

Science

Grade 4

PA Alternate Eligible Content

PA Reporting Category: The Nature of Science

ASSESSMENT ANCHOR:

S4.A.1 Reasoning and Analysis

ANCHOR DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content	ALTERNATE ELIGIBLE CONTENT
<p>S4.A.1.1 Identify and explain the pros and cons of applying scientific, environmental, or technological knowledge to possible solutions to problems.</p> <p>Reference: 3.2.4.A, 3.2.4.C, 3.8.4.C</p>	<p>S4.A.1.1.1 Distinguish between a scientific fact and an opinion, providing clear explanations that connect observations and results (e.g., a scientific act can be supported through making observations).</p>		
	<p>S4.A.1.1.2 Identify and describe examples of common technological changes past to present in the community (e.g., energy production, transportation, communications, agriculture, packaging materials) that have either positive or negative impacts on society or the environment.</p>	<p>S4A1.1.2a</p>	<p>Identify common technologies that benefit society.</p>
<p>S4.A.1.3 Recognize and describe change in natural or human-made systems and the possible effects of those changes.</p> <p>Reference: 3.1.4.C, 4.7.4.B, 4.8.4.A, 4.8.4.C</p>	<p>S4.A.1.3.1 Observe and record change by using time and measurement.</p>	<p>S4A1.3.1a</p>	<p>Identify changes to objects and living things.</p>
	<p>S4.A.1.3.2 Describe relative size, distance, or motion.</p>		
	<p>S4.A.1.3.3 Observe and describe the change to objects caused by temperature change or light.</p>		
	<p>S4.A.1.3.4 Explain what happens to a living organism when its food supply, access to water, shelter, or space is changed (e.g., they might die, migrate, change behavior, eat something else).</p>		
	<p>S4.A.1.3.5 Provide examples, predict, or describe how everyday human activities (e.g., solid waste production, food production and consumption, transportation, water consumption, energy production and use) may change the environment.</p>		

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ASSESSMENT ANCHOR:

S4.A.2 Processes, Procedures and Tools of Scientific Investigations

ANCHOR DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
<p>S4.A.2.1 Apply skills necessary to conduct an experiment or design a solution to solve a problem.</p> <p>Reference: 3.2.4.C, 3.2.4.D</p>	S4.A.2.1.1 Generate questions about objects, organisms, or events that can be answered through scientific investigations.		
	S4.A.2.1.2 Design and describe an investigation (a fair test) to test one variable.		
	S4.A.2.1.3 Observe a natural phenomenon (e.g., weather changes, length of daylight/night, movement of shadows, animal migrations, growth of plants), record observations, and then make a prediction based on those observations.		
	S4.A.2.1.4 State a conclusion that is consistent with the information/data.	S4A2.1.4a	Recognize the observation that supports a scientific fact.
<p>S4.A.2.2 Identify appropriate instruments for a specific task and describe the information the instrument can provide.</p> <p>Reference: 3.7.4.A, 3.7.4.B</p>	S4.A.2.2.1 Identify appropriate tools or instruments for specific tasks and describe the information they can provide (e.g., measuring: length-ruler, mass-balance scale, volume-beaker, temperature- thermometer; making observations: hand lens, binoculars, telescope).	S4A2.2.1a	Select appropriate tools to perform basic measurement tasks (limited to length, weight, volume, and temperature).
		S4A2.2.1b	Select appropriate tools for making observations (limited to hand lens, binoculars, microscope, and telescope).

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ASSESSMENT ANCHOR:

S4.A.3 Systems, Models and Patterns

ANCHOR DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
<p>S4.A.3.1 Identify systems and describe relationships among parts of a familiar system (e.g., digestive system, simple machines, water cycle).</p> <p>Reference: 3.1.4.A, 4.4.4.C, 4.6.4.A, 4.6.4.B, 3.6.4.A, 3.6.4.B, 3.6.4.C</p>	S4.A.3.1.1 Categorize systems as either natural or human-made (e.g., ballpoint pens, simple electrical circuits, plant anatomy, water cycle).	S4A3.1.1a	Identify whether a system is natural or human-made (e.g., plants vs. electrical systems).
	S4.A.3.1.2 Explain a relationship between the living and nonliving components in a system (e.g., food web, terrarium,).		
	S4.A.3.1.3 Categorize the parts of an ecosystem as either living or non- living and describe their roles in the system.		
	S4.A.3.1.4 Identify the parts of the food and fiber systems as they relate to agricultural products from the source to the consumer.		
<p>S4.A.3.2 Use models to illustrate simple concepts and compare the models to what it represent.</p> <p>Reference: 3.1.4.B, 4.3.4.C</p>	S4.A.3.2.1 Identify what different models represent (e.g., maps show physical features, directions, distances; globes represent Earth; drawings of watersheds depict terrain; dioramas show ecosystems; concept maps show relationships of ideas).		
	S4.A.3.2.2 Use models to make observations to explain how systems work (e.g., water cycle, sun-Earth-moon system).		
	S4.A.3.2.3 Use appropriate, simple modeling tools and techniques to describe or illustrate a system (e.g., two cans and string to model a communications system, terrarium to model an ecosystem).		
<p>S4.A.3.3 Identify and make observations about patterns that regularly occur and reoccur in nature.</p> <p>Reference: 3.1.4.C, 3.2.4.B</p>	S4.A.3.3.1 Identify and describe observable patterns (e.g., growth patterns in plants, weather, water cycle).	S4A3.3.1a	Identify patterns, cycles or trends seen in nature (e.g., seasonal, day/night, life cycles).
	S4.A.3.3.2 Predict future conditions/events based on observable patterns (e.g., day/night, seasons, sunrise/sunset, lunar phases).		

PA Reporting Category: Biological Sciences

ASSESSMENT ANCHOR:

S4.B.1 Structure and Function of Organisms

ANCHOR DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
S4.B.1.1 Identify and describe similarities and differences between living things and their life processes. Reference: 3.3.4.A, 3.3.4.B, 4.3.4.A, 4.3.4.C, 4.6.4.A	S4.B.1.1.1 Identify life processes of living things (e.g., growth, digestion, respiration).		
	S4.B.1.1.2 Compare similar functions of external characteristics of organisms (e.g., anatomical characteristics: appendages, type of covering, body segments).		
	S4.B.1.1.3 Describe basic needs of plants and animals (e.g., air, water, food).	S4B1.1.3a	Identify basic needs of plants or animals (limited to air, water, nutrients, sun, and shelter).
	S4.B.1.1.4 Describe how different parts of a living thing work together to provide what the organism needs (e.g., parts of plants: roots, stems, leaves).	S4B1.1.4a	Identify how parts of plants or animals work together to meet basic needs (e.g., roots and leaves or appendages and coverings).
	S4.B.1.1.5 Describe the life cycles of different organisms (e.g., moth, grasshopper, frog, seed producing plant).	S4B1.1.5a	Recognize the stages of development of an organism (limited to butterfly, ladybug, frog, grasshopper, and seed-producing plant).

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**ASSESSMENT ANCHOR:
S4.B.2 Continuity of Life**

ANCHOR DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
S4.B.2.1 Identify and explain how adaptations help organisms to survive. Reference: 4.7.4.B	S4.B.2.1.1 Identify characteristics for plant and animal survival in different environments (e.g., wetland, tundra, desert, prairie, deep ocean, forest).	S4B2.1.1a	Identify plants or animals that live in different environments (limited to grasslands, tundra, desert, aquatic, forest, and rainforest).
	S4.B.2.1.2 Explain how specific adaptations can help a living organism survive (e.g., protective coloration, mimicry, leaf sizes and shapes, ability to catch or retain water).		
S4.B.2.2 Identify that characteristics are inherited and, thus, offspring closely resemble their parents. Reference: 3.3.4.C, 4.7.4.A, 4.7.4.C	S4.B.2.2.1 Identify physical characteristics (e.g., height, hair color, eye color, attached earlobes, ability to roll tongue) that appear in both parents and could be passed on to offspring.		

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ASSESSMENT ANCHOR:

S4.B.3 Ecological Behavior and Systems

ANCHOR DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
S4.B.3.1 Identify and describe living and nonliving things in the environment and their interaction. Reference: 4.6.4.A	S4.B.3.1.1 Describe the living and nonliving components of a local ecosystem (e.g., lentic and lotic systems, forest, cornfield, grasslands, city park or playground).	S4B3.1.1a	Categorize the parts of an ecosystem as either living or non-living (e.g., forest, city, park).
	S4.B.3.1.2 Describe interactions between living and nonliving components (e.g. plants – water, soil, sunlight, carbon dioxide, temperature; animals – food, water, shelter, oxygen, temperature) of a local ecosystem.		
S4.B.3.2 Describe, explain, and predict change in natural or human-made systems and the possible effects of those changes on the environment. Reference: 4.2.4.C, 4.3.4.C, 4.6.4.C	S4.B.3.2.1 Describe what happens to a living thing when its habitat is changed.		
	S4.B.3.2.2 Describe and predict how changes in the environment (e.g., fire, pollution, flood, building dams) can affect systems.		
	S4.B.3.2.3 Explain and predict how changes in seasons affect plants, animals, or daily human life (e.g., food availability, shelter, mobility).	S4B3.2.3.a	Identify how seasons affect trees or animals (e.g., temperature, migration, hibernation).
S4.B.3.3 Identify or describe human reliance on the environment at the individual or the community level. Reference: 4.3.4.B, 4.4.4.B, 4.5.4.C, 3.8.4.C	S4.B.3.3.1 Identify everyday human activities (e.g., driving, washing, eating, industry, farming, littering) within a community that depend on the natural environment.		
	S4.B.3.3.2 Describe the human dependence on the food and fiber systems from production to consumption (e.g., food, clothing, shelter, products).		
	S4.B.3.3.3 Identify biological pests (e.g., plants – foxtail, mold, purple loosestrife, Eurasian water milfoil; animals – aphides, ticks, zebra mussels, starlings, mice) that compete with humans for resources.		
	S4.B.3.3.4 Identify major land uses in the urban, suburban and rural communities (e.g., housing, commercial, recreation).		
	S4.B.3.3.5 Describe the effects of pollution (e.g., litter) in the community.	S4B3.3.5a	Identify the impact of one type of pollution on a community.

PA Reporting Category: Physical Sciences

ASSESSMENT ANCHOR:

S4.C.1 Structure, Properties, and Interactions of Matter and Energy

ANCHOR DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
S4.C.1.1 Describe observable physical properties of matter. Reference: 3.4.4.A, 3.2.4.B	S4.C.1.1.1 Use physical properties [i.e., mass, shape, size, volume, color, texture, magnetic property, state (i.e., solid, liquid, or gas), conductivity (i.e., electrical and heat)] to describe matter.	S4C1.1.1a	Identify solid or liquid states of matter.
	S4.C.1.1.2 Categorize/group objects using physical characteristics.	S4C1.1.2a	Compare objects by shape, size, weight, or texture.

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ASSESSMENT ANCHOR:

S4.C.2 Forms, Sources, Conversion, and Transfer of Energy

ANCHOR DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
S4.C.2.1 Recognize basic energy types and sources, or describe how energy can be changed from one form to another. Reference: 3.4.4.B, 3.4.4.C	S4.C.2.1.1 Identify energy forms, energy transfer, and energy examples (e.g., light, heat, stored, motion, electrical).		
	S4.C.2.1.2 Describe the flow of energy through an object or system (e.g., feeling radiant heat from a light bulb, eating food to get energy, using a battery to light a bulb or run a fan).		
	S4.C.2.1.3 Recognize or illustrate simple direct current series and parallel circuits composed of batteries, light bulbs (or other common loads), wire, and on/off- switches.		
	S4.C.2.1.4 Identify characteristics of sound (e.g., pitch, loudness, echoes).		

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ASSESSMENT ANCHOR:

S4.C.3 Principles of Motion and Force

ANCHOR DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
S4.C.3.1 Identify and describe different types of force and motion, or the effect of the interaction between force and motion. Reference: 3.4.4.C, 3.6.4.C, 3.2.4.B	S4.C.3.1.1 Describe changes in motion caused by forces (e.g., magnetic, pushes or pulls, gravity, friction).	S4C3.1.1a	Identify the relationship between force and motion (limited to push and pull).
	S4.C.3.1.2 Compare the relative movement of objects or describe types of motion that are evident (e.g., bouncing ball, moving in a straight line, back and forth, merry-go-round).		
	S4.C.3.1.3 Describe the position of an object by locating it relative to another object or the background (e.g., geographic direction, left, up).	S4C3.1.3a	Identify the position of an object relative to another object (limited to in front of, behind, above, below, to the right, and to the left).

PA Reporting Category: Earth and Space Sciences

ASSESSMENT ANCHOR:

S4.D.1 Earth Features and Processes that Change Earth and Its Resources

ANCHOR DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
S4.D.1.1 Describe basic landforms in Pennsylvania. <i>Reference: 3.5.4.A</i>	S4.D.1.1.1 Describe how prominent Earth features in Pennsylvania (e.g., mountains, valleys, beaches, caves, sinkholes, lakes, rivers) were formed.	S4D1.1.1a	Identify prominent Earth features (limited to mountains, valleys, beaches, oceans, lakes, and rivers).
	S4.D.1.1.2 Identify various Earth structures (e.g., mountain, watershed, peninsula, lake, river, valley) through the use of models.		
	S4.D.1.1.3 Describe the composition of soil as weathered rock and decomposed organic remains.		
S4.D.1.2 Identify the types and uses of Earth's resources. <i>Reference: 3.5.4.B, 3.5.4.D, 4.2.4.B, 4.8.4.D,</i>	S4.D.1.2.1 Identify products and by-products of plants and animals for human use (e.g., food, clothing, building materials, paper products).	S4D1.2.1a	Identify food or clothing products that come from plants or animals.
	S4.D.1.2.2 Identify the types and uses of Earth materials for renewable, nonrenewable, and reusable products (e.g., human-made products: concrete, paper, plastics, metal, fabrics, buildings, highways).	S4D1.2.2a	Identify products that can be recycled or reused (e.g., paper, plastic, cans, fabrics, lumber).
	S4.D.1.2.3 Recognize ways that humans benefit from the use of water resources (e.g., agriculture, energy, recreation).		
S4.D.1.3 Describe Earth's different sources of water or describe changes in the form of water. <i>Reference: 3.5.4.D, 4.1.4.A, 4.1.4.D, 4.1.4.E</i>	S4.D.1.3.1 Describe types of freshwater and saltwater bodies (e.g., lakes, rivers, wetlands, oceans).		
	S4.D.1.3.2 Explain how water goes through phase changes (i.e., evaporation, condensation, freezing, and melting).		
	S4.D.1.3.3 Describe or compare lotic systems (ponds, lakes, bays) and lentic systems (streams, creeks, rivers).		
	S4.D.1.3.4 Explain the role and relationship of a watershed or a wetland on water sources (e.g., water storage, groundwater recharge, water filtration, water source, water cycle).		

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ASSESSMENT ANCHOR:

S4.D.2 Weather, Climate, and Atmospheric Processes

ANCHOR DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
S4.D.2.1 Identify basic weather conditions and how they are measured. Reference: 3.5.4.C, 3.7.4.B, 3.2.4.B	S4.D.2.1.1 Identify basic clouds types (cirrus, cumulus, stratus, cumulonimbus) and make connections to basic elements of weather (e.g., changes in temperature and precipitation).		
	S4.D.2.1.2 Identify weather patterns from data charts or graphs of the data (e.g., temperature, wind direction, wind speed, cloud types, precipitation).	S4D2.1.2a	Identify weather conditions using symbols or pictures (limited to temperature, types of precipitation, visibility, and sunlight).
	S4.D.2.1.3 Identify appropriate instruments (thermometer, rain gauge, weather vane, anemometer, barometer) to study weather and what they measure.	S4D2.1.3a	Select the appropriate tool to measure the weather (limited to temperature, wind direction, and precipitation).

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ASSESSMENT ANCHOR:

S4.D.3 Composition and Structure of the Universe

ANCHOR DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
S4.D.3.1 Describe Earth's relationship to the sun and the moon. Reference: 3.4.4.D	S4.D.3.1.1 Describe motions of the sun-Earth-moon system.		
	S4.D.3.1.2 Explain how the motion of the sun, earth, moon system relates to time (e.g., days, months, years).		
	S4.D.3.1.3 Describe the causes of seasonal change as it relates to the rotation of the Earth and the tilt of the Earth's axis.		