

Elementary Science PK – 6 Vertical Alignment

Prekindergarten	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
PK.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate and responsible practices.	K.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate and responsible practices.	1.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate and responsible practices.	2.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures.	3.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following school and home safety procedures and environmentally appropriate practices.	4.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations, following home and school safety procedures and environmentally appropriate and ethical practices.	5.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and environmentally appropriate and ethical practices.	6.1 Scientific investigation and reasoning. The student, for at least 40% of instructional time, conducts laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.
Safety and Conservation Practices							
P PK. VI.D.1-K.1A Practice good habits of personal safety (follow/use safety procedures while using common tools and materials).	P K.1A identify and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately	P 1.1A recognize and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately	P 2.1A identify and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately	P 3.1A demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including observing a schoolyard habitat	P 4.1A demonstrate safe practices and the use of safety equipment as described in the Texas Safety Standards during classroom and outdoor investigations	P 5.1A demonstrate safe practices and the use of safety equipment as described in the Texas Safety Standards during classroom and outdoor investigations	P 6.1A demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standards
P PK. VI.D.1-K.1B practice good habits of personal safety (understanding of fire safety, shelter in place procedures, etc.)	P K.1B discuss the importance of safe practices to keep self and others safe and healthy	P 1.1B recognize the importance of safe practices to keep self and others safe and healthy	P 2.1B describe the importance of safe practices				
P PK. VI.D.2 practice good habits of personal health and hygiene							
P PK.VI.C.4-K.1C demonstrate the importance of caring for our environment and our planet ("green practices," conservation, recycling)	P K.1C demonstrate how to use, conserve, and dispose of natural resources and materials such as conserving water and reusing or recycling paper, plastic, and metal	P 1.1C identify and learn how to use natural resources and materials, including conservation and reuse or recycling of paper, plastic, and metals	P 2.1C identify and demonstrate how to use, conserve, and dispose of natural resources and materials such as conserving water and reuse or recycling of paper, plastic, and metal	P 3.1B make informed choices in the use and conservation of natural resources by recycling or reusing materials such as paper, aluminum cans, and plastics	P 4.1B make informed choices in the use and conservation of natural resources and reusing and recycling of materials such as paper, aluminum, glass, cans, and plastic	P 5.1B make informed choices in the conservation, disposal, and recycling of materials	P 6.1B practice appropriate use and conservation of resources including disposal, reuse, or recycling of materials

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PK.2 Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations.	K.2 Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations.	1.2 Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations.	2.2 Scientific investigation and reasoning. The student develops abilities necessary to do scientific inquiry in classroom and outdoor investigations.	3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.	4.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.	5.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.	6.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and field investigations.
Inquiry Process Skills							
P PK.K.2A Ask questions about organisms, objects, and events observed in the natural world.	P K.2A ask questions about organisms, objects, and events observed in the natural world	P 1.2A ask questions about organisms, objects, and events observed in the natural world	P 2.2A ask questions about organisms, objects, and events during observations and investigations	P 3.2A plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a specific problem in the natural world	P 4.2A plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer his/her questions	P 5.2A <i>describe, plan, and implement simple experimental investigations testing one variable</i>	P 6.2A plan and implement comparative and descriptive investigations by making observations, asking well- defined questions, and using appropriate equipment and technology
P PK.K.2B Plan and conduct simple descriptive investigations such as ways objects move	P K.2B plan and conduct simple descriptive investigations such as ways objects move	P 1.2B plan and conduct simple descriptive investigations such as ways objects move	P 2.2B plan and conduct descriptive investigations such as how organisms grow			P 5.2B <i>ask well-defined questions, formulate testable hypotheses, and select and use appropriate equipment and technology</i>	P 6.2B design and implement experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology
P PK.VI.A.3-K.2C use simple measuring devices to learn about objects (balance, non-standard measures, cups, buckets, etc.)	P K.2C collect data and make observations using simple equipment such as hand lenses, primary balances, and non-standard measurement tools	P 1.2C collect data and make observations using simple equipment such as hand lenses, primary balances, and non-standard measurement tools	P 2.2C collect data from observations using simple equipment such as hand lenses, primary balances, thermometers, and non-standard measurement tools	P 3.2B collect data by observing and measuring using the metric system and recognize differences between observed and measured data	P 4.2B collect and record data by observing and measuring, using the metric system, and using descriptive words and numerals such as labeled drawings, writing, and concept maps	P 5.2C collect information by detailed observations and accurate measuring	P 6.2C collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers
P PK.K.2D Record and organize data and observations using pictures, numbers, and words (simple data charts and graphs)	P K.2D record and organize data and observations using pictures, numbers, and words	P 1.2D record and organize data using pictures, numbers, and words	P 2.2D record and organize data using pictures, numbers, and words	P 3.2C construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data	P 4.2C construct simple tables, charts, bar graphs, and maps using tools and current technology to organize, examine, and evaluate data	P 5.2G construct appropriate simple graphs, tables, maps, and charts using technology, including computers, to organize, examine, and evaluate information	P 6.2D construct tables, using repeated trials and means to organize data and identify patterns

Process Skill = **P** Readiness Standard = **R** Supporting Standard = **S**

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				<p>P 3.2D analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations</p>	<p>P 4.2D analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured</p>	<p>P 5.2D analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence</p>	<p>P 6.2E analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends</p>
<p>P PK.K.2E communicate observations with others about simple descriptive investigations (through pictures, discussions or dramatizations)</p>	<p>P K.2E communicate observations with others about simple descriptive investigations</p>	<p>P 1.2E communicate observations and provide reasons for explanations using student-generated data from simple descriptive investigations</p>	<p>P 2.2E communicate observations and justify explanations using student-generated data from simple descriptive investigations</p>	<p>P 3.2F communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion</p>	<p>P 4.2F communicate valid, oral, and written results supported by data</p>	<p>P 5.2F communicate valid conclusions in both written and verbal forms</p>	
				<p>P 3.2E demonstrate that repeated investigations may increase the reliability of results</p>	<p>P 4.2E perform repeated investigations to increase the reliability of results</p>	<p>P 5.2E demonstrate that repeated investigations may increase the reliability of results</p>	
			<p>P 2.2F compare results of investigations with what students and scientists know about the world</p>				

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Prekindergarten	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
<p>PK.3 Scientific investigation and reasoning. The student knows that information and critical thinking are used in scientific problem solving.</p>	<p>K.3 Scientific investigation and reasoning. The student knows that information and critical thinking are used in scientific problem solving.</p>	<p>1.3 Scientific investigation and reasoning. The student knows that information and critical thinking are used in scientific problem solving.</p>	<p>2.3 Scientific investigation and reasoning. The student knows that information and critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions.</p>	<p>3.3 Scientific investigation and reasoning. The student knows that information, critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions.</p>	<p>4.3 Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions.</p>	<p>5.3 Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions.</p>	<p>6.3 Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p>
Critical Thinking Skills							
<p>P PK.3A identify and explain a problem such as the impact of littering on the playground and propose a solution in his/her own words</p>	<p>P K.3A identify and explain a problem such as the impact of littering on the playground and propose a solution in his/her own words</p>	<p>P 1.3A identify and explain a problem such as finding a home for a classroom pet and propose a solution in his/her own words</p>	<p>P 2.3A identify and explain a problem in his/her own words and propose a task and solution for the problem such as lack of water in a habitat</p>	<p>P 3.3A in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student</p>	<p>P 4.3A in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student</p>	<p>P 5.3A in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student</p>	<p>P 6.3A in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning and experimental and observational testing, including examining all sides of the scientific evidence of those scientific explanations so as to encourage critical thinking by the student</p>
<p>P P K.3B make predictions based on observable patterns in nature such as the shapes of leaves</p>	<p>P K.3B make predictions based on observable patterns in nature such as the shapes of leaves</p>	<p>P 1.3B make predictions based on observable patterns</p>	<p>P 2.3B make predictions based on observable patterns</p>	<p>P 3.3B draw inferences and evaluate accuracy of product claims found in advertisements and labels such as for toys and food</p>	<p>P 4.3B draw inferences and evaluate accuracy of services and product claims found in advertisements and labels such as for toys, food, and sunscreen</p>	<p>P 5.3B evaluate the accuracy of the information related to promotional materials for products and services such as nutritional labels</p>	

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				<p>P 3.3C represent the natural world using models such as volcanoes or Sun, Earth, and Moon system and identify their limitations, including size, properties, and materials</p>	<p>P 4.3C represent the natural world using models such as rivers, stream tables, or fossils and identify their limitations, including accuracy and size</p>	<p>P 5.3C draw or develop a model that represents how something works or looks that cannot be seen such as how a soda dispensing machine works</p>	<p>P 6.3B use models to represent aspects of the natural world such as a model of Earth's layers</p>
							<p>P 6.3C identify advantages and limitations of models such as size, scale, properties, and materials</p>
	<p>P K.3C explore that scientists investigate different things in the natural world and use tools to help in their investigations</p>	<p>P 1.3C describe what scientists do</p>	<p>P 2.3C identify what a scientist is and explore what different scientists do</p>	<p>P 3.3D connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists</p>	<p>P 4.3D connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists</p>	<p>P 5.3D connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists</p>	<p>P 6.3D relate the impact of research on scientific thought and society including the history of science and contributions of scientists as related to the content</p>

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<p>PK.4 Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world.</p>	<p>K.4 Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world.</p>	<p>1.4 Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world.</p>	<p>2.4 Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world.</p>	<p>3.4 Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry.</p>	<p>4.4 Scientific investigation and reasoning. The student knows how to use a variety of tools, materials, equipment, and models to conduct science inquiry.</p>	<p>5.4 Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry.</p>	<p>6.4 Scientific investigation and reasoning. The student knows how to use a variety of tools and safety equipment to conduct science inquiry. The student is expected to:</p>
Tools - Equipment							
	<p>P K.4A collect information using tools, including computers, hand lenses, primary balances, cups, bowls, magnets, collecting nets, and notebooks; timing devices, including clocks and timers; non-standard measuring items such as paper clips and clothespins; weather instruments such as demonstration thermometers and wind socks; and materials to support observations of habitats of organisms such as terrariums and aquariums</p>	<p>P 1.4A collect, record, and compare information using tools, including computers, hand lenses, primary balances, cups, bowls, magnets, collecting nets, notebooks, and safety goggles; timing devices, including clocks and timers; non-standard measuring items such as paper clips and clothespins; weather instruments such as classroom demonstration thermometers and wind socks; and materials to support observations of habitats of organisms such as aquariums and terrariums</p>	<p>P 2.4A collect, record, and compare information using tools, including computers, hand lenses, rulers, primary balances, plastic beakers, magnets, collecting nets, notebooks, and safety goggles; timing devices, including clocks and stopwatches; weather instruments such as thermometers, wind vanes, and rain gauges; and materials to support observations of habitats of organisms such as terrariums and aquariums</p>	<p>P 3.4A collect, record, and analyze information using tools, including microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, compasses, magnets, collecting nets, notebooks, sound recorders, and Sun, Earth, and Moon system models; timing devices, including clocks and stopwatches; and materials to support observation of habitats of organisms such as terrariums and aquariums</p>	<p>P 4.4A collect, record, and analyze information using tools, including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, mirrors, spring scales, pan balances, triple beam balances, graduated cylinders, beakers, hot plates, meter sticks, compasses, magnets, collecting nets, and notebooks; timing devices, including clocks and stopwatches; and materials to support observation of habitats of organisms such as terrariums and aquariums</p>	<p>P 5.4A collect, record, and analyze information using tools, including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, prisms, mirrors, pan balances, triple beam balances, spring scales, graduated cylinders, beakers, hot plates, meter sticks, magnets, collecting nets, and notebooks; timing devices, including clocks and stopwatches; and materials to support observations of habitats of organisms such as terrariums and aquariums</p>	<p>P 6.4A use appropriate tools to collect, record, and analyze information including: journals/notebooks, beakers, Petri dishes, meter sticks, graduated cylinders, hot plates, test tubes, triple beam balances, microscopes, thermometers, calculators, computers, timing devices, and other equipment as needed to teach the curriculum</p>

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Prekindergarten	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
<p>P PK.VI.A.1-K.4B describe, observe and investigate properties and characteristics of common objects (use senses to explore and sensory language to describe properties of natural and human-made materials to learn their characteristics and capabilities)</p>	<p>P K.4B use senses as a tool of observation to identify properties and patterns of organisms, objects, and events in the environment</p>	<p>P 1.4B measure and compare organisms and objects using non-standard units</p>	<p>P 2.4B measure and compare organisms and objects using non-standard units that approximate metric units.</p>				
<p>P PK.VI.B.1-K.4A identify and describe the characteristics of organisms (use the tools of science [hand lens and measurement tools] to observe and discuss plants and animals)</p>							
Safety Equipment							
<p>P PK.VI.D.1-3.4B practice good habits of personal safety (use safety procedures while using common tools and materials [scissors, pencils, safety goggles, etc.])</p>				<p>P 3.4B use safety equipment as appropriate, including safety goggles and gloves</p>	<p>P 4.4B use safety equipment as appropriate, including safety goggles and gloves</p>	<p>P 5.4B use safety equipment, including safety goggles and gloves</p>	<p>P 6.4B use preventative safety equipment including chemical splash goggles, aprons, and gloves and be prepared to use emergency safety equipment including an eye/face wash, a fire blanket, and a fire extinguisher</p>

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<p>PK.5 Matter and energy. The student knows that objects have properties and patterns.</p>	<p>K.5 Matter and energy. The student knows that objects have properties and patterns.</p>	<p>1.5 Matter and energy. The student knows that objects have properties and patterns.</p>	<p>2.5 Matter and energy. The student knows that matter has physical properties and those properties determine how it is described, classified, changed, and used.</p>	<p>3.5 Matter and energy. The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used.</p>	<p>4.5 Matter and energy. The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used.</p>	<p>5.5 Matter and energy. The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used.</p>	<p>6.6 Matter and energy. The student knows matter has physical properties that can be used for classification</p>
Classification and Measurement of Physical Properties of Matter							
<p>PK.VI.A.1-2.5C describe, observe and investigate properties and characteristics of common objects (predict whether materials will sink or float)</p>	<p>K.5A observe and record properties of objects, including relative size and mass, such as bigger or smaller and heavier or lighter, shape, color, and texture</p>	<p>1.5A classify objects by observable properties of the materials from which they are made such as larger and smaller, heavier and lighter, shape, color, and texture</p>	<p>2.5A classify matter by physical properties, including shape, relative mass, relative temperature, texture, flexibility, and whether material is a solid or liquid</p>	<p>3.5A measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float</p>	<p>4.5A measure, compare, and contrast physical properties of matter, including size, mass, volume, states (solid, liquid, gas), temperature, magnetism, and the ability to sink or float</p>	<p>R 5.5A classify matter based on physical properties, including mass, magnetism, physical state (solid, liquid, and gas), relative density (sinking and floating), solubility in water, and the ability to conduct or insulate thermal energy or electric energy</p>	<p>S 6.6A compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity or malleability</p>
<p>PK.VI.A.1-K.5A describe, observe and investigate properties and characteristics of common objects (sort, classify objects by properties, i.e., texture, hard/soft, heavy/light, smell, sound)</p>				<p>S 3.5B describe and classify samples of matter as solids, liquids, and gases and demonstrate that solids have a definite shape and that liquids and gases take the shape of their container</p>		<p>S 5.5B identify the boiling and freezing/melting points of water on the Celsius scale</p>	<p>S 6.6B calculate density to identify an unknown substance</p>
<p>PK.VI.A.3-K.5A use simple measuring devices to learn about objects (mass, length, volume, temperature)</p>				<p>6.6C test the physical properties of minerals including hardness, color, luster, and streak</p>			

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Changes in the State of Matter							
PK.VI.A.3-K.5B use simple measuring devices to learn about objects (observe and describe temperature of materials, including outdoor air temperature)	K.5B observe, record, and discuss how materials can be changed by heating or cooling	1.5B predict and identify changes in materials caused by heating and cooling such as ice melting, water freezing, and water evaporating	2.5B compare changes in materials caused by heating and cooling	S 3.5C predict, observe, and record changes in the state of matter caused by heating or cooling	4.5B predict the changes caused by heating and cooling such as ice becoming liquid water and condensation forming on the outside of a glass of ice water		
			2.5C demonstrate that things can be done to materials to change their physical properties such as cutting, folding, sanding, and melting				
Elements and Compounds							
							6.5 Matter and energy. The student knows the differences between elements and compounds.
							6.5A know that an element is a pure substance represented by chemical symbols
							6.5B recognize that a limited number of the many known elements comprise the largest portion of solid Earth, living matter, oceans, and the atmosphere
							S 6.5C differentiate between elements and compounds on the most basic level
Properties of Mixtures and Solutions							
			2.5D combine materials that when put together can do things that they cannot do by themselves such as building a tower or a bridge and justify the selection of those materials based on their physical properties	3.5D explore and recognize that a mixture is created when two materials are combined such as gravel and sand and metal and plastic paper clips	4.5C compare and contrast a variety of mixtures and solutions such as rocks in sand, sand in water, or sugar in water	S 5.5C <i>demonstrate that some mixtures maintain physical properties of their ingredients such as iron filings and sand; and</i>	6.5D identify the formation of a new substance by using the evidence of a possible chemical change such as production of a gas, change in temperature, production of a precipitate, or color change
						S 5.5D <i>identify changes that can occur in the physical properties of solutions such as dissolving salt in water or adding lemon juice to water</i>	

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K.6 Force, motion, and energy. The student knows that energy, force, and motion are related and are a part of their everyday life.	K.6 Force, motion, and energy. The student knows that energy, force, and motion are related and are a part of their everyday life.	1.6 Force, motion, and energy. The student knows that force, motion, and energy are related and are a part of everyday life.	2.6 Force, motion, and energy. The student knows that forces cause change and energy exists in many forms.	3.6 Force, motion, and energy. The student knows that forces cause change and that energy exists in many forms.	4.6 Force, motion, and energy. The student knows that energy exists in many forms and can be observed in cycles, patterns, and systems.	5.6 Force, motion, and energy. The student knows that energy occurs in many forms and can be observed in cycles, patterns, and systems.	
Forms of Energy							
PK.VI.A.4-K.6A investigate and describe sources of energy including light, heat, and electricity	K.6A use the five senses to explore different forms of energy such as light, heat, and sound	1.6A identify and discuss how different forms of energy such as light, heat, and sound are important to everyday life	2.6A investigate the effects on an object by increasing or decreasing amounts of light, heat, and sound energy such as how the color of an object appears different in dimmer light or how heat melts butter	3.6A explore different forms of energy, including mechanical, light, sound, and heat/thermal in everyday life	4.6A differentiate among forms of energy, including mechanical, sound, electrical, light, and heat/thermal	R 5.6A explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy	
How Energy Transfers							
							6.9 Force, motion, and energy. The student knows that the Law of Conservation of Energy states that energy can neither be created nor destroyed, it just changes form. The student is expected to:
					4.6B differentiate between conductors and insulators	R 5.6B demonstrate that the flow of electricity in circuits requires a complete path through which an electric current can pass and can produce light, heat, and sound	6.9A investigate methods of thermal energy transfer including conduction, convection, and radiation
					4.6C demonstrate that electricity travels in a closed path, creating an electrical circuit, and explore an electromagnetic field		6.9B verify through investigations that thermal energy moves in a predictable pattern from warmer to cooler until all the substances attain the same temperature such as an ice cube melting

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						R 5.6C demonstrate that light travels in a straight line until it strikes an object or travels through one medium to another and demonstrate that light can be reflected such as the use of mirrors or other shiny surfaces and refracted such as the appearance of an object when observed through water	S 6.9C demonstrate energy transformations such as the energy in a flashlight battery changes from chemical energy to electrical energy to light energy
Changes in Motion							
							6.8 Force, motion, and energy. The student knows force and motion are related to potential and kinetic energy. The student is expected to:
PK.VI.A.2-K.6D investigate and describe position and motion of objects (straight, zigzag, round and round, fast, slow)	K.6C observe and describe the location of an object in relation to another such as above, below, behind, in front of, and beside	1.6C describe the change in the location of an object such as closer to, nearer to, and farther from	2.6C trace the changes in the position of an object over time such as a cup rolling on the floor and a car rolling down a ramp	S 3.6B demonstrate and observe how position and motion can be changed by pushing and pulling objects to show work being done such as swings, balls, pulleys, and wagons			6.8B identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces
	K.6D observe and describe the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow	1.6D demonstrate and record the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow	2.6D compare patterns of movement of objects such as sliding, rolling, and spinning				S 6.8D Measure and graph changes in motion
Law of the Conservation of Energy							
							S 6.8A compare and contrast potential and kinetic energy

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Forces							
<p>PK.VI.A.1-K.6B describe, observe and investigate properties and characteristics of common objects (describe and compare the effects magnets have on other objects)</p>	<p>K.6B explore interactions between magnets and various materials</p>	<p>1.6B predict and describe how a magnet can be used to push or pull an object</p>	<p>2.6B observe and identify how magnets are used in everyday life</p>	<p>3.6C observe forces such as magnetism and gravity acting on objects</p>	<p>4.6D design an experiment to test the effect of force on an object such as a push or a pull, gravity, friction, or magnetism.</p>	<p>S 5.6D design an experiment that tests the effect of force on an object.</p>	<p>6.8E investigate how inclined planes and pulleys can be used to change the amount of force to move an object</p> <p>6.11 Earth and space. The student understands the organization of our solar system and the relationships among the various bodies that comprise it. The student is expected to:</p> <p>S 6.11B understand that gravity is the force that governs the motion of our solar system</p>

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PK.7 Earth and space. The student knows that the natural world includes earth materials.	K.7 Earth and space. The student knows that the natural world includes earth materials.	1.7 Earth and space. The student knows that the natural world includes rocks, soil, and water that can be observed in cycles, patterns, and systems.	2.7 Earth and space. The student knows that the natural world includes earth materials.	3.7 Earth and space. The student knows that Earth consists of natural resources and its surface is constantly changing.	4.7 Earth and space. The students know that Earth consists of useful resources and its surface is constantly changing.	5.7 Earth and space. The student knows Earth's surface is constantly changing and consists of useful resources.	6.10 Earth and space. The student understands the structure of Earth, the rock cycle, and plate tectonics. The student is expected to:
Earth Materials: Rocks, Soil, and Water							
PK.VI.C.1-K.7A identify, compare, discuss earth materials and their properties and uses (observe, discuss and compare earth materials [rocks, soil and sand] using hand lenses, sieves, water, and balances)	K.7A observe, describe, compare, and sort rocks by size, shape, color, and texture	1.7A observe, compare, describe, and sort components of soil by size, texture, and color	2.7A observe and describe rocks by size, texture, and color	3.7A explore and record how soils are formed by weathering of rock and the decomposition of plant and animal remains	S 4.7A examine properties of soils, including color and texture, capacity to retain water, and ability to support the growth of plants	R 5.7A <i>explore the processes that led to the formation of sedimentary rocks and fossil fuels</i>	6.10B classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation
	K.7B observe and describe physical properties of natural sources of water, including color and clarity	1.7B identify and describe a variety of natural sources of water, including streams, lakes, and oceans	2.7B identify and compare the properties of natural sources of freshwater and saltwater				
Earth Systems: Formation of Earth's Surface							
				S 3.7B investigate rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides			6.10A build a model to illustrate the structural layers of Earth including the inner core, outer core, mantle, crust, asthenosphere, and lithosphere
				3.7C identify and compare different landforms, including mountains, hills, valleys, and plains	4.7B observe and identify slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice	R 5.7B <i>recognize how landforms such as deltas, canyons, and sand dunes are the result of changes to Earth's surface by wind, water, and ice</i>	6.10C identify the major tectonic plates including Eurasian, African, Indo-Australian, Pacific, North American, and South American
							6.10D describe how plate tectonics causes major geological events, such as ocean basins, earthquakes, volcanic eruptions, and mountain building

Process Skill = **P** Readiness Standard = **R** Supporting Standard = **S**



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Prekindergarten	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Use of Natural Resources							
PK.VI.C.1-K.7C identify, compare, discuss earth materials and their properties and uses (discuss and explain ways earth materials are used for building houses, road construction, and decorative purposes [uses of rocks])	K.7C give examples of ways rocks, soil, and water are useful	1.7C gather evidence of how rocks, soil, and water help to make useful products	2.7C distinguish between natural and manmade resources	3.7D explore the characteristics of natural resources that make them useful in products and materials such as clothing and furniture and how resources may be conserved	S 4.7C identify and classify Earth's renewable resources, including air, plants, water, and animals; and nonrenewable resources, including coal, oil, and natural gas; and the importance of conservation	R 5.7C identify alternative energy resources such as wind, solar, hydroelectric, geothermal, and biofuels	6.7A research and debate the advantages and disadvantages of using coal, oil, natural gas, nuclear power, biomass, wind, hydropower, geothermal, and solar resources
							6.7B design a logical plan to manage energy resources in the home, school or community
Fossils							
						S 5.7D identify fossils as evidence of past living organisms and the nature of the environments at the time using models	

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Elementary Science PK – 6 Vertical Alignment

Prekindergarten	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
PK.8 Earth and space. The student knows that there are recognizable patterns in the natural world and among objects in the sky.	K.8 Earth and space. The student knows that there are recognizable patterns in the natural world and among objects in the sky.	1.8 Earth and space. The student knows that the natural world includes the air around us and objects in the sky.	2.8 Earth and space. The student knows that there are recognizable patterns in the natural world and among objects in the sky.	3.8 Earth and space. The student knows there are recognizable patterns in the natural world and among objects in the sky.	4.8 Earth and space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system.	5.8 Earth and space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system.	6.11 Earth and space. The student understands the organization of our solar system and the relationships among the various bodies that comprise it.
Weather							
PK.VI.C.3-K.8A observe and describe what happens during changes in the earth and sky (observe, record and predict daily weather changes [weather charts]; observe seasonal changes)	K.8A observe and describe weather changes from day to day and over seasons	1.8A record weather information, including relative temperature, such as hot or cold, clear or cloudy, calm or windy, and rainy or icy	2.8A measure, record, and graph weather information, including temperature, wind conditions, precipitation, and cloud coverage, in order to identify patterns in the data	3.8A observe, measure, record, and compare day-to-day weather changes in different locations at the same time that include air temperature, wind direction, and precipitation	S 4.8A measure and record changes in weather and make predictions using weather maps, weather symbols, and a map key	S 5.8A differentiate between weather and climate	
PK.VI.C.3-2.8B observe and describe what happens during changes in the earth and sky (discuss weather and changes in the weather including discussions about what to wear when the weather changes [rain, sleet, snow, sun, seasonal changes])		1.8D demonstrate that air is all around us and observe that wind is moving air	2.8B identify the importance of weather and seasonal information to make choices in clothing, activities, and transportation				
PK.VI.C.3-1.8D observe and describe what happens during changes in the earth and sky (investigate with objects to observe what happens during a windy day [flying a kite])							

Elementary Science PK – 6 Vertical Alignment

Prekindergarten	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Water Cycle							
			AS 2.8C explore the processes in the water cycle, including evaporation, condensation, and precipitation, as connected to weather conditions	AS 3.8B describe and illustrate the Sun as a star composed of gases that provides light and heat energy for the water cycle	S 4.8B describe and illustrate the continuous movement of water above and on the surface of Earth through the water cycle and explain the role of the Sun as a major source of energy in this process	S 5.8B <i>explain how the Sun and the ocean interact in the water cycle</i>	
Objects in the Sky							
PK.VI.C.2-K.8C identify, observe, and discuss objects in the sky (clouds, sun, stars, moon)	K.8C observe, describe, and illustrate objects in the sky such as the clouds, Moon, and stars, including the Sun	1.8B observe and record changes in the appearance of objects in the sky such as clouds, the Moon, and stars, including the Sun	2.8D observe, describe, and record patterns of objects in the sky, including the appearance of the Moon	3.8C construct models that demonstrate the relationship of the Sun, Earth, and Moon, including orbits and positions	S 4.8C collect and analyze data to identify sequences and predict patterns of change in shadows, tides, seasons, and the observable appearance of the Moon over time	R 5.8C demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle and the apparent movement of the Sun across the sky	
	K.8B identify events that have repeating patterns, including seasons of the year and day and night	1.8C identify characteristics of the seasons of the year and day and night		S 3.8D <i>identify the planets in Earth's solar system and their position in relation to the Sun</i>		S 5.8D identify and compare the physical characteristics of the Sun, Earth, and Moon	6.11A describe the physical properties, locations, and movements of the Sun, planets, Galilean moons, meteors, asteroids, and comets
							6.11C describe the history and future of space exploration including the types of equipment and transportation needed for space travel

Process Skill = **P** Readiness Standard = **R** Supporting Standard = **S**



Elementary Science PK – 6 Vertical Alignment

Prekindergarten	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
<p>PK.9 Organisms and environments. The student knows that plants and animals have basic needs and depend on the living and nonliving things around them for survival.</p>	<p>K.9 Organisms and environments. The student knows that plants and animals have basic needs and depend on the living and nonliving things around them for survival.</p>	<p>1.9 Organisms and environments. The student knows that the living environment is composed of relationships between organisms and the life cycles that occur.</p>	<p>2.9 Organisms and environments. The student knows that living organisms have basic needs that must be met for them to survive within their environment.</p>	<p>3.9 Organisms and environments. The student knows that organisms have characteristics that help them survive and can describe patterns, cycles, systems, and relationships within the environments.</p>	<p>4.9 Organisms and environments. The student knows and understands that living organisms within an ecosystem interact with one another and with their environment.</p>	<p>5.9 Organisms and environments. The student knows that there are relationships, systems, and cycles within environments.</p>	<p>6.12 Organisms and environments. The student knows all organisms are classified into Domains and Kingdoms. Organisms within these taxonomic groups share similar characteristics which allow them to interact with the living and nonliving parts of their ecosystem. The student is expected to:</p>
Interacting with the Environment							
<p>PK.VI.B.2-K.9A describe life cycles of organisms ((describe characteristics and differences between living and non-living)</p>	<p>K.9A differentiate between living and nonliving things based upon whether they have basic needs and produce offspring</p>	<p>1.9A sort and classify living and nonliving things based upon whether or not they have basic needs and produce offspring</p>	<p>2.9A identify the basic needs of plants and animals</p>	<p>S 3.9A <i>observe and describe the physical characteristics of environments and how they support populations and communities within an ecosystem</i></p>	<p>4.9A investigate that most producers need sunlight, water, and carbon dioxide to make their own food, while consumers are dependent on other organisms for food</p>	<p>R 5.9A observe the way organisms live and survive in their ecosystem by interacting with the living and non-living elements</p>	<p>6.12E describe biotic and abiotic parts of an ecosystem in which organisms interact</p>
<p>PK.VI.B.1-K.9B identify and describe the characteristics of organisms (describe animals' need for food, water, air, and shelter or plants' needs for water, nutrients, air and light)</p>	<p>K.9B examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants</p>	<p>1.9B analyze and record examples of interdependence found in various situations such as terrariums and aquariums or pet and caregiver</p>	<p>2.9B identify factors in the environment, including temperature and precipitation, that affect growth and behavior such as migration, hibernation, and dormancy of living things</p>			<p>S 5.9D identify the significance of the carbon dioxide-oxygen cycle to the survival of plants and animals</p>	<p>6.12F diagram the levels of organization within an ecosystem including organism, population, community, and ecosystem</p>
Energy Transfer Through the Ecosystem							
<p>PK.VI.B.3-1.9C recognize, observe, and discuss the relationship of organisms to their environments (discuss how animals and humans depend on plants [birds eat seeds, cows eat grass, humans eat vegetables])</p>		<p>1.9C gather evidence of interdependence among living organisms such as energy transfer through food chains and animals using plants for shelter</p>	<p>2.9C compare and give examples of the ways living organisms depend on each other and on their environments such as food chains within a garden, park, beach, lake, and wooded area</p>	<p>3.9B identify and describe the flow of energy in a food chain and predict how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field</p>	<p>4.9B describe the flow of energy through food webs, beginning with the Sun, and predict how changes in the ecosystem affect the food web such as a fire in a forest</p>	<p>R 5.9B describe how the flow of energy derived from the Sun, used by producers to create their own food, is transferred through a food chain and food web to consumers and decomposers</p>	

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Prekindergarten	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Effects of Environmental Change							
PK.VI.B.3-2.9B recognize, observe, and discuss the relationship of organisms to their environments (discuss how seasons affect daily life; observe and explain animal behaviors; discuss animals in their natural habitats)				3.9C describe environmental changes such as floods and droughts where some organisms thrive and others perish or move to new locations		S 5.9C predict the effects of changes in ecosystems caused by living organisms, including humans, such as the overpopulation of grazers or the building of highways; and	

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Prekindergarten	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
<p>K.10 Organisms and environments. The student knows that organisms resemble their parents and have structures and processes that help them survive within their environments.</p>	<p>K.10 Organisms and environments. The student knows that organisms resemble their parents and have structures and processes that help them survive within their environments.</p>	<p>1.10 Organisms and environments. The student knows that organisms resemble their parents and have structures and processes that help them survive within their environments.</p>	<p>2.10 Organisms and environments. The student knows that organisms resemble their parents and have structures and processes that help them survive within their environments.</p>	<p>3.10 Organisms and environments. The student knows that organisms undergo similar life processes and have structures that help them survive within their environments.</p>	<p>4.10 Organisms and environments. The student knows that organisms undergo similar life processes and have structures that help them survive within their environment.</p>	<p>5.10 Organisms and environments. The student knows that organisms undergo similar life processes and have structures that help them survive within their environments.</p>	<p>6.12 Organisms and environments. The student knows all organisms are classified into Domains and Kingdoms. Organisms within these taxonomic groups share similar characteristics which allow them to interact with the living and nonliving parts of their ecosystem. The student is expected to:</p>
Structure and Function							
<p>PK.VI.B.1-K.10A identify and describe the characteristics of organisms (describe color, size, shape of organisms; compare differences and similarities of animals)</p>	<p>K.10A sort plants and animals into groups based on physical characteristics such as color, size, body covering, or leaf shape</p>	<p>1.10A investigate how the external characteristics of an animal are related to where it lives, how it moves, and what it eats</p>	<p>2.10A observe, record, and compare how the physical characteristics and behaviors of animals help them meet their basic needs such as fins help fish move and balance in the water</p>	<p>3.10A explore how structures and functions of plants and animals allow them to survive in a particular environment;</p>	<p>4.10A explore how adaptations enable organisms to survive in their environment such as comparing birds' beaks and leaves on plants</p>	<p>5.10A compare the structures and functions of different species that help them live and survive such as hooves on prairie animals or webbed feet in aquatic animals</p>	
<p>PK.VI.B.1-K.10B identify and describe the characteristics of organisms (compare differences and similarities of animals [fish live in water, birds have feathers, etc.]</p>	<p>K.10B identify parts of plants such as roots, stem, and leaves and parts of animals such as head, eyes, and limbs</p>	<p>1.10B identify and compare the parts of plants</p>	<p>2.10B observe, record, and compare how the physical characteristics of plants help them meet their basic needs such as stems carry water throughout the plant</p>				
Cell Structure and Function							
							<p>6.12A understand that all organisms are composed of one or more cells</p>
							<p>6.12B recognize the presence of a nucleus determines whether a cell is prokaryotic or eukaryotic</p>

Process Skill = **P** Readiness Standard = **R** Supporting Standard = **S**



Elementary Science PK – 6 Vertical Alignment

Prekindergarten	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Taxonomy							
							6.12C recognize the broadest taxonomic classification of living organisms is divided into currently recognized Domains
							S 6.12D identify the basic characteristics of organisms, including prokaryotic or eukaryotic, unicellular or multicellular, autotrophic or heterotrophic, and mode of reproduction, that further classify them in the currently recognized Kingdoms
Heredity: Inherited Traits and Learned Behaviors							
PK-1.10C compare ways that young animals resemble their parents	K.10C identify ways that young plants resemble the parent plant	1.10C compare ways that young animals resemble their parents		3.10B explore that some characteristics of organisms are inherited such as the number of limbs on an animal or flower color and recognize that some behaviors are learned in response to living in a certain environment such as animals using tools to get food	4.10B demonstrate that some likenesses between parents and offspring are inherited, passed from generation to generation such as eye color in humans or shapes of leaves in plants. Other likenesses are learned such as table manners or reading a book and seals balancing balls on their noses	R 5.10B differentiate between inherited traits of plants and animals such as spines on a cactus or shape of a beak and learned behaviors such as an animal learning tricks or a child riding a bicycle	
Life Cycles							
PK.VI.B.2-K.10D describe life cycles of organisms (observe, record and discuss the stages of the life cycle of an organism [baby, dog, cat and chicken])	K.10D observe changes that are part of a simple life cycle of a plant: seed, seedling, plant, flower, and fruit	1.10D observe and record life cycles of animals such as a chicken, frog, or fish	2.10C investigate and record some of the unique stages that insects undergo during their life cycle	S 3.10C investigate and compare how animals and plants undergo a series of orderly changes in their diverse life cycles such as tomato plants, frogs, and lady bugs	4.10C explore, illustrate, and compare life cycles in living organisms such as butterflies, beetles, radishes, or lima beans	S 5.10C describe the differences between complete and incomplete metamorphosis of insects	

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