravitational forces	shows evidence of	show evidence of
		on interacting objects.	gravitational forces on	gravitational forces on
		(MS.1.4.b)	interacting objects of	interacting objects of
			different mass.	different mass. (MS.1.4.b)
			(MS.1.4.b)	
	Identify that	Identify an electric or	Identify evidence from an	Plan an investigation that
	electromagnetic forces	magnetic field as a cause	investigation that electric	provides evidence that
	can act at a distance.	of the exertion of force	or magnetic fields exist	electric or magnetic fields
	(MS.1.4.c)	on an object.	between objects exerting	exist between objects
		OR	forces on each other	exerting forces on each
		Identify evidence from an	even though the objects	other even though the
		investigation that electric	are not in contact.	objects are not in contact.
		or magnetic fields exist.	(MS.1.4.c)	(MS.1.4.c)
		(MS.1.4.c)		
PG 3.	Students can use the full r	ange of science and enginee	ring practices to make sense	e of natural phenomena
	and solve problems that re	equire understanding of how	v energy is transferred and o	conserved.
GLE		Identify that the mass	Use graphical displays of	Use graphical displays of
1.5		and the speed of an	data to identify the	data showing the
1.6,		object affects the kinetic	relationship of the kinetic	relationship of kinetic
1.7		energy of the object.	energy of an object to	energy to mass and speed
		(MS.1.5.a)	the mass and the speed	to predict the mass,
			of the object. (MS.1.5.a)	speed, or kinetic energy of
				an object. (MS.1.5.a)
		Identify that the distance	Use a model to identify	Create a model to
		between interacting	that when the position of	demonstrate that when
		objects affects the	objects interacting at a	the position of objects
		potential energy stored	distance changes,	interacting at a distance
		in the system. (MS.1.5.b)	different amounts of	changes, different
			potential energy are	amounts of potential
			stored in the system.	energy are stored in the
			(MS.1.5.b)	system. (MS.1.5.b)
	Identify that more or less	Identify a device that	Compare data to identify	Compare data to explain
	thermal energy makes an	either minimizes or	a device that either	how a device either
	object feel warmer or	maximizes thermal	minimizes or maximizes	minimizes or maximizes
	colder. (MS.1.5.c)	energy transfer.	thermal energy transfer.	thermal energy transfer.
		(MS.1.5.c)	(MS.1.5.c)	(MS.1.5.c)
	Identify a change in	Use an investigation to	Use an investigation to	Plan an investigation to
	temperature as evidence	identify evidence that an	identify evidence that an	identify evidence that a
	of energy transfer.	energy transfer occurs	energy transfer occurs	change in temperature
	OR	when the temperature of	between objects when	measures energy transfer
	Identify a change in	an object changes.	their temperatures are	between objects of
	feeling of warmth or	(MS.1.5.d)	different. (MS.1.5.d)	different masses and
	coolness as evidence of			different types of
	energy transfer.			materials. (MS.1.5.d)
	energy transfer.			

	Physical Sci	ience	
Emerging	Approaching Target	At Target	Advanced
Identify a change in	Identify the direction of	Use an investigation to	
temperature or phase	energy transfer based on	support the claim that	
change as evidence of	a change in temperature	the transfer of energy	
energy transfer.	of an object. (MS.1.5.e)	between two objects can	
(MS.1.5.e)		be measured by	
		temperature. (MS.1.5.e)	
	Identify a device that	Explain the operation of	Propose the design, a test,
	minimizes or maximizes	a device that minimizes	or a modification of a
	thermal energy transfer	or maximizes thermal	device to minimize or
	from one object to	energy transfer from one	maximize thermal energy
	another. (MS.1.6.a)	object to another.	transfer from one object
		(MS.1.6.a)	to another. (MS.1.6.a)
	Identify that the	Identify a relationship	Demonstrate
	temperature of an object	between the energy	understanding of a
	is a measure of the	transferred to or from an	relationship between the
	average kinetic energy of	object and the average	energy transferred to or
	the particles making up	kinetic energy of the	from an object, the type
	the object. (MS.1.6.b)	particles making up the	of matter making up the
		object, as measured by	object, the mass of the
		the temperature of the	object, and the change in
		object.	the average kinetic energy
		Demonstrate an	of the particles making up
		understanding that the	the object, as measured by the temperature of the
		average kinetic energy of	object. (MS.1.6.b)
		the particles making up	object. (M3.1.0.0)
		an object, as measured	
		by the temperature of	
		the object, changes when	
		kinetic energy is	
		transferred to or from	
		the object.	
		(MS.1.6.b)	
	Identify a change in	Use a diagram to show	Create a diagram to show
	direction of motion as a	that a change in direction	that a change in direction
	case of kinetic energy	or speed of motion is	or speed of motion is
	transfer. (MS.1.6.c)	evidence of kinetic	evidence of kinetic energy
		energy transfer from one	transfer from one object
		object or another.	or another. (MS.1.6.c)
		(MS.1.6.c)	

		Physical Sci	ience	
	Emerging	Approaching Target	At Target	Advanced
	Identify that the position	Use a model to identify	Use a model to identify	Create a model to
	of an object affects the	when an object has more	that when the position of	demonstrate that when
	potential energy	or less potential energy	objects interacting at a	the position of objects
	associated with it.	associated with it.	distance changes,	interacting at a distance
	(MS.1.7.a)	(MS.1.7.a)	different amounts of	changes, different
			potential energy are	amounts of potential
			stored in the system.	energy are stored in the
			(MS.1.7.a)	system. (MS.1.7.a)
PG 4.		ange of science and enginee		
	-	equire understanding of how		
GLE	Identify waves as a	Identify that a wave has	Identify how an	Use a visual
1.8,	carrier of energy.	an observable property	observable property of	representation, simple
1.9,	(MS.1.8.a)	(e.g., loudness or	the amplitude of waves	graph, or table to show
1.10		brightness) because it	(e.g., loudness or	how the amplitude of a
		has energy.	brightness) is related to	wave is related to the
		(MS.1.8.a)	the energy in the wave.	energy in the wave.
			(MS.1.8.a)	(MS.1.8.a)
	Identify that different	Identify how a property	Use a visual	Use multiple
	materials can affect the	of a material affects the	representation to show	representations to
	reflection, absorption, or	reflection, absorption, or	that the reflection,	demonstrate how sound
	transmission of a sound	transmission of a sound	absorption, or	waves are reflected,
	wave.	wave.	transmission of a sound	absorbed, or transmitted
	OR	OR	wave is affected by the	through various materials.
	Identify a material that	Use a visual	properties of a material.	(MS.1.8.b)
	most or least affects the	representation to	(MS.1.8.b)	
	reflection, absorption, or	identify that different		
	transmission of a sound	materials can affect the		
	wave. (MS.1.8.b)	reflection, absorption, or		
		transmission of a sound		
		wave. (MS.1.8.b)		
	Identify that different	Identify how a property	Use a visual	Use multiple
	materials can affect the	of a material affects the	representation to show	representations to
	reflection, absorption, or	reflection, absorption, or	that the reflection,	demonstrate how light
	transmission of a light	transmission of a light	absorption, or	waves are reflected,
	wave.	wave.	transmission of a light	absorbed, or transmitted
	OR	OR	wave is affected by the	through various materials
	Identify a material that	Use a visual	properties of a material.	(MS.1.9.a)
	most or least affects the	representation to	(MS.1.9.a)	
	reflection, absorption, or	identify that different		
	transmission of a light	materials can affect the		
	wave. (MS.1.9.a)	reflection, absorption, or		
		transmission of a light		
		wave. (MS.1.9.a)		

Physical Science				
Emerging	Approaching Target	At Target	Advanced	
	Identify waves as a	Use information to	Use information to	
	carrier of information. (MS.1.10.a)	identify that digitized signals are a reliable way to encode and transmit information. (MS.1.10.a)	support the claim that digitized signals are a reliable way to encode and transmit information.	
			(MS.1.10.a)	

	1	Life Sc	ience		
	Emerging	Approaching Target	At Target	Advanced	
PG 5.	5. Students can use the full range of science and engineering practices to make sense of natural phen and solve problems that require understanding how individual organisms are configured and how structures function to support life, growth, behavior, and reproduction.				
GLE 2.1, 2.2, 2.3, 2.4	Identify a cell as the smallest living part of a living thing. (MS.2.1.a)	Identify the tools, instruments, or methods that can be used to see or learn about cells. (MS.2.1.a)	Identify how an investigation could show that living things are made of one or more cells. (MS.2.1.a)	Use evidence from an investigation to show that living things are made of one or more cells. (MS.2.1.a)	
	Identify that all plants and animals are made up of cells. (MS.2.1.b)	Use a model to identify one major component of a plant or animal cell. OR Identify the primary roles of one major component of a plant or animal cell. (MS.2.1.b)	Use a model to identify at least three major components of a plant or animal cell. OR Identify the primary roles of at least three major components of a plant or animal cell. (MS.2.1.b)	Develop or use a model to identify three major components of a plant or animal cell and the primary role of each component. (MS.2.1.b)	
	Identify that an organ is made up of cells. (MS.2.1.c)	Identify that the major organs that make up a specific system are made up of cells. (MS.2.1.c)	Use evidence to show that major organs are made up of cells. OR Identify how the major organs that make up specific systems interact and are made up of cells. (MS.2.1.c)	Use evidence to show that the major organs that make up specific systems interact and are made up of cells. (MS.2.1.c)	
		Identify how characteristic animal behaviors and specialized plant structures help them survive. (MS.2.2.a) Identify an environmental factor that influences the growth of an organism	Identify how characteristic animal behaviors and specialized plant structures help them survive and reproduce in a given environment. (MS.2.2.a) Identify how an organism's growth is influenced by an	plant structures help them survive and reproduce in a given environment. (MS.2.2.a) Use data to show how different environmental factors influence the growth	
	Identify light, carbon dioxide, or water as a necessary input into photosynthesis. (MS.2.3.a)	growth of an organism. (MS.2.2.b) Identify that photosynthesis needs the input of matter and energy. (MS.2.3.a)	environmental factor. (MS.2.2.b) Identify how photosynthesis plays a role in the cycling of matter and the flow of energy between plants and animals. (MS.2.3.a)	of organisms. (MS.2.2.b) Explain how photosynthesis plays a role in the cycling of matter and the flow of energy between plants and animals. (MS.2.3.a)	

		Life So	cience			
	Emerging	Approaching Target	At Target	Advanced		
	Identify food as a	Use a model to identify	Use a model to show	Develop a model to show		
	source of matter and	the flow of matter and	how food supports	how food supports growth		
	energy for growth.	energy used for growth.	growth and releases	and releases energy in an		
	(MS.2.3.b)	(MS.2.3.b)	energy in an organism.	organism. (MS.2.3.b)		
			(MS.2.3.b)			
	Identify that	Use information to	Use information to	Use information to identify		
	organisms sense and	identify that the	identify that organisms	how organisms detect,		
	respond <mark>to</mark>	nervous system is	detect, process, and use	process, and use		
	information (stimuli).	involved in the	information via the	information via the nervous		
	(MS.2.4.a)	processing of	nervous system for	system for immediate use or		
		information and	immediate use or to	to store information as a		
		formation of memories.	store information as a	memory. (MS.2.4.a)		
		OR	memory. (MS.2.4.a)			
		Identify that organisms				
		detect, process, and use				
		information for				
		immediate use or to				
		store information as a				
		memory.				
		(MS.2.4.a)				
PG 6.	Students can use the full range of science and engineering practices to make sense of natural phenomena					
	and solve problems that require understanding how living systems interact with the biotic and abiotic					
	environment.					
GLE	Identify that an	Identify how a change in	Identify how a change in	Use data to identify how a		
2.5,	individual organism is	environmental	environmental conditions	change in environmental		
2.6,	helped or hurt by the	conditions such as	such as resource	conditions such as resource		
2.7	availability of a	resource availability can	availability can affect	availability can affect		
	resource. (MS.2.5.a)	affect an individual	organisms and	organisms and populations		
		organism. (MS.2.5.a)	populations in an	in an ecosystem. (MS.2.5.a)		
			ecosystem. (MS.2.5.a)			
		Identify an example of	Identify an example of	Explain the differences		
		competitive, predatory,	competitive, predatory,	between competitive,		
		and mutually beneficial	and mutually beneficial	predatory, and mutually		
		relationships between	relationships between	beneficial relationships		
		organisms. (MS.2.5.b)	organisms in at least	between organisms in at		
			three different	least three different		
			ecosystems. (MS.2.5.b)	ecosystems. (MS.2.5.b)		

		Life Sc	Life Science				
	Emerging	Approaching Target	At Target	Advanced			
	Identify that living	Use a model to identify	Use a model to identify	Develop a model to show			
	things receive inputs	an input of matter or	an example of how	how matter and energy are			
	of matter and energy.	energy into a living	matter and energy are	cycled among living and			
	(MS.2.6.a)	thing.	cycled among living and	nonliving parts of an			
		OR	nonliving parts of an	ecosystem. (MS.2.6.a)			
		Identify an example of	ecosystem. (MS.2.6.a)				
		the cycling of matter					
		and energy among living					
		and nonliving parts of					
		an ecosystem.					
		(MS.2.6.a)					
		Identify an effect on a	Identify examples of how	Use evidence to show how			
		population from a	changes to physical or	changes to physical or			
		change in a physical or	biological components of	biological components of an			
		biological component of	an ecosystem affect	ecosystem affect			
		an ecosystem.	populations. (MS.2.7.a)	populations. (MS.2.7.a)			
		(MS.2.7.a)					
	Identify that the	Identify how a design	Compare the economic				
	health of an	solution maintains the	costs, social				
	ecosystem can change	health of an ecosystem	considerations, or				
	when the system is	in the face of a	scientific constraints of				
	disturbed. (MS.2.7.b)	disruption to a physical	two design solutions for				
		or biological component	maintaining the health of				
		of the system.	an ecosystem in the face				
		(MS.2.7.b)	of a disruption to a				
			physical or biological				
			component of the				
			system. (MS.2.7.b)				
PG 7.		t require understanding ho	•.	ense of natural phenomena tal factors influence variation			
GLE		Identify genes as things	Use a model to identify	Develop a model of how			
2.8		that change to result in	that structural changes to	structural changes to genes			
		harmful, beneficial, or	genes (mutations) result	(mutations) result in			
		neutral effects for an	in harmful, beneficial, or	harmful, beneficial, or			
		organism. (MS.2.8.a)	neutral effects for an	neutral effects for an			
			organism. (MS.2.8.a)	organism. (MS.2.8.a)			

		Life So	ience	
	Emerging	Approaching Target	At Target	Advanced
	Identify that offspring have similar	Use a model to identify that organisms with	Use a model to identify that the genetic	Develop a model to show how the genetic
	characteristics to their	similar characteristics	characteristics of a	characteristics of a
	parents. (MS.2.8.b)	are related.	generation produced by	generation produced by
		OR	asexual or sexual	asexual or sexual
		Identify whether an	reproduction relate to	reproduction relate to the
		organism is genetically	the previous generation.	previous generation.
		related to the previous	(MS.2.8.b)	(MS.2.8.b)
		generation.		
		(MS.2.8.b)		
PG 8.	Students can use the fu	Il range of science and eng	ineering practices to make s	sense of natural phenomena
	and solve problems that	t require understanding ho	ow natural selection drives b	piological evolution,
	accounting for the unity	and diversity of organism	S.	
GLE		Identify that fossils are	Identify patterns in the	Use data to identify at least
2.9,		evidence of organisms	fossil record that show	three examples of patterns
2.10		that lived in the past.	changes in the level of	in the fossil record that
		(MS.2.9.a)	complexity of anatomical	show changes in the level of
			structures in organisms	complexity of anatomical
			and the chronological	structures in organisms and
			order of fossil	the chronological order of
			appearance in the rock	fossil appearance in the rock
			layers.	layers. (MS.2.9.a)
			OR Use data to identify that	
			the fossil record shows	
			changes in the level of	
			complexity of anatomical	
			structures in organisms	
			and that layering of	
			fossils reveals their	
			chronological order of	
			appearance. (MS.2.9.a)	
	Identify that two	Identify that fossils are	Identify patterns of	Use scientific information to
	modern organisms	evidence of organisms	similarities and	explain that patterns of
	with similar structures	that lived in the past.	differences among	similarities and differences
	are likely more closely	(MS.2.9.b)	modern organisms and	among modern organisms
	related than those		fossil organisms.	and fossil organisms are
	without similar		(MS.2.9.b)	because of evolutionary
	structures. (MS.2.9.b)			relationships. (MS.2.9.b)
		Identify that an embryo	Use a display of pictorial	Use a display of pictorial
		eventually develops into	data to compare patterns	data to compare embryonic
		a recognizable	of embryonic	development patterns
		organism. (MS.2.9.c)	characteristics across	across multiple species.
			multiple species.	(MS.2.9.c)
			(MS.2.9.c)	

	Life S	cience	
Emerging	Approaching Target	At Target	Advanced
Identify that an individual organism is helped or hurt by one of its traits. (MS.2.10.a)	Identify that variations of traits in populations increase some individuals' probability of surviving and reproducing. (MS.2.10.a)	Identify how variations of traits in populations increase some individuals' probability of surviving and reproducing. (MS.2.10.a)	Explain how variations of traits in populations increase some individuals' probability of surviving and reproducing. (MS.2.10.a)
	Identify that some genetic variations give some individuals an advantage in surviving and reproducing. (MS.2.10.c) Identify that natural	Identify the relationship between genetic variations among individuals and advantages or disadvantages those individuals have for surviving and reproducing. (MS.2.10.c) Identify the relationship	Use mathematical thinking to identify the relationship between genetic variations among individuals and advantages or disadvantages those individuals have for surviving and reproducing. (MS.2.10.c) Use mathematical thinking
	selection works over many generations. (MS.2.11.a)	between natural selection of genetic variations over many generations and the increase and decrease of specific traits in populations over time. (MS.2.11.a)	to identify the relationship between natural selection of genetic variations over generations and the increase and decrease of specific traits in populations over time. (MS.2.11.a)
Identify biodiversity as a measure of the health of an ecosystem. (MS.2.12.a)	Identify a solution for maintaining the biodiversity of an ecosystem. (MS.2.12.a)	Compare the economic costs, social considerations, or scientific constraints of two design solutions for maintaining the biodiversity of an ecosystem. (MS.2.12.a)	

		Earth and Sp	bace Science			
	Emerging	Approaching Target	At Target	Advanced		
PG 9.			•••	sense of natural phenomena		
	and solve problems that require understanding the universe and Earth's place in it.					
GLE	Identify that the	Use a model of the	Use a model of the	Develop a model of the		
3.1,	appearance of Earth's	Earth-Sun-moon system	Earth-Sun-moon system	Earth-Sun-moon system to		
3.2	moon changes, or	to identify that the	to show the cyclic	show the cyclic patterns of		
	Earth's seasons	appearance of Earth's	patterns of the moon's	the moon's common phases		
	change, because of	moon changes, or	common phases and	and Earth's seasons.		
	their relative	Earth's seasons change,	Earth's seasons.	(MS.3.1.a)		
	positions. (MS.3.1.a)	because of their relative positions. (MS.3.1.a)	(MS.3.1.a)			
		Identify gravity as what	Use a model to identify	Use a model to demonstrate		
		keeps Earth and the	the role of gravity in the	the role of gravity in the		
		moon in their orbits.	orbital motions of Earth	orbital motions of Earth and		
		(MS.3.1.b)	and the moon.	the moon. (MS.3.1.b)		
			(MS.3.1.b)			
		Identify gravity as what	Use a model to identify	Use a model to demonstrate		
		draws and holds	the role of gravity in	the role of gravity in drawing		
		together the matter	drawing and holding	and holding together the		
		making up Earth and the	together the matter	matter making up Earth and		
		moon. (MS.3.2.a)	making up Earth and the	the moon. (MS.3.2.a)		
			moon. (MS.3.2.a)			
	Identify that all solar	Identify one similarity or	Use data to determine			
	system objects are	one difference among	at least one similarity			
	affected by gravity.	solar system objects.	and one difference			
	(MS.3.2.b)	(MS.3.2.b)	among solar system			
			objects. (MS.3.2.b)			
	Identify that the	Use a model of the	Use a model of the	Develop or use a model of		
	appearance of Earth's	Earth-Sun-moon system	Earth-Sun-moon system	the Earth-Sun-moon system		
	moon changes, or	to identify that the	to describe a cyclic	to compare the different		
	Earth's seasons	appearance of Earth's	pattern in lunar phases,	cyclic patterns of lunar		
	change, because of	moon changes, or	eclipses of the Sun and	phases, eclipses of the Sun		
	their relative	Earth's seasons change,	the moon, and Earth's	and the moon, and Earth's		
	positions. (MS.3.2.c)	because of their relative	seasons. (MS.3.2.c)	seasons. (MS.3.2.c)		
		positions. (MS.3.2.c)				
PG		•		sense of natural phenomena		
10.	and solve problems that	t require understanding ho				
GLE		Identify that rock strata	Identify evidence that	Use evidence to support the		
3.3,		can be used to establish	supports the scientific	identification of the relative		
3.4,		relative ages in Earth's	explanation that rock	ages of materials based on		
3.5,		history. (MS.3.3.a)	strata can be used to	rock strata. (MS.3.3.a)		
3.6,			establish relative ages in			
3.7			Earth's history.			
			(MS.3.3.a)			

Earth and Space Science					
Emerging	Approaching Target	At Target	Advanced		
Identify that heat	Use a model to identify	Use a model to identify	Develop or use a model to		
energy from Earth's	that the influence of the	that the influence of the	show how the influence of		
interior can change	Sun's energy on the	Sun's energy on the	the Sun's energy on the		
and form rocks.	water cycle and the heat	water cycle and the heat	water cycle and the heat		
(MS.3.4.a)	energy from Earth's	energy from Earth's	energy from Earth's interio		
	interior can change and	interior can act over	can act over time to change		
	form rocks. (MS.3.4.a)	time to change and form	and form rocks. (MS.3.4.a)		
		rocks. (MS.3.4.a)			
	Use scientific resources	Use scientific resources	Use scientific resources to		
	to identify a process	to identify fast and slow	describe fast and slow		
	that has changed Earth's	processes that have	processes that have change		
	surface. (MS.3.4.b)	changed Earth's surface	Earth's surface on global		
		on global scales over	scales over time. (MS.3.4.b		
		time. (MS.3.4.b)			
	Use data to identify	Use data on the shape	Use data on the shape of		
	plate motions as the	of continents, ocean	continents, ocean structure		
	cause of ocean structure	structure (ridges,	(ridges, fracture zones, and		
	(ridges, fracture zones,	fracture zones, and	trenches), and distribution		
	and trenches).	trenches), and	fossils to represent the		
	(MS.3.5.a)	distribution of fossils to	phenomenon of plate		
		identify evidence of past	motions. (MS.3.5.a)		
		plate motions.			
		(MS.3.5.a)			
Identify a process that	Identify the fast and	Explain the fast and			
changes Earth's	slow processes that	slow processes that			
surface on a local	have changed Earth's	have changed Earth's			
scale over time.	surface on local scales	surface on local scales			
(MS.3.6.a)	over time. (MS.3.6.a)	over time. (MS.3.6.a)			
Identify a change that	Identify how the state of	Use a model to identify	Develop a model to show		
makes more water	water changes at one	how the state of water	how the state of water		
vapor, liquid water, or	stage of the water cycle.	changes as it moves	changes as it moves throug		
ice. (MS.3.6.b)	(MS.3.6.b)	through the water cycle.	the water cycle. (MS.3.6.b)		
		(MS.3.6.b)			
Identify how the state	Identify that the motion	Use data to provide	Use data to identify how th		
of water changes	and interaction of air	evidence that the	motion and interaction of a		
when rain or snow	masses cause changes in	motion and interaction	masses cause changes in		
forms. (MS.3.6.c)	weather conditions.	of air masses cause	weather conditions.		
· · · ·	(MS.3.6.c)	changes in weather	(MS.3.6.c)		
	`	conditions. (MS.3.6.c)			

	-	Earth and Sp	pace Science	
	Emerging	Approaching Target	At Target	Advanced
	Identify that a location's climate is affected by the location's latitude, elevation, and proximity to oceans. (MS.3.6.d)	Identify a location's climate based on the location's latitude, elevation, and proximity to oceans. OR Use a model to identify two locations of similar or different climates. (MS.3.6.d)	Use a model to identify how the latitude, elevation, and proximity to oceans of a location determines the location's climate. (MS.3.6.d)	Develop a model to show how the latitude, elevation, and proximity to oceans of a location determines the location's climate. (MS.3.6.d)
	Identify how the state of water changes when rain or snow forms. (MS.3.7.a)	Identify that the motion and interaction of air masses can cause severe weather. (MS.3.7.a)	Use evidence from an investigation to identify how the motion and interaction of air masses cause severe weather. (MS.3.7.a)	Plan an investigation to identify how the motion and interaction of air masses cause severe weather. (MS.3.7.a)
	Identify that a region's climate is affected by the region's landforms and latitude. (MS.3.7.b)	Identify a regional climate based on the region's landforms and latitude. (MS.3.7.b)	Use a system model to identify different regional climates related to the Coriolis Effect, different landforms, and unequal heating due to latitude. (MS.3.7.b)	Develop a system model to identify different regional climates related to the Coriolis Effect, different landforms, and unequal heating due to latitude. (MS.3.7.b)
PG 11.		Il range of science and eng t require understanding ho	ineering practices to make	sense of natural phenomena
GLE 3.9, 3.10	Identify that humans depend on limited resources from Earth. (MS.3.8.a)	Use scientific resources to identify evidence of how Earth's resources are limited and uneven. OR Identify that Earth's resources are limited and uneven as a result of geoscience processes. (MS.3.8.a)	Use scientific resources to identify evidence of how Earth's resources are limited and uneven as a result of geoscience processes. (MS.3.8.a)	
	Identify that humans need to prepare for natural hazards. (MS.3.9.a)	Use data to identify how some natural hazards can be predicted, prepared for, and mitigated. (MS.3.9.a)	Use patterns in data to show how some natural hazards can be predicted, prepared for, and mitigated. (MS.3.9.a)	

Earth and Space Science						
Emerging	Approaching Target	At Target	Advanced			
Identify that a human activity can affect the environment. (MS.3.10.a)	Identify how a human activity is likely to affect the environment. (MS.3.10.a)	Identify a solution to an environmental problem caused by humans in order to minimize the impact of the problem. (MS.3.10.a)	Develop a solution to an environmental problem caused by humans in order to minimize the impact of the problem. (MS.3.10.a)			
Identify that humans use natural resources. (MS.3.10.b)	Identify that use of natural resources is likely to increase with an increase in human population. (MS.3.10.b)	Use data to identify the effect of increases in human population and the use of natural resources on Earth's systems. (MS.3.10.b)	Use data to explain or predict the effect of increases in human population and the use of natural resources on Earth's systems. (MS.3.10.b)			