

Science Grade 5

Assessment Anchors and Eligible Content



Pennsylvania Department of Education

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S.5.A The Nature of Science**Reporting Category****ASSESSMENT ANCHOR****S.5.A.1 Reasoning and Analysis****ELIGIBLE CONTENT**

S.5.A.1.1 Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats (visuals, scenarios, graphs).

Reference: 3.1.5.A, 3.4.5.A, 3.4.5.C, 3.4.5.D, 3.4.5.E

S.5.A.1.1.1 Explain how certain questions can be answered through scientific inquiry and/or technological design (e.g., investigate to find out if all clay or foil boats designs react the same when filled with paperclips).

S.5.A.1.1.2 Explain how observations and/or experimental results are used to support inferences and claims about an investigation or relationship (e.g., make a claim based on information on a graph).

S.5.A.1.1.3 Describe how explanations, predictions, and models are developed using evidence.

S.5.A The Nature of Science**Reporting Category****ASSESSMENT ANCHOR****S.5.A.2 Processes, Procedures, and Tools of Scientific Investigations****ELIGIBLE CONTENT**

S.5.A.2.1 Apply knowledge of scientific investigation or technological design to make inferences and solve problems.

Reference: 3.1.5.A, 3.4.5.C, 3.4.5.D

S.5.A.2.1.1 Design a simple, controlled experiment (fair test) identifying the independent and dependent variables, how the dependent variable will be measured and which variables will be held constant (e.g., relate the effect of variables [mass, release height, length of string] to number of swings of a pendulum, investigate the relationships between variables in paper airplane designs).

S.5.A.2.1.2 Describe relationships between variables through interpretation of data and observations (i.e., make predictions for the outcome of a controlled experiment using data tables and graphs).

S.5.A.2.2 Apply appropriate instruments for specific purposes and describe the information the instruments can provide.

Reference: 3.1.5.A, 3.4.5.A, 3.4.5.C

S.5.A.2.2.1 Describe the appropriate use of instruments and scales to accurately measure time, mass, distance, volume, and temperature safely under a variety of conditions (e.g., use a thermometer to observe and compare the interaction of food coloring in water at different temperatures).

S.5.A.2.2.2 Explain how technology extends and enhances human abilities for specific purposes (e.g., use hand lens to examine crystals in evaporation dishes; use graduated cylinders to measure the amount of water used in a controlled plant experiment).

S.5.A The Nature of Science

Reporting Category

ASSESSMENT ANCHOR

S.5.A.3 Systems, Models, and Patterns

ELIGIBLE CONTENT

S3.A.3.1 Apply knowledge of systems and patterns to make predictions.

Reference: 3.1.5.A

S.5.A.3.1.1 Make predictions based on patterns in natural systems (e.g., phases of the Moon, time [day, month, and year], weather, seasons).

S.5.A.3.2 Apply knowledge of models to make predictions or explain technological concepts.

Reference: 3.1.5.A

S.5.A.3.2.1 Describe how models are used to better understand the relationships in natural systems (e.g., water cycle, Sun-Earth-Moon system, ecosystems, observe and draw a diagram to show the effects of flowing water in a watershed).

S.5.B Biological Sciences**Reporting Category****ASSESSMENT ANCHOR****S.5.B.1 Structure and Function of Organisms**

| | | ELIGIBLE CONTENT | |
|-----------|--|-------------------------|---|
| S.5.B.1.1 | Describe how the cell is the basic unit of structure and function for all living things. <i>Reference: 3.1.5.A, 3.1.5.C</i> | S.5.B.1.1.1 | Recognize that all organisms are composed of cells. |
| | | S.5.B.1.1.2 | Explain the concept of the cell as the basic structural unit of all living things. |
| | | S.5.B.1.1.3 | Compare the structure and function of basic cell parts in organisms (i.e., plants and animals). |

ASSESSMENT ANCHOR**S.5.B.2 Continuity of Life**

| | | ELIGIBLE CONTENT | |
|-----------|---|-------------------------|--|
| S.5.B.2.1 | Explain how certain inherited traits and/or behaviors allow some organisms to survive and reproduce more successfully than others. <i>Reference: 3.1.5.A, 3.1.5.B, 3.1.5.C</i> | S.5.B.2.1.1 | Differentiate between inherited and acquired traits (e.g., scars, injuries). |
| | | S.5.B.2.1.2 | Explain how inherited traits help organisms survive and reproduce in different environments. |
| | | S.5.B.2.1.3 | Explain how certain behaviors help organisms survive and reproduce in different environments. |
| | | S.5.B.2.1.4 | Identify changes in environmental conditions that can affect the survival of populations and entire species. |

S.5.B Biological Sciences

Reporting Category

ASSESSMENT ANCHOR

S.5.B.3 Ecological Behavior and Systems

ELIGIBLE CONTENT

S.5.B.3.1 Describe the relationships between organisms in different ecosystems.

Reference: 3.1.5.A, 3.1.5.B, 3.1.5.C, 3.4.5.E, 4.1.5.A, 4.1.5.C, 4.4.5.A

S.5.B.3.1.1 Describe the roles of producers, consumers, and decomposers within a local ecosystem.

S.5.B.3.1.2 Describe the relationships between organisms in different food webs.

S.5.B.3.2 Explain how renewable and nonrenewable resources provide for human needs.

Reference: 3.1.5.A, 3.3.5.A, 4.5.5.D

S.5.B.3.2.1 Identify fossil fuels and alternative fuels used by humans.

S.5.B.3.2.2 Describe the usefulness of Earth’s physical resources as raw materials for the human-made world.

S.5.B.3.2.3 Explain how different items are recycled and reused.

S.5.C Physical Sciences**Reporting Category****ASSESSMENT ANCHOR****S.5.C.1 Structure, Properties, and Interaction of Matter and Energy**

| | | ELIGIBLE CONTENT | |
|-----------|---|-------------------------|---|
| S.5.C.1.1 | Describe the observable physical properties of matter. <i>Reference: 3.2.5.A</i> | S.5.C.1.1.1 | Identify characteristic properties of matter that are independent of mass and volume. |
| | | S.5.C.1.1.2 | Differentiate between volume and mass. |
| S.5.C.1.2 | Describe that matter can undergo chemical and physical changes. <i>Reference: 3.2.5.A, 3.3.5.A</i> | S.5.C.1.2.1 | Describe how water changes from one state to another. |
| | | S.5.C.1.2.2 | Identify differences between chemical and physical changes of matter. |

ASSESSMENT ANCHOR**S.5.C.2 Forms, Sources, Conversion, and Transfer of Energy**

| | | ELIGIBLE CONTENT | |
|-----------|---|-------------------------|---|
| S.5.C.2.1 | Describe basic energy types and sources, and how energy can be changed from one form to another. <i>Reference: 3.2.5.B</i> | S.5.C.2.1.1 | Describe how energy exists in many forms (e.g., electrical, mechanical, chemical, heat, light, sound) and can be transformed within a system. |
| | | S.5.C.2.1.2 | Describe how heat energy is usually a byproduct of an energy transformation. |
| | | S.5.C.2.1.3 | Distinguish between kinetic and potential energy. |
| | | S.5.C.2.1.4 | Explain how energy is conserved. |

ASSESSMENT ANCHOR**S.5.C.3 Principles of Motion and Force****ELIGIBLE CONTENT**

S.5.C.3.1 Explain the relationships between mass, force, and movement.

Reference: 3.2.5.B

S.5.C.3.1.1 Differentiate between the mass and weight of an object.

S.5.C.3.1.2 Explain how the mass of an object resists change to motion (inertia).

S.5.C.3.2 Observe and recognize how magnets and electricity produce related forces.

Reference: 3.2.5.B

S.5.C.3.2.1 Recognize that moving electric charges produce magnetic forces and moving magnets produce electric forces (electromagnetism).

S.5.C.3.2.2 Identify the variables within an electric current (i.e., voltage, current, and resistance).

S.5.D Earth and Space Sciences**Reporting Category****ASSESSMENT ANCHOR****S.5.D.1 Earth Features and Processes That Change Earth and Its Resources**

| | | ELIGIBLE CONTENT | |
|-----------|---|-------------------------|---|
| S.5.D.1.1 | Describe constructive and destructive natural processes that form different geologic structures and resources. <i>Reference: 3.3.5.A</i> | S.5.D.1.1.1 | Differentiate between abrupt changes in Earth's surface (e.g., earthquakes, volcanoes, meteor impacts, landslides) and gradual changes in Earth's surface (e.g., lifting up of mountains, wearing away by erosion). |
| | | S.5.D.1.1.2 | Explain how geological processes observed today (e.g., erosion, changes in the composition of the atmosphere, volcanic eruptions, earthquakes) are similar to those in the past. |
| S.5.D.1.2 | Describe characteristic features of Earth's water systems and their impact on resources. <i>Reference: 3.2.5.A, 3.3.5.A, 4.2.5.A, 4.2.5.B, 4.2.5.C</i> | S.5.D.1.2.1 | Identify physical, chemical, and biological factors that affect water quality. |
| | | S.5.D.1.2.2 | Describe the importance of wetlands in an ecosystem. |

ASSESSMENT ANCHOR**S.5.D.2 Weather, Climate, and Atmospheric Processes**

| | | ELIGIBLE CONTENT | |
|-----------|---|-------------------------|--|
| S.5.D.2.1 | Differentiate between weather and climate. <i>Reference: 3.2.5.A, 3.3.5.A, 4.2.5.A</i> | S.5.D.2.1.1 | Explain how the cycling of water into and out of the atmosphere impacts climatic patterns. |
| | | S.5.D.2.1.2 | Explain the effects of oceans and lakes on climate. |

ASSESSMENT ANCHOR

S.5.D.3 Composition and Structure of the Universe

ELIGIBLE CONTENT

S.5.D.3.1 Explain the relationships between objects in our solar system.

Reference: 3.3.5.B

S.5.D.3.1.1 Describe the patterns of Earth’s rotation and revolution in relation to the Sun and Moon (i.e., solar eclipse, phases of the Moon, and time).

S.5.D.3.1.2 Compare the general characteristics of the inner planets of our solar system (i.e., size, orbital path, surface characteristics, and moons).