

GRADE: 1

Big Idea 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.1.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.1.N.1.2	Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts
SC.1.N.1.3	Keep records as appropriate - such as pictorial and written records - of investigations conducted. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts
SC.1.N.1.4	Ask "how do you know?" in appropriate situations. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

Big Idea 12: Motion of Objects

A. Motion is a key characteristic of all matter that can be observed, described, and measured.

B. The motion of objects can be changed by forces.

BENCHMARK CODE	BENCHMARK
SC.1.P.12.1	Demonstrate and describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

Big Idea 13: Forces and Changes in Motion

A. It takes energy to change the motion of objects.

B. Energy change is understood in terms of forces--pushes or pulls.

C. Some forces act through physical contact, while others act at a distance.

Clarification for grades K-5: The target understanding for students in the elementary grades should focus on Big Ideas A, B, and C.

Clarification for grades 6-8: The target understanding for students in grades 6-8 should begin to transition the focus to a more specific definition of forces and changes in motion. Net forces create a change in motion. A change in momentum occurs when a net force is applied to an object over a time interval.

Grades 9-12, Standard 12: Motion - A. Motion can be measured and described qualitatively and quantitatively. Net forces create a change in motion. B. Momentum is conserved under well-defined conditions. A change in momentum occurs when a net force is applied to an object over a time interval.

BENCHMARK CODE	BENCHMARK
SC.1.P.13.1	Demonstrate that the way to change the motion of an object is by applying a push or a pull. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

Big Idea 14: Organization and Development of Living Organisms

A. All plants and animals, including humans, are alike in some ways and different in others.

B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.

C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.1.L.14.1	Make observations of living things and their environment using the five senses. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall
SC.1.L.14.2	Identify the major parts of plants, including stem, roots, leaves, and flowers. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall
SC.1.L.14.3	Differentiate between living and nonliving things. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning

Big Idea 16: Heredity and Reproduction

A. Offspring of plants and animals are similar to, but not exactly like, their parents or each other.

B. Life cycles vary among organisms, but reproduction is a major stage in the life cycle of all organisms.

BENCHMARK CODE	BENCHMARK
SC.1.L.16.1	Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall

Big Idea 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.

B. Both human activities and natural events can have major impacts on the environment.

C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.1.L.17.1	Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall

Big Idea 5: Earth in Space and Time

Humans continue to explore Earth's place in space. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the Solar System, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of our Solar System.

BENCHMARK CODE	BENCHMARK
SC.1.E.5.1	Observe and discuss that there are more stars in the sky than anyone can easily count and that they are not scattered evenly in the sky. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts
SC.1.E.5.2	Explore the Law of Gravity by demonstrating that Earth's gravity pulls any object on or near Earth toward it even though nothing is touching the object. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts
SC.1.E.5.3	Investigate how magnifiers make things appear bigger and help people see things they could not see without them. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts
SC.1.E.5.4	Identify the beneficial and harmful properties of the Sun. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

Big Idea 6: Earth Structures

Humans continue to explore the composition and structure of the surface of the Earth. External sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's water and natural resources.

BENCHMARK CODE	BENCHMARK
SC.1.E.6.1	Recognize that water, rocks, soil, and living organisms are found on Earth's surface. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall
SC.1.E.6.2	Describe the need for water and how to be safe around water. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts
SC.1.E.6.3	Recognize that some things in the world around us happen fast and some happen slowly. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning

Big Idea 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.

B. Objects and substances can be classified by their physical and chemical properties. Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.

Clarification for grades K-2: The use of the more familiar term 'weight' instead of the term "mass" is recommended for grades K-2.

Clarification for grades 3-5: In grade 3, introduce the term mass as compared to the term weight. In grade 4, investigate the concept of weight versus mass of objects. In grade 5, discuss why mass (not weight) is used to compare properties of solids, liquids and gases.

BENCHMARK CODE	BENCHMARK
SC.1.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light), texture, and whether objects sink or float. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts