



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: K

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.K.N.1.1	Collaborate with a partner to collect information. <i>Content Complexity:</i> Level 1: Recall Related Access Point(s) SC.K.N.1.In.1 Identify a partner to obtain information. SC.K.N.1.Su.1 Collect a designated item with a partner. SC.K.N.1.Pa.1 Share objects with a partner.
SC.K.N.1.2	Make observations of the natural world and know that they are descriptors collected using the five senses. <i>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts Related Access Point(s) SC.K.N.1.In.2 Identify information about objects and actions in the natural world through observation. SC.K.N.1.Su.2 Identify information about objects in the natural world through observation. SC.K.N.1.Pa.2 Recognize common objects in the natural world through observation.
SC.K.N.1.3	Keep records as appropriate -- such as pictorial records -- of investigations conducted. <i>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts Related Access Point(s) SC.K.N.1.Pa.2 Recognize common objects in the natural world through observation. SC.K.N.1.In.3 Observe, explore, and create a visual representation of real objects. SC.K.N.1.Su.3 Observe, explore, and match pictures to real objects.
SC.K.N.1.4	Observe and create a visual representation of an object which includes its major features. <i>Content Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning Related Access Point(s) SC.K.N.1.Pa.2 Recognize common objects in the natural world through observation. SC.K.N.1.In.3 Observe, explore, and create a visual representation of real objects. SC.K.N.1.Su.3 Observe, explore, and match pictures to real objects.
SC.K.N.1.5	Recognize that learning can come from careful observation. <i>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts Related Access Point(s) SC.K.N.1.In.2 Identify information about objects and actions in the natural world through observation. SC.K.N.1.Su.2 Identify information about objects in the natural world through observation. SC.K.N.1.Pa.2 Recognize common objects in the natural world through observation. SC.K.N.1.Su.3 Observe, explore, and match pictures to real objects.

Big Idea 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.

B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.K.P.10.1	Observe that things that make sound vibrate.
	<i>Content Complexity:</i> Level 1: Recall
	Related Access Point(s)
	SC.K.P.10.In.1 Identify objects that create specific sounds.
	SC.K.P.10.Su.1 Match sounds to specific objects.
	SC.K.P.10.Pa.1 Recognize and respond to common sounds.

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.K.P.12.1	Investigate that things move in different ways, such as fast, slow, etc.
	<i>Content Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
	Related Access Point(s)
	SC.K.P.12.In.1 Identify ways that things move, such as fast or slow.
	SC.K.P.12.Su.1 Recognize that things move.
	SC.K.P.12.Pa.1 Track objects in motion.

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.K.P.13.1	Observe that a push or a pull can change the way an object is moving.
	<i>Content Complexity:</i> Level 1: Recall
	Related Access Point(s)
	SC.K.P.13.In.1 Demonstrate pushing or pulling of an object to make it move.
	SC.K.P.13.Su.1 Recognize that pushing or pulling an object makes it move.
SC.K.P.13.Pa.1 Track the movement of objects that are pushed or pulled.	

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.K.L.14.1	Recognize the five senses and related body parts.
	<i>Content Complexity:</i> Level 1: Recall
	Related Access Point(s)
	SC.K.L.14.In.1 Recognize the senses of sight, hearing, and smell and related body parts.
	SC.K.L.14.Su.1 Recognize the senses of sight and hearing and related body parts.
SC.K.L.14.Pa.1 Recognize and respond to one type of sensory stimuli.	
SC.K.L.14.2	Recognize that some books and other media portray animals and plants with characteristics and behaviors they do not have in real life.
	<i>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts
	Related Access Point(s)
	SC.K.L.14.In.2 Identify a behavior of an animal or plant in a book or other media that is not real.
	SC.K.L.14.Su.2 Distinguish a real animal and an animal that is not a living thing, such as a toy animal.
SC.K.L.14.Pa.2 Distinguish between a plant and animal.	
SC.K.L.14.3	Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.
	<i>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts
	Related Access Point(s)
SC.K.L.14.Pa.2 Distinguish between a plant and animal.	

	SC.K.L.14.In.3 Identify differences in characteristics of plants and animals.
	SC.K.L.14.Su.3 Match identical animals and plants.

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.K.E.5.1	Explore the Law of Gravity by investigating how objects are pulled toward the ground unless something holds them up.
	<i>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts
	Related Access Point(s)
	SC.K.E.5.In.1 Identify that objects can fall to the ground unless something stops them.
	SC.K.E.5.Su.1 Recognize that objects fall to the ground.
SC.K.E.5.2	SC.K.E.5.Pa.1 Track a falling object.
	Recognize the repeating pattern of day and night.
	<i>Content Complexity:</i> Level 1: Recall
	Related Access Point(s)
	SC.K.E.5.In.2 Identify daily activities in a 24-hour period, such as eating breakfast and going to bed, and associate activities with morning and night.
SC.K.E.5.3	SC.K.E.5.Su.2 Identify one common activity that occurs in the day and one that occurs in the night.
	SC.K.E.5.Pa.2 Recognize one common activity that occurs during the day.
	Recognize that the Sun can only be seen in the daytime.
	<i>Content Complexity:</i> Level 1: Recall
	Related Access Point(s)
SC.K.E.5.4	SC.K.E.5.In.3 Identify the Sun in the daytime.
	SC.K.E.5.Su.3 Recognize the Sun in the daytime.
	SC.K.E.5.Pa.3 Associate the Sun with daytime.
	Observe that sometimes the Moon can be seen at night and sometimes during the day.
	<i>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.K.E.5.5	Related Access Point(s)
	SC.K.E.5.In.4 Identify the Moon in the sky at night.
	SC.K.E.5.Su.4 Recognize the Moon in the sky at night.
	SC.K.E.5.Pa.4 Associate the Moon with night.
	Observe that things can be big and things can be small as seen from Earth.
	<i>Content Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
	Related Access Point(s)

	SC.K.E.5.In.5 Observe big and small things in the sky.
	SC.K.E.5.Su.5 Recognize the size of items as either big or small.
	SC.K.E.5.Pa.5 Recognize items that are big.
SC.K.E.5.6	Observe that some objects are far away and some are nearby as seen from Earth. <i>Content Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning Related Access Point(s)
	SC.K.E.5.In.6 Identify an item that is far away and an item that is nearby.
	SC.K.E.5.Su.6 Recognize familiar objects that are far away or nearby.
	SC.K.E.5.Pa.6 Recognize items as nearby.

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.K.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light) and texture. <i>Content Complexity:</i> Level 2: Basic Application of Skills & Concepts Related Access Point(s)
	SC.K.P.8.In.1 Sort objects by observable properties, such as size, shape, or color.
	SC.K.P.8.Su.1 Match objects by an observable property, such as size or color.
	SC.K.P.8.Pa.1 Recognize two common objects that are identical to each other.

Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

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

Clarification for Grades 6-8: The target understanding for students in middle grades should begin to transition the focus to: C. When matter changes chemically, a rearrangement of bonds between the atoms occurs. This results in new substances with new properties.

BENCHMARK CODE	BENCHMARK
SC.K.P.9.1	Recognize that the shape of materials such as paper and clay can be changed by cutting, tearing, crumpling, smashing, or rolling.
	<i>Content Complexity:</i> Level 1: Recall
	Related Access Point(s)
	SC.K.P.9.In.1 Recognize that the shape of objects, such as paper, changes when cut, torn, or crumpled.
	SC.K.P.9.Su.1 Recognize that the shape of objects, such as paper, changes when cut or torn.
SC.K.P.9.Pa.1 Recognize a change in an object.	