

# PA Assessment Anchor Eligible Content K-4

## Science, Environment, Ecology

| Please rate the groups of science assessment anchors below according to whether you think you would benefit from additional support. (such as: additional materials, equipment, professional development workshops, field trips, guest speakers etc.).                                     | Please circle<br>1=no support needed<br>5= highly interested in more support |
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| <b>Nature of Science</b>   | 1 – 2 – 3 – 4 – 5  |
| <b>S4.A.1.1.1</b> Distinguish between a scientific fact and an opinion, providing clear explanations that connect observations and results (e.g., a scientific fact can be supported by making observations).  |  |
| <b>S4.A.2.1.1</b> Generate questions about objects, organisms, or events that can be answered through scientific investigations.   |  |
| <b>S4.A.2.1.2</b> Design and describe an investigation (a fair test) to test one variable.   |  |
| <b>S4.A.2.1.4</b> State a conclusion that is consistent with the information/data.   |  |
| <b>Technology Education</b>  | 1 – 2 – 3 – 4 – 5  |
| <b>S4.A.1.1.2</b> 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. |  |
| <b>S4.A.3.2.3</b> 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).  |  |
| <b>Science Process Skills</b>  | 1 – 2 – 3 – 4 – 5  |
| <b>S4.A.1.3.1</b> Observe and record change by using time and measurement.   |  |
| <b>S4.A.1.3.2</b> Describe relative size, distance, or motion.   |  |
| <b>S4.A.1.3.3</b> Observe and describe the change to objects caused by temperature change or light.  |  |
| <b>S4.A.2.2.1</b> 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).   |  |
| <b>S4.A.3.2.1</b> 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).                                  |  |
| <b>S4.A.3.2.2</b> Use models to make observations to explain how systems work (e.g., water cycle, Sun-Earth-Moon system).  |  |
| <b>S4.A.3.3.1</b> Identify and describe observable patterns (e.g., growth patterns in plants, weather, water cycle).   |  |
| <b>S4.A.3.3.2</b> Predict future conditions/events based on observable patterns (e.g., day/night, seasons, sunrise/sunset, lunar phases).  |  |

| <b>Ecology</b>   | 1 – 2 – 3 – 4 – 5 |
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| <b>S4.A.1.3.4</b> Explain what happens to a living organism when its food supply, access to water, shelter, or space is changed (e.g., it might die, migrate, change behavior, eat something else).  |                   |
| <b>S4.B.2.1.1</b> Identify characteristics for plant and animal survival in different environments (e.g., wetland, tundra, desert, prairie, deep ocean, forest).   |                   |
| <b>S4.B.2.1.2</b> 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).   |                   |
| <b>S4.A.3.1.2</b> Explain a relationship between the living and nonliving components in a system (e.g., food web, terrarium).  |                   |
| <b>S4.A.3.1.3</b> Categorize the parts of an ecosystem as either living or nonliving and describe their roles in the system.   |                   |
| <b>S4.B.3.1.1</b> Describe the living and nonliving components of a local ecosystem (e.g., lentic and lotic systems, forest, cornfield, grasslands, city park, playground).  |                   |
| <b>S4.B.3.1.2</b> 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.                    |                   |
| <b>S4.B.3.2.1</b> Describe what happens to a living thing when its habitat is changed.   |                   |
| <b>Environment</b>   | 1 – 2 – 3 – 4 – 5 |
| <b>S4.A.3.1.1</b> Categorize systems as either natural or human-made (e.g., ballpoint pens, simple electrical circuits, plant anatomy, water cycle).   |                   |
| <b>S4.A.1.3.5</b> 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. |                   |
| <b>S4.B.3.2.2</b> Describe and predict how changes in the environment (e.g., fire, pollution, flood, building dams) can affect systems.  |                   |
| <b>S4.B.3.2.3</b> Explain and predict how changes in seasons affect plants, animals, or daily human life (e.g., food availability, shelter, mobility).   |                   |
| <b>S4.B.3.3.1</b> Identify everyday human activities (e.g., driving, washing, eating, manufacturing, farming) within a community that depend on the natural environment.   |                   |
| <b>S4.B.3.3.4</b> Identify major land uses in the urban, suburban and rural communities (e.g., housing, commercial, recreation).   |                   |
| <b>S4.B.3.3.5</b> Describe the effects of pollution (e.g., litter) in the community.   |                   |
| <b>Agriculture</b>   | 1 – 2 – 3 – 4 – 5 |
| <b>S4.A.3.1.4</b> Identify the parts of the food and fiber systems as they relate to agricultural products from the source to the consumer.  |                   |
| <b>S4.B.3.3.2</b> Describe the human dependence on the food and fiber systems from production to consumption (e.g., food, clothing, shelter, products).  |                   |
| <b>S4.B.3.3.3</b> Identify biological pests (e.g., fungi – molds, plants – foxtail, purple loosestrife, Eurasian water milfoil; animals – aphides, ticks, zebra mussels, starlings, mice) that compete with humans for resources.                |                   |

| Biology   | 1 – 2 – 3 – 4 – 5 |
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| 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).   |                   |
| 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).   |                   |
| S4.B.1.1.5 Describe the life cycles of different organisms (e.g., moth, grasshopper, frog, seed-producing plant).   |                   |
| 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.      |                   |
| Physical Science  | 1 – 2 – 3 – 4 – 5 |
| S4.C.1.1.1 Use physical properties [e.g., mass, shape, size, volume, color, texture, magnetism, state (i.e., solid, liquid, and gas), conductivity (i.e., electrical and heat)] to describe matter. |                   |
| S4.C.1.1.2 Categorize/group objects using physical characteristics.   |                   |
| S4.C.2.1.1 Identify energy forms, energy transfer, and energy examples (e.g., light, heat, 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, reflection).   |                   |
| S4.C.3.1.1 Describe changes in motion caused by forces (e.g., magnetic, pushes or pulls, gravity, friction).  |                   |
| 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 a stationary background (e.g., geographic direction, left, up).  |                   |
| Earth Science   | 1 – 2 – 3 – 4 – 5 |
| S4.D.1.1.1 Describe how prominent Earth features in Pennsylvania (e.g., mountains, valleys, caves, sinkholes, lakes, rivers) were formed.   |                   |
| S4.D.1.1.2 Identify various Earth structures (e.g., mountains, watersheds, peninsulas, lakes, rivers, valleys) through the use of models.   |                   |
| S4.D.1.1.3 Describe the composition of soil as weathered rock and decomposed organic remains.   |                   |
| S4.D.1.2.1 Identify products and by-products of plants and animals for human  |                   |

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| use (e.g., food, clothing, building materials, paper products).  |                   |
| <b>S4.D.1.2.2</b> Identify the types and uses of Earth materials for renewable, nonrenewable, and reusable products (e.g., human-made products: concrete, paper, plastics, fabrics).             |                   |
| <b>Watershed Education</b>   | 1 – 2 – 3 – 4 – 5 |
| <b>S4.D.1.2.3</b> Recognize ways that humans benefit from the use of water resources (e.g., agriculture, energy, recreation).  |                   |
| <b>S4.D.1.3.1</b> Describe types of freshwater and saltwater bodies (e.g., lakes, rivers, wetlands, oceans).   |                   |
| <b>S4.D.1.3.2</b> Explain how water goes through phase changes (i.e., evaporation, condensation, freezing, and melting).   |                   |
| <b>S4.D.1.3.3</b> Describe or compare lentic systems (i.e., ponds, lakes, and bays) and lotic systems (i.e., streams, creeks, and rivers).   |                   |
| <b>S4.D.1.3.4</b> 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).       |                   |
| <b>Weather, Climate, Atmosphere</b>  | 1 – 2 – 3 – 4 – 5 |
| <b>S4.D.2.1.1</b> Identify basic cloud types (i.e., cirrus, cumulus, stratus, and cumulonimbus) and make connections to basic elements of weather (e.g., changes in temperature, precipitation). |                   |
| <b>S4.D.2.1.2</b> Identify weather patterns from data charts or graphs of the data (e.g., temperature, wind direction, wind speed, cloud types, precipitation).                                  |                   |
| <b>S4.D.2.1.3</b> Identify appropriate instruments (i.e., thermometer, rain gauge, weather vane, anemometer, and barometer) to study weather and what they measure.                              |                   |
| <b>Space Science</b>   | 1 – 2 – 3 – 4 – 5 |
| <b>S4.D.3.1.1</b> Describe motions of the Sun - Earth - Moon system.   |                   |
| <b>S4.D.3.1.2</b> Explain how the motion of the Sun - Earth - Moon system relates to time (e.g., days, months, years).   |                   |
| <b>S4.D.3.1.3</b> Describe the causes of seasonal change as they relate to the revolution of Earth and the tilt of Earth's axis.   |                   |

Adapted from PA K-4 Science Assessment Anchors by J. William Hug, Ph.D.