



## Science Standards

### GRADES: K-2

#### Body of Knowledge: COMPUTER SCIENCE - PERSONAL, COMMUNITY, GLOBAL, AND ETHICAL IMPACT

##### Standard 1: Responsible use of technology and information

BENCHMARK CODE	BENCHMARK
SC.K2.CS-PC.1.1	Demonstrate proper care for electronic devices (e.g., handling devices carefully, logging off or shutting down correctly, and keeping devices away from water/food).
SC.K2.CS-PC.1.2	Describe the attributes of a good digital citizen: one who protects private information, balances time online, reports cyberbullying, and recognizes inappropriate content/contact.
SC.K2.CS-PC.1.3	Identify safe and unsafe examples of online communications.
SC.K2.CS-PC.1.4	Explain that a password helps protect the privacy of information.

##### Standard 2: The impact of computing resources on local and global society

BENCHMARK CODE	BENCHMARK
SC.K2.CS-PC.2.1	Identify and describe how people use many types of technologies in their daily work and personal lives.
SC.K2.CS-PC.2.2	Communicate about technology using developmentally appropriate terminology.
SC.K2.CS-PC.2.3	Recognize that people use computing technology in the workplace to perform many important tasks and functions.

##### Standard 4: Security, privacy, information sharing, ownership, licensure and copyright

BENCHMARK CODE	BENCHMARK
SC.K2.CS-PC.4.1	Explain that some information is private and should not be shared online.

#### Body of Knowledge: COMPUTER SCIENCE - COMMUNICATION AND COLLABORATION

##### Standard 1: Communication and collaboration

BENCHMARK CODE	BENCHMARK
SC.K2.CS-CC.1.1	Identify a variety of digital tools used for communication and collaboration (e.g., online library catalogs and databases).
SC.K2.CS-CC.1.2	Conduct basic keyword searches, and exchange information and feedback with teachers and other students (e.g., e-mail and text messaging).
SC.K2.CS-CC.1.3	Collaborate and cooperate with peers, teachers, and others using technology to solve problems.
SC.K2.CS-CC.1.4	Provide and accept constructive criticism on a collaborative project.

## Body of Knowledge: COMPUTER SCIENCE - COMMUNICATION SYSTEMS AND COMPUTING

### Standard 1: Modeling and simulations

BENCHMARK CODE	BENCHMARK
SC.K2.CS-CS.1.1	Define simulation and identify the concepts illustrated by a simple simulation (e.g., growth, human health, and the butterfly life cycle).
SC.K2.CS-CS.1.2	Describe how models and simulations can be used to solve real-world issues in science and engineering.
SC.K2.CS-CS.1.3	Describe how models represent a real-life system (e.g., globe or map).
SC.K2.CS-CS.1.4	Solve questions individually and collaboratively using models.

### Standard 2: Problem solving and algorithms

BENCHMARK CODE	BENCHMARK
SC.K2.CS-CS.2.1	Arrange or sort information into useful order, such as sorting students by birth date, with or without technology.
SC.K2.CS-CS.2.2	Solve age-appropriate problems (e.g., puzzles and logical thinking programs) with or without technology (i.e., computational thinking).
SC.K2.CS-CS.2.3	Solve real life issues in science and engineering using computational thinking.
SC.K2.CS-CS.2.4	Define an algorithm as a sequence of defined steps.
SC.K2.CS-CS.2.5	Create a simple algorithm, individually and collaboratively, without using computers to complete the task (e.g., making a sandwich, getting ready for school).
SC.K2.CS-CS.2.6	Illustrate thoughts, ideas, and stories in a step-by-step manner using writing tools, digital cameras, and drawing tools.
SC.K2.CS-CS.2.7	Develop and present an algorithm using tangible materials.
SC.K2.CS-CS.2.8	Gather and organize information using concept-mapping tools.

### Standard 3: Digital tools

BENCHMARK CODE	BENCHMARK
SC.K2.CS-CS.3.1	Create a digital artifact (independently and collaboratively) that clearly expresses thoughts and ideas.
SC.K2.CS-CS.3.2	Create, review, and revise artifacts that include text, images, and audio using digital tools.

### Standard 4: Hardware and software

BENCHMARK CODE	BENCHMARK
SC.K2.CS-CS.4.1	Recognize different kinds of computing devices in the classroom and other places (e.g., laptops, tablets, smart phones, desktops, printers).
SC.K2.CS-CS.4.2	Recognize and operate different types of computers, applications and peripherals (e.g., use input/output devices such as a mouse, keyboard, or touch screen; find, navigate, launch a program).
SC.K2.CS-CS.4.3	Explain that a computer program is running when a program or command is executed.

### Standard 6: Human “ Computer interactions and Artificial Intelligence

BENCHMARK CODE	BENCHMARK
SC.K2.CS-CS.6.1	Identify tasks that are made easier because of computers.

## Body of Knowledge: COMPUTER SCIENCE - COMPUTER PRACTICES AND PROGRAMMING

### Standard 1: Data analysis

BENCHMARK CODE	BENCHMARK
SC.K2.CS-CP.1.1	Identify different kinds of data (e.g., text, charts, graphs, numbers, pictures, audio, video, and collections of objects).
SC.K2.CS-CP.1.2	Collect and manipulate data using a variety of computing methods (e.g., sorting, totaling, and averaging).
SC.K2.CS-CP.1.3	Propose a solution to a problem or question based on an analysis of the data and critical thinking, individually and collaboratively.
SC.K2.CS-CP.1.4	Create data visualizations (e.g., charts and infographics), individually and collaboratively.

### Standard 2: Computer programming basics

BENCHMARK CODE	BENCHMARK
SC.K2.CS-CP.2.1	Define a computer program as a set of commands created by people to do something.
SC.K2.CS-CP.2.2	Perform a simple task (e.g., making a sandwich and brushing teeth) breaking it into small steps.
SC.K2.CS-CP.2.3	Explain that computers only follow the program's instructions.
SC.K2.CS-CP.2.4	Construct a simple program using tools that do not require a textual programming language (e.g. block-based programming language).

### Standard 3: Programming applications

BENCHMARK CODE	BENCHMARK
SC.K2.CS-CP.3.1	Create developmentally appropriate multimedia products with support from teachers, family members, or student partners.
SC.K2.CS-CP.3.2	Prepare a simple presentation of digital products and applications.

## Science Standards

### 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	<p>Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations.</p> <p><i>Content Complexity:</i> Level 3: Strategic Thinking &amp; Complex Reasoning</p> <p><b>Related Access Point(s)</b></p> <p>SC.1.N.1.In.1 Request information about the environment.</p> <p>SC.1.N.1.Su.1 Ask questions about common objects in the environment.</p> <p>SC.1.N.1.Pa.1 Recognize common objects in the environment.</p>
SC.1.N.1.2	<p>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.</p> <p><i>Content Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p> <p><b>Related Access Point(s)</b></p> <p>SC.1.N.1.In.2 Use careful observation to identify objects based on size, shape, color, or texture.</p> <p>SC.1.N.1.Su.2 Recognize differences in objects through observation of size, shape, or color</p> <p>SC.1.N.1.Pa.2 Recognize common objects as the same.</p>
SC.1.N.1.3	<p>Keep records as appropriate - such as pictorial and written records - of investigations conducted.</p> <p><i>Content Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p> <p><b>Related Access Point(s)</b></p> <p>SC.1.N.1.Pa.1 Recognize common objects in the environment.</p> <p>SC.1.N.1.In.3 Draw pictures about investigations conducted.</p> <p>SC.1.N.1.Su.3 Contribute to group recordings of observations.</p>
SC.1.N.1.4	<p>Ask "how do you know?" in appropriate situations.</p> <p><i>Content Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p> <p><b>Related Access Point(s)</b></p> <p>SC.1.N.1.Su.1 Ask questions about common objects in the environment.</p> <p>SC.1.N.1.Pa.1 Recognize common objects in the environment.</p> <p>SC.1.N.1.In.4 Ask a question about a science investigation.</p>

## 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
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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>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts
	<b>Related Access Point(s)</b>
	SC.1.P.12.In.1 Demonstrate and identify that objects can move in different ways, such as up and down, in a straight line, and back and forth.
	SC.1.P.12.Su.1 Demonstrate that objects can move in different ways, such as up and down.
SC.1.P.12.Pa.1 Track objects moving up and down.	

### 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>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts
	<b>Related Access Point(s)</b>
	SC.1.P.13.In.1 Identify the effect that a push or pull has on an object, such as changing the way an object moves.
	SC.1.P.13.Su.1 Demonstrate and recognize that pushing or pulling of an object makes it move.
SC.1.P.13.Pa.1 Apply a push to move an object.	

### 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>Content Complexity:</i> Level 1: Recall
	<b>Related Access Point(s)</b>
	SC.1.L.14.In.1 Use sight, hearing, and smell to make observations.
	SC.1.L.14.Su.1 Use sight and hearing to make observations.
SC.1.L.14.2	Identify the major parts of plants, including stem, roots, leaves, and flowers.
	<i>Content Complexity:</i> Level 1: Recall
	<b>Related Access Point(s)</b>
	SC.1.L.14.In.2 Identify the leaf, flower, and stem of a plant.
	SC.1.L.14.Su.2 Recognize the leaf and flower of a plant.
SC.1.L.14.3	Differentiate between living and nonliving things.
	<i>Content Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
	<b>Related Access Point(s)</b>
	SC.1.L.14.In.3 Identify characteristics of living and nonliving things, including whether they need food or water.
	SC.1.L.14.Su.3 Distinguish common living and nonliving things in the environment.
SC.1.L.14.Pa.1	Recognize and respond to different types of sensory stimuli.
	Recognize that plants have leaves.
SC.1.L.14.Pa.2	Recognize that plants have leaves.
	Recognize self and others as living things.

## 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>Content Complexity:</i> Level 1: Recall
	<b>Related Access Point(s)</b>
	SC.1.L.16.In.1 Match offspring of specific animals to adult animals.
	SC.1.L.16.Su.1 Recognize that baby plants and animals have parents.
SC.1.L.16.Pa.1	Recognize one's own parents.

## 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>Content Complexity:</i> Level 1: Recall
	<b>Related Access Point(s)</b>
	SC.1.L.17.In.1 Observe and recognize that plants and animals need water and food.
	SC.1.L.17.Su.1 Observe and recognize that plants and animals need water.
	SC.1.L.17.Pa.1 Observe and recognize that people need water.

## 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>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts
	<b>Related Access Point(s)</b>
	SC.1.E.5.Su.1 Recognize that there are many stars in the sky.
	SC.1.E.5.Pa.1 Associate stars with the night sky.
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>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts
	<b>Related Access Point(s)</b>
	SC.1.E.5.In.2 Observe and recognize that an object will fall when it is dropped.
	SC.1.E.5.Su.2 Indicate the location of an object before and after it falls.
	SC.1.E.5.Pa.2 Track objects that fall to the ground.
SC.1.E.5.3	Investigate how magnifiers make things appear bigger and help people see things they could not see without them.  <i>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts
	<b>Related Access Point(s)</b>
	SC.1.E.5.In.3 Identify that magnifiers enlarge the appearance of objects.

	SC.1.E.5.Su.3 Match a magnified item to its original item.
	SC.1.E.5.Pa.3 Recognize a familiar object enlarged by magnification.
SC.1.E.5.4	Identify the beneficial and harmful properties of the Sun.  <i>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts <b>Related Access Point(s)</b>
	SC.1.E.5.In.4 Recognize positive and harmful effects of sunlight.
	SC.1.E.5.Su.4 Recognize a positive effect and a negative effect of sunlight.
	SC.1.E.5.Pa.4 Recognize effects of sunlight, such as warming and giving light.

## 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>Content Complexity:</i> Level 1: Recall <b>Related Access Point(s)</b>
	SC.1.E.6.In.1 Identify rocks, water, and living things in the environment.
	SC.1.E.6.Su.1 Recognize rocks and living things in the environment.
	SC.1.E.6.Pa.1 Recognize living things in the environment.
SC.1.E.6.2	Describe the need for water and how to be safe around water.  <i>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts <b>Related Access Point(s)</b>
	SC.1.E.6.In.2 Identify reasons people need water and safe practices around water.
	SC.1.E.6.Su.2 Identify reasons people need water.
	SC.1.E.6.Pa.2 Recognize one way people use water.
SC.1.E.6.3	Recognize that some things in the world around us happen fast and some happen slowly.  <i>Content Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning <b>Related Access Point(s)</b>
	SC.1.E.6.In.3 Distinguish between events that happen slowly and those that happen fast.
	SC.1.E.6.Su.3 Distinguish between actions that are fast or slow.
	SC.1.E.6.Pa.3 Recognize an action as fast or slow.

## 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>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts
	<b>Related Access Point(s)</b>
	SC.1.P.8.In.1 Sort objects by observable properties, such as size, shape, color, or texture.
	SC.1.P.8.Su.1 Sort objects by an observable property, such as size, shape, or color.
SC.1.P.8.Pa.1 Identify common classroom objects by one observable property, such as size or color.	