

New Mexico Expanded Grade Band Expectations

Science: Grades 5 and 6

Strand I: SCIENTIFIC THINKING AND PRACTICE

Standard I: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically

	5–8 Benchmark 1: Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings		5–8 Benchmark 2: Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge		5–8 Benchmark 3: Use mathematical ideas, tools, and techniques to understand scientific knowledge	
ENGAGEMENT	The student	GLPS		GLPS		GLPS
	<i>1-a indicates that personal physical problems exist (e.g., crying for hunger)</i>	5.1	<i>1-a responds to routine events while participating in scientific inquiries</i>	5.1 6.2	<i>1-a attends to scientific stimuli and materials that are reflective of grade band expectations and represent math ideas, tools, and techniques for at least a few seconds at a time on a regular basis</i>	5.1 6.2
	<i>2-a maintains and shifts attention between one or more objects, activities, or social partners</i>	5.1	<i>2-a recognizes that actions have consequences within the context of a scientific inquiry</i>	5.1 6.2	<i>2-a indicates understanding of routine events occurring in sequenced science activities involving math tools</i>	5.1 6.2

	5–8 Benchmark 1: Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings		5–8 Benchmark 2: Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge		5–8 Benchmark 3: Use mathematical ideas, tools, and techniques to understand scientific knowledge	
PRE-SYMBOLIC	The student	GLPS		GLPS		GLPS
	<i>3-a indicates observed changes within the environment</i>	5.1 5.3 6.1	<i>3-a anticipates an action resulting from specific conditions (cause and effect)</i>	5.1 6.2	<i>3-a anticipates an action resulting from specific conditions</i>	5.2 5.3 6.2
	<i>4-a identifies problems/issues that exist in the physical world</i>	5.1	<i>4-a identifies problems/issues that exist in the physical world</i>	5.1	<i>4-a matches tool used for measurement with application (e.g., ruler with distance, thermometer with temperature, timer with elapsed time)</i>	5.1 5.4
	<i>4-b investigates data presented in graph, chart, and table form</i>	5.1 5.3 6.1	<i>4-b investigates problems/issues with peers</i>	5.2		

	5–8 Benchmark 1: Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings		5–8 Benchmark 2: Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge		5–8 Benchmark 3: Use mathematical ideas, tools, and techniques to understand scientific knowledge	
SYMBOLIC	The student	GLPS		GLPS		GLPS
	5-a describes basic cause and effect in a variety of contexts (e.g., if-then statements)	5.3 6.2	<i>5-a uses a variety of methods to collect information (e.g., observation, data collection, controlled experiment)</i>	5.1 6.2	<i>5-a demonstrates that numerals can be used to convey information about the physical world (e.g., number of objects, tallying measurable observations)</i>	5.2
	<i>5-b collects specific data related to a posed scientific question or problem</i>	5.1 5.3 6.1	<i>5-b discusses the possibility that results that do not answer the question being investigated will be collected</i>	6.3	<i>5-b uses measurement tools to gather data (e.g., ruler, timer, thermometer)</i>	5.1 5.4
	5-c communicates observations about the world	5.5	<i>6-a uses defined criteria to investigate a hypothesis for a given scientific problem with peers</i>	5.2 6.2	<i>6-a recognizes that tables, charts, and graphs contain information that can be used to answer specific questions</i>	5.3
	<i>6-a systematically records data, using appropriate tools, related to a problem or observation (e.g., average height in the classroom)</i>	5.3 6.1			<i>6-b makes predictions based upon review of data, observation, and explanations</i>	5.3 6.2
	<i>6-b documents steps taken in a scientific investigation</i>	5.5				

	5–8 Benchmark 1: Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings		5–8 Benchmark 2: Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge		5–8 Benchmark 3: Use mathematical ideas, tools, and techniques to understand scientific knowledge	
EXTENDED SYMBOLIC	The student	GLPS		GLPS		GLPS
	<i>7-a constructs appropriate graphs, tables, and charts from data to determine simple relationships between two variables</i>	5.3 6.1	<i>7-a communicates basic understanding of scientific investigation (e.g., hypothesis, experiment, conclusion)</i>	6.2	<i>7-a uses mathematical numerals to represent measurable data and observations</i>	5.3 6.2
	<i>8-a plans and conducts an investigation, including formulating a question, making observations, developing conclusions, and communicating findings</i>	5.1 6.3	<i>7-b formulates hypotheses that potentially explain observations</i>	6.2	<i>7-b uses appropriate measurement tool (e.g., ruler, thermometer, timer) to gather relevant data (e.g., distances, temperatures, elapsed times)</i>	5.1 5.4 6.1
	<i>8-b uses available tools to collect and analyze data (e.g., calculators, computers, balances, spring scales, microscopes)</i>	5.2	<i>8-a shares the results of an experiment with peers and gathers feedback regarding their respective acceptance or rejection of the hypothesis and conclusion</i>	5.2	<i>8-a demonstrates that the number of data (sample size) influences the reliability of a prediction (e.g., replicating a heads/tails coin experiment three times versus 20 times)</i>	5.3 6.2
	<i>8-c uses a variety of graphic models to present data (e.g., charts, graphs, tables, labeled diagrams)</i>	5.3 6.1	<i>8-b examines alternative explanations for observations with peers</i>	6.2		

Strand II: CONTENT OF SCIENCE

Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy

	5–8 Benchmark 1: Know the forms and properties of matter and how matter interacts		5–8 Benchmark 2: Explain the physical processes involved in the transfer, change, and conservation of energy		5–8 Benchmark 3: Describe and explain forces that produce motion in objects	
ENGAGEMENT	The student	GLPS		GLPS		GLPS
	<i>1-a responds to changes in properties of matter (e.g., textures)</i>	5.1 6.1	<i>1-a responds to changes in environmental conditions involving energy (e.g., light, temperature)</i>	5.1 5.3 6.1 6.2	<i>1-a responds to changes in movement and touch</i>	5.3
	<i>2-a responds selectively to tactile stimuli (e.g., hard/soft, scratchy/smooth, round/square)</i>	5.1 6.1	<i>2-a responds selectively to environmental conditions (e.g., hot/cold, light/dark)</i>	5.1 5.3 6.1 6.2	<i>2-a shows a preference for different types of movement (e.g., rocking, bouncing) and touch (e.g., heavy/light)</i>	5.3
PRE-SYMBOLIC	The student	GLPS		GLPS		GLPS
	<i>3-a distinguishes between different environmental conditions (e.g., light/dark, hot/cold)</i>	6.2	<i>3-a distinguishes between different environmental conditions (light/dark, hot/cold)</i>	5.1 6.1 6.2	<i>3-a recognizes that force produces motion</i>	5.3
	4-a describes functional changes in matter (e.g., melting)	5.2	<i>4-a initiates purposeful activity in response to environmental conditions (e.g., light, heat, sound, and pressure)</i>	6.2 6.3	<i>4-a identifies actions or motion of objects</i>	5.3

	5–8 Benchmark 1: Know the forms and properties of matter and how matter interacts		5–8 Benchmark 2: Explain the physical processes involved in the transfer, change, and conservation of energy		5–8 Benchmark 3: Describe and explain forces that produce motion in objects	
SYMBOLIC	The student	GLPS		GLPS		GLPS
	5-a matches scientific terms for states (e.g., solid, gas, liquid) to physical objects	5.2 6.1	<i>5-a matches scientific terms for types of energy (e.g., heat, light, electrical, chemical, nuclear) with appropriate symbols and objects</i>	5.3 6.1	<i>5-a demonstrates that when a force (e.g., gravity, friction) acts on an object, the object speeds up, slows down, or goes in a different direction</i>	5.4
	<i>5-b demonstrates that wholes are composed of smaller parts (e.g., models, puzzles, manipulatives)</i>	5.3 5.4 6.3	<i>5-b demonstrates that heat is transferred from hotter to cooler materials</i>	5.1 6.2	<i>5-b identifies forces in nature (e.g., gravity, magnetism, electricity, friction)</i>	5.3
	<i>6-a matches substances with like properties (e.g., hardness, color, texture, smell)</i>	5.1 6.1 6.2	6-a demonstrates that energy is needed to make things operate (e.g., batteries, gas, electricity)	5.4 6.1	<i>6-a identifies simple machines (e.g., wedges, inclined planes, levers, wheels and axles, pulleys, screws)</i>	5.5
			<i>6-b demonstrates understanding that energy is neither created nor destroyed</i>	6.3	<i>6-b demonstrates understanding that every object has mass and exerts gravitational force on other objects (e.g., Earth’s gravitational force on falling objects)</i>	6.1 6.2

	5–8 Benchmark 1: Know the forms and properties of matter and how matter interacts		5–8 Benchmark 2: Explain the physical processes involved in the transfer, change, and conservation of energy		5–8 Benchmark 3: Describe and explain forces that produce motion in objects	
EXTENDED SYMBOLIC	The student	GLPS		GLPS		GLPS
	7-a demonstrates how matter changes phases (e.g., ice to water to steam)	5.1 5.2	<i>7-a describes various sources for the production of electricity (e.g., coal plants, wind generators, solar cells, geothermal plants, nuclear power plants)</i>	5.4 6.1	<i>7-a describes how simple machines (e.g., wedges, inclined planes, levers, wheels and axles, pulleys, screws) work</i>	5.5
	8-a describes phase changes among states of matter (e.g., evaporation, condensation, melting)	5.2	<i>8-a describes the conversion of some energy into heat when energy changes forms</i>	5.4	<i>7-b demonstrates that greater force is needed to move objects with greater mass</i>	5.4
	<i>8-b uses properties to identify substances (e.g., hardness, color, texture, smell)</i>	6.2			<i>8-a describes fundamental forces in nature (e.g., gravity, magnetism, electricity, friction, nuclear)</i>	5.3
	<i>8-c uses models to investigate the structure of simple atoms and molecules</i>	5.3 5.5 6.3			<i>8-b demonstrates understanding that force has both magnitude and direction</i>	5.1

Strand II: CONTENT OF SCIENCE

Standard II (Life Science): Understand the properties, structures, and processes of living things and the interdependence of living things and their environments

	5–8 Benchmark 1: Explain the diverse structures and functions of living things and the complex relationships between living things and their environments		5–8 Benchmark 2: Understand how traits are passed from one generation to the next and how species evolve		5–8 Benchmark 3: Understand the structure of organisms and the function of cells in living systems	
ENGAGEMENT	The student	GLPS		GLPS		GLPS
	<i>1-a attends to others in the environment for at least a few seconds at a time on a regular basis as demonstrated by physical orientation, when possible, toward others and a change in previous activity or behavior</i>	5.3 6.1	<i>1-a attends to others in the environment for at least a few seconds at a time on a regular basis as demonstrated by physical orientation, when possible, toward others and a change in previous activity or behavior</i>	5.2 6.2	<i>1-a responds to a variety of sensory information or stimuli (e.g., smell, visual, taste, touch, sound, or movement) that represent the structure of organisms</i>	5.3
	<i>2-a attends to organisms in the environment</i>	5.3 6.1	<i>2-a distinguishes between self and others</i>	5.2 6.2	<i>2-a distinguishes between self-directed movement and being moved by others</i>	5.3
			<i>2-b distinguishes between different organisms</i>	5.2 6.2	<i>2-b distinguishes between different organisms</i>	5.3

	5–8 Benchmark 1: Explain the diverse structures and functions of living things and the complex relationships between living things and their environments		5–8 Benchmark 2: Understand how traits are passed from one generation to the next and how species evolve		5–8 Benchmark 3: Understand the structure of organisms and the function of cells in living systems	
PRE-SYMBOLIC	The student	GLPS		GLPS		GLPS
	<i>3-a distinguishes between different environments</i>	5.3 6.3	<i>3-a matches graphic representations of like plants and animals (species)</i>	5.2	<i>3-a matches graphic representations of like plants and animals</i>	5.3
	<i>3-b distinguishes between different organisms</i>	5.3 6.1	<i>4-a identifies characteristics of like species</i>	5.2 5.3	<i>4-a matches plant cells with plant cells and animal cells with animal cells</i>	5.1 5.3
	<i>4-a matches organisms to specific ecosystems in which they live (e.g., beavers to riparian ecosystem)</i>	6.3	<i>4-b demonstrates understanding that organisms change over the course of their lives (e.g., birth, growth and development, reproduction, and death)</i>	5.1	<i>4-b identifies characteristics of plant cells</i>	5.1 5.3
					<i>4-c identifies characteristics of animal cells</i>	5.1 5.3

	5–8 Benchmark 1: Explain the diverse structures and functions of living things and the complex relationships between living things and their environments		5–8 Benchmark 2: Understand how traits are passed from one generation to the next and how species evolve		5–8 Benchmark 3: Understand the structure of organisms and the function of cells in living systems	
SYMBOLIC	The student	GLPS		GLPS		GLPS
	<i>5-a identifies components of habitats and ecosystems (producers, consumers, decomposers, predators)</i>	5.1	<i>5-a demonstrates understanding that organisms grow and change over many generations</i>	5.1 5.3	<i>5-a distinguishes between plant and animal cells</i>	5.1
	<i>5-b depicts relationships between different organisms, using food webs</i>	5.2	<i>5-b identifies characteristics that are the same between parents and offspring</i>		<i>5-b demonstrates understanding that living organisms are composed of cells</i>	5.1
			<i>6-a explains how reproduction is a characteristic of all living things and is essential to the continuation of the species</i>	5.2 6.2		
			6-b identifies adaptations that species have undergone that resulted in an advantage within a specific environment	6.2		
			<i>6-c identifies adaptations that species have undergone that resulted in the extinction of the species within a specific environment</i>	6.2		

	5–8 Benchmark 1: Explain the diverse structures and functions of living things and the complex relationships between living things and their environments		5–8 Benchmark 2: Understand how traits are passed from one generation to the next and how species evolve		5–8 Benchmark 3: Understand the structure of organisms and the function of cells in living systems	
EXTENDED SYMBOLIC	The student	GLPS		GLPS		GLPS
	<i>7-a demonstrates how energy flows through ecosystems (e.g., sunlight, green plants, food for animals)</i>	5.1	<i>7-a compares how a variety of organisms have changed over generations, based upon the fossil record</i>	5.3 6.1 6.2	<i>7-a demonstrates understanding that cells perform specialized functions (e.g., reproduction, digestion, movement)</i>	5.2
	<i>7-b describes how human activities impact the environment</i>	5.4	<i>7-b demonstrates understanding that parents pass along inheritable traits to their offspring</i>	5.2 5.3	<i>7-b explains how fossil fuels were formed from animal and plant cells</i>	6.1 6.2
	<i>8-a describes how organisms adapt to various environmental conditions</i>	5.3 6.3	<i>8-a explains different characteristics of each stage of the life cycle for a variety of plants and animals</i>	5.1		
			<i>8-b identifies traits that are inherited by offspring of both plants and animals (e.g., flower color, eye color)</i>	5.2 5.3		

Strand II: CONTENT OF SCIENCE

Standard III (Earth and Space Science): Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth’s systems

	5–8 Benchmark 1: Describe how the concepts of energy, matter, and force can be used to explain the observed behavior of the solar system, the universe, and their structures		5–8 Benchmark 2: Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth’s systems	
ENGAGEMENT	The student	GLPS		GLPS
	<i>1-a attends to objects in the sky (e.g., planets, moon, stars)</i>	5.2 6.3	1-a responds to atmospheric changes (e.g., wind, water, weather)	5.1 6.5
	<i>2-a shifts attention to objects in the sky (e.g., planets, moon, stars)</i>	5.2 6.3	2-a shifts attention to atmospheric changes (e.g., wind, water, weather)	5.1 6.5
PRE-SYMBOLIC	The student	GLPS		GLPS
	<i>3-a associates environmental changes with the seasons (e.g., cold/winter, blossoms/spring, hot/summer, leaves changing color/fall)</i>	6.4	3-a distinguishes between air, soil, and water	5.2 5.3
	<i>4-a matches graphic representations of suns, moons, and planets</i>	6.2	<i>3-b distinguishes between fresh water and salt water</i>	5.3
			4-a matches graphic representations of air, soil, and water	5.2 5.3
SYMBOLIC	The student	GLPS		GLPS
	<i>5-a demonstrates understanding that there have been manned and unmanned journeys to space and to the moon</i>	5.3	<i>5-a demonstrates understanding that oceans are composed of salt water, and rivers, streams, and lakes are composed of fresh water</i>	5.3
	<i>5-b appropriately identifies graphic representations of the planets that compose our solar system</i>	5.2 6.3	<i>5-b investigates models of the Earth’s layers (e.g., crust, mantle, core)</i>	6.1

	5–8 Benchmark 1: Describe how the concepts of energy, matter, and force can be used to explain the observed behavior of the solar system, the universe, and their structures		5–8 Benchmark 2: Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth’s systems	
	<i>6-a demonstrates understanding that our sun is composed of gases (e.g., hydrogen and helium)</i>	6.3	<i>6-a describe the differences among the Earth’s layers</i>	6.1
	<i>6-b demonstrates understanding that celestial objects are huge and are separated from one another by vast distances</i>	5.1	<i>6-b investigates models of the strata in the Earth’s atmosphere</i>	6.6
			<i>6-c recognizes that the Earth’s seasons are caused by the Earth’s motion around the sun and tilt of the Earth’s axis of rotation</i>	5.4
EXTENDED SYMBOLIC	The student	GLPS		GLPS
	<i>7-a describes the characteristics of the different planets that compose our solar system</i>	6.3	<i>7-a demonstrates how the Earth’s motions, both axis rotation and orbital, create our years, days, and seasons</i>	5.4
	<i>7-b demonstrates understanding that the Earth-moon-sun system’s regular motion explains phenomena on Earth</i>	6.4	7-b demonstrates understanding of the factors that influence weather and climate (e.g., heat, air movement, pressure, humidity)	6.5
	<i>8-a identifies types of objects in the solar systems (e.g., sun, planets, moons, asteroids)</i>	5.2 6.3	<i>8-a describes how to use weather maps and data (e.g., temperature, wind speeds, precipitation)</i>	6.6
	<i>8-b demonstrates understanding that the universe is composed of numerous galaxies, which are composed of solar systems such as ours</i>	5.1 5.2 6.1 6.2	8-b demonstrates understanding that landforms are shaped by constructive and destructive forces (e.g., weather, erosion, plate tectonics, volcanoes, asteroids, glaciers)	6.2
			8-c demonstrates understanding of the role that air plays on Earth (e.g., weather, wind currents, erosion, oxygen, water vapor)	5.1 5.2 6.4 6.5

Strand III: SCIENCE AND SOCIETY

Standard I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies

	5–8 Benchmark 1: Explain how scientific discoveries and inventions have changed individuals and societies	
ENGAGEMENT	The student	GLPS
	1-a attends to others while participating in discussions about how scientific discoveries (e.g., transportation, entertainment, health, nutrition, medicine, computers) have changed individuals and societies	5.1 5.2 6.1 6.2
	2-a responds to others while participating in activities that address how scientific discoveries (e.g., transportation, entertainment, health, nutrition, medicine, computers) have changed individuals and societies	5.1 5.2 6.1 6.2
PRE-SYMBOLIC	The student	GLPS
	<i>3-a uses available technology (e.g., computer, assistive technology, audiovisual equipment)</i>	5.2 6.2
	<i>4-a demonstrates the appropriate use of available technology</i>	5.2 6.2
SYMBOLIC	The student	GLPS
	<i>5-a identifies how scientific knowledge has shaped our decision-making processes (e.g., nutrition, hygiene, preventative medicine, medical treatment, exploration)</i>	5.1 5.2 6.1
	<i>6-a describes contributions of science to local or current issues (e.g., environmental protection, water use, technology, National Laboratories)</i>	5.1

	5–8 Benchmark 1: Explain how scientific discoveries and inventions have changed individuals and societies	
EXTENDED SYMBOLIC	The student	GLPS
	<i>7-a describes how various technologies have affected the lives of individuals (e.g., assistive technology, transportation, entertainment, health, energy production)</i>	5.2
	<i>8-a describes the technologies that are responsible for revolutionizing communications, medicine, health, energy production</i>	6.2