

SCIENCE PROCESSES AND INQUIRY

Grade 5

Process Standard 1: Observe and Measure—Observing is the first action taken by the learner to acquire new information about an object, organism, or event. Opportunities for observation are developed through the use of a variety of scientific tools. Measurement allows observations to be quantified. The student will accomplish these objectives to meet this process standard.

1. Observe and measure objects, organisms, and/or events (e.g., mass, length, time, volume, temperature) using Systems International (SI) units (i.e., grams, milligrams, meters, millimeters, centimeters, kilometers, liters, milliliters, and degrees Celsius).
2. Compare and/or contrast similar and/or different characteristics (e.g., color, shape, size, texture, sound, position, change) in a given set of objects, organisms, or events.

Process Standard 2: Classify—Classifying establishes order. Objects, organisms, and events are classified based on similarities, differences, and interrelationships. The student will accomplish these objectives to meet this process standard.

1. Classify a set of objects, organisms, and/or events using two or more observable properties (e.g., simple dichotomous keys).
2. Arrange objects, organisms and/or events in serial order (e.g., least to greatest, fastest to slowest).

Process Standard 3: Experiment—Experimenting is a method of discovering information. It requires making observations and measurements to test ideas. The student will accomplish these objectives to meet this process standard.

- *1. Ask questions about the world and formulate an orderly plan to investigate a question.
2. Evaluate the design of a scientific investigation.
- *3. Design and conduct a scientific investigation.
4. Recognize potential hazards and practice safety procedures in all science investigations.

Process Standard 4: Interpret and Communicate—Interpreting is the process of recognizing patterns in collected data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication may be oral, written, or mathematical and includes organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations. The student will accomplish these objectives to meet this process standard.

- *1. Report data using tables, line, bar, trend, and/or simple circle graphs.
2. Interpret data tables, line, bar, trend, and/or simple circle graphs.
3. Make predictions based on patterns in experimental data.
4. Communicate the results of investigations and/or give explanations based on data.

Process Standard 5: Inquiry—Inquiry can be defined as the skills necessary to carry out the process of scientific or systemic thinking. In order for inquiry to occur, students must

have the opportunity to ask a question, formulate a procedure, and observe phenomena. The student will accomplish these objectives to meet this process standard.

- *1. Use different ways to investigate questions and evaluate the fairness of the test.
- *2. Use a variety of measurement tools and technology.
- *3. Formulate a general statement to represent the data.
- *4. Share results of an investigation in sufficient detail so that data may be combined with data from other students and analyzed further.

PHYSICAL SCIENCE

Grade 5

Standard 1: Properties of Matter and Energy—Describe characteristics of objects based on physical qualities such as size, shape, color, mass, temperature, and texture. Energy can produce changes in properties of objects such as changes in temperature. The student will engage in investigations that integrate the process standards and lead to the discovery of the following objectives:

1. Matter has physical properties that can be used for identification (e.g., color, texture, shape).
2. Physical properties of objects can be observed, described, and measured using tools such as simple microscopes, gram spring scales, metric rulers, metric balances, and Celsius thermometers.
3. Energy can be transferred in many ways (e.g., energy from the Sun to air, water, and metal).

LIFE SCIENCE

Grade 5

Standard 2: Organisms and Environments—Organisms within a community are dependent on one another and the environment. The student will engage in investigations that integrate the process standards and lead to the discovery of the following objectives:

1. Organisms in a community, interacting populations in a common location, depend on each other for food, shelter, and reproduction.
2. Changes in environmental conditions due to human interactions or natural phenomena can affect the survival of individual organisms and/or entire species.

EARTH/SPACE SCIENCE

Grade 5

Standard 3: Structure of Earth and the Solar System—Interaction between air, water, rocks/soil, and all living things. The student will engage in investigations that integrate the process standards and lead to the discovery of the following objectives:

- *1. Soil consists of weathered rocks and decomposed organic material from dead plants, animals, and bacteria. Soils are often found in layers.
2. Weather exhibits daily and seasonal patterns (i.e., air temperature, cloud type, wind direction, wind speed, and precipitation).
3. Earth is the third planet from the Sun in a system that includes the moon, the Sun, and eight other planets.