

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		
	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, privac	 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).		
	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	
	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		
	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: Da	ata anal	ysis	

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
	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: 2

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.

cognize that these	lge is based on observation and inference; it is important to are very different things. Not only does science require creativity i
methods and proc	cesses, but also in its questions and explanations.
BENCHMARK CODE	BENCHMARK
SC.2.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations bas on those explorations.
	Content Complexity: Level 3: Strategic Thinking & Complex Reasoning Related Access Point(s)
	SC.2.N.1.In.1
	Ask questions and make observations about things in the natural world. SC.2.N.1.Su.1
	Answer yes and no questions and make observations about common objects and actions in the natural world.
	SC.2.N.1.Pa.1 Request a change or help to solve a problem in the environment.
SC.2.N.1.2	Compare the observations made by different groups using the same tools.
	Content Complexity: Level 2: Basic Application of Skills & Concepts
	Related Access Point(s)
	SC.2.N.1.In.2 Identify information about objects based on observation.
	SC.2.N.1.Su.2
	Identify characteristics of objects based on observation.
	SC.2.N.1.Pa.2
	Use senses to recognize objects.
SC.2.N.1.3	Ask "how do you know?" in appropriate situations and attempt reasonable answers when asked the same question by others.
	Content Complexity: Level 3: Strategic Thinking & Complex Reasoning
	Related Access Point(s)
	SC.2.N.1.In.1 Ask questions and make observations about things in the natural world.
	SC.2.N.1.Su.1
	Answer yes and no questions and make observations about common objects and actions in the natural world.
	SC.2.N.1.Pa.1
00.0114.4	Request a change or help to solve a problem in the environment.
SC.2.N.1.4	Explain how particular scientific investigations should yield similar conclusions when repeated.
	Content Complexity: Level 3: Strategic Thinking & Complex Reasoning
	Related Access Point(s)
	SC.2.N.1.In.3
	Recognize that the results of a scientific activity should be the same when repeated
	SC.2.N.1.Su.3 Recognize that science activities can be repeated.
	SC.2.N.1.Pa.3
	Recognize common objects in different environments.
SC.2.N.1.5	Distinguish between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think).
	Content Complexity: Level 2: Basic Application of Skills & Concepts
	Related Access Point(s)
	SC.2.N.1.In.2 Identify information about objects based on observation.
	SC.2.N.1.Su.2
	Identify characteristics of objects based on observation.

	SC.2.N.1.Pa.2 Use senses to recognize objects.
SC.2.N.1.6	Explain how scientists alone or in groups are always investigating new ways to solve problems.
	Content Complexity: Level 2: Basic Application of Skills & Concepts
	Related Access Point(s)
	SC.2.N.1.Pa.1
	Request a change or help to solve a problem in the environment.
	SC.2.N.1.In.4
	Recognize that scientists work to solve problems.
	SC.2.N.1.Su.4
	Recognize that people work in science.

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.2.P.10.1	Discuss that people use electricity or other forms of energy to cook their food, cool or warm their homes, and power their cars.
	<u>Content Complexity:</u> Level 1: Recall
	Related Access Point(s)
	SC.2.P.10.In.1
	Identify ways people use electricity in their lives.
	SC.2.P.10.Su.1
	Recognize a way people use electricity in their lives.
	SC.2.P.10.Pa.1
	Activate a device that uses electricity.

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.2.P.13.1	Investigate the effect of applying various pushes and pulls on different objects.
	Content Complexity: Level 3: Strategic Thinking & Complex Reasoning
	Related Access Point(s)
	SC.2.P.13.In.1
	Observe and identify that pushing or pulling an object can change the direction of movement of the object.
	SC.2.P.13.Su.1
	Identify that pushing or pulling an object makes it move.
	SC.2.P.13.Pa.1
	Recognize that pushing and pulling an object makes it move.
SC.2.P.13.2	Demonstrate that magnets can be used to make some things move without touching
	them.
	Content Complexity: Level 1: Recall
	Related Access Point(s)
	SC.2.P.13.Pa.1
	Recognize that pushing and pulling an object makes it move.
	SC.2.P.13.In.2
	Observe and recognize that magnets can move some objects.
	SC.2.P.13.Su.2
	Use magnets to cause objects to move.
SC.2.P.13.3	Recognize that objects are pulled toward the ground unless something holds them up.
	Content Complexity: Level 1: Recall
	Related Access Point(s)
	SC.2.P.13.Pa.2
	Indicate that an object has fallen.
	SC.2.P.13.In.3
	Identify and demonstrate that an object will fall to the ground when dropped.
	SC.2.P.13.Su.3
	Recognize that an object will fall to the ground when dropped.
SC.2.P.13.4	Demonstrate that the greater the force (push or pull) applied to an object, the greater
	the change in motion of the object.
	Or a faint Or and failt and Or Danis Analise firm of Obills 9. Or a costs
	Content Complexity: Level 2: Basic Application of Skills & Concepts
	Related Access Point(s) SC.2.P.13.Pa.1
	Recognize that pushing and pulling an object makes it move.
	SC.2.P.13.In.4
	Identify that pushing or pulling an object with more force will make the object go faster
	or farther.
	SC.2.P.13.Su.4
	Recognize that pushing or pulling an object with more force will make the object go
	faster or farther.
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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.2.L.14.1	Distinguish human body parts (brain, heart, lungs, stomach, muscles, and skeleton) and their basic functions.
	Content Complexity: Level 2: Basic Application of Skills & Concepts
	Related Access Point(s)
	SC.2.L.14.In.1
	Identify major external body parts, such as hands and legs, and their uses.
	SC.2.L.14.Su.1
	Match external body parts, such as a foot, to their uses.
	SC.2.L.14.Pa.1
	Recognize one or more external body parts.

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
	Observe and describe major stages in the life cycles of plants and animals, including beans and butterflies.
	Content Complexity: Level 2: Basic Application of Skills & Concepts
	Related Access Point(s)
	SC.2.L.16.In.1
	Observe and recognize the major stages in the life cycles of plants and animals.
	SC.2.L.16.Su.1
	Observe and recognize the sequence of stages in the life cycles of common animals.
	SC.2.L.16.Pa.1
	Recognize that offspring can be matched with their parents, such as a human baby with adult humans and a puppy with dogs.

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.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival.
	Content Complexity: Level 2: Basic Application of Skills & Concepts
	Related Access Point(s)
	SC.2.L.17.In.1
	Identify the basic needs of living things, including water, food, and air.
	SC.2.L.17.Su.1
	Recognize that living things have basic needs, including water and food.
	SC.2.L.17.Pa.1
	Recognize that animals need water.
SC.2.L.17.2	Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs.

Content Complexity: Level 2: Basic Application of Skills & Concepts
Related Access Point(s)
SC.2.L.17.In.2
Recognize that many different kinds of living things are found in different habitats.
SC.2.L.17.Su.2
Recognize that many kinds of living things are found in the environment.
SC.2.L.17.Pa.2
Recognize common living things in the immediate environment.

Big Idea 6: Earth Structures

Humans continue to explore the composition and structure of the surface of 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.2.E.6.1	Recognize that Earth is made up of rocks. Rocks come in many sizes and shapes.
	Contant Complexity Level 2. Regio Application of Skills & Concents
	Content Complexity: Level 2: Basic Application of Skills & Concepts Related Access Point(s)
	SC.2.E.6.In.1
	Sort rocks according to size and shape.
	SC.2.E.6.Su.1
	Sort rocks according to size.
	SC.2.E.6.Pa.1
	Recognize the ground in the environment.
SC.2.E.6.2	Describe how small pieces of rock and dead plant and animal parts can be the basis of soil and explain the process by which soil is formed.
	Content Complexity: Level 3: Strategic Thinking & Complex Reasoning
	Related Access Point(s)
	SC.2.E.6.Pa.1
	Recognize the ground in the environment.
	SC.2.E.6.In.2
	Identify components of soil, such as dead plants and pieces of rock.
	SC.2.E.6.Su.2
	Identify small pieces of rock in the soil.
SC.2.E.6.3	Classify soil types based on color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants.
	Content Complexity: Level 3: Strategic Thinking & Complex Reasoning
	Related Access Point(s)
	SC.2.E.6.Pa.2
	Distinguish examples of soil from other substances.
	SC.2.E.6.In.3
	Recognize soil types based on color (dark or light) and texture (size of particles).
	SC.2.E.6.Su.3
	Sort soil samples according to physical properties, such as color (dark or light) or texture (size of particles).

Big Idea 7: Earth Systems and Patterns

Humans continue to explore the interactions among water, air, and land. Air and water are in constant motion that results in changing conditions that can be observed over time.

BENCHMARK CODE BENCHMARK

SC.2.E.7.1	Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.
	Content Complexity: Level 2: Basic Application of Skills & Concepts
	Related Access Point(s)
	SC.2.E.7.In.1
	Identify common weather patterns associated with each season.
	SC.2.E.7.Su.1
	Recognize types of weather and match to the weather outdoors. SC.2.E.7.Pa.1
	Recognize daily outdoor temperature as hot or cold.
SC.2.E.7.2	Investigate by observing and measuring, that the Sun's energy directly and indirectly warms the water, land, and air.
	Content Complexity: Level 3: Strategic Thinking & Complex Reasoning
	Related Access Point(s)
	SC.2.E.7.Pa.1
	Recognize daily outdoor temperature as hot or cold.
	SC.2.E.7.In.2
	Identify that the Sun heats the outside air and water. SC.2.E.7.Su.2
	Recognize that items outside are heated by the Sun.
SC.2.E.7.3	Investigate, observe and describe how water left in an open container disappears
00.2.2.1.0	(evaporates), but water in a closed container does not disappear (evaporate).
	Content Complexity: Level 3: Strategic Thinking & Complex Reasoning
	Related Access Point(s)
	SC.2.E.7.Pa.2
	Distinguish between items that are wet and items that are dry.
	SC.2.E.7.In.3
	Recognize that water in an open container will disappear (evaporate).
	SC.2.E.7.Su.3
	Recognize that wet things will dry when they are left in the air.
SC.2.E.7.4	Investigate that air is all around us and that moving air is wind.
	Content Complexity: Level 3: Strategic Thinking & Complex Reasoning
	Related Access Point(s)
	SC.2.E.7.Pa.3
	Indicate awareness of air moving. SC.2.E.7.In.4
	Identify effects of wind. SC.2.E.7.Su.4
	Recognize effects of wind.
SC.2.E.7.5	State the importance of preparing for severe weather, lightning, and other weather
	related events.
	<u>Content Complexity:</u> Level 1: Recall
	Related Access Point(s)
	SC.2.E.7.Pa.4
	Recognize where to go to avoid severe weather, such as thunder and lightning.
	SC.2.E.7.In.5
	Identify harmful consequences of being outside in severe weather, such as lightning,
	hurricanes, or tornados.
	SC.2.E.7.Su.5
	Recognize reasons for staying inside during severe weather, such as hurricanes and thunderstorms.

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.2.P.8.1	Observe and measure objects in terms of their properties, including size, shape, color,
	temperature, weight, texture, sinking or floating in water, and attraction and repulsion of
	magnets.
	Content Complexity: Level 1: Recall
	Related Access Point(s)
	SC.2.P.8.In.1
	Identify objects by observable properties, such as, size, shape, color,
	SC.2.P.8.Su.1
	Identify objects by observable properties, such as size, shape, and color.
	SC.2.P.8.Pa.1
	Match objects by one observable property, such as size or color.
SC.2.P.8.2	Identify objects and materials as solid, liquid, or gas.
	<u>Content Complexity:</u> Level 1: Recall
	Related Access Point(s)
	SC.2.P.8.In.2
	Identify objects and materials as solid or liquid.
	SC.2.P.8.Su.2
	Recognize water in solid or liquid states.
	SC.2.P.8.Pa.2
	Recognize water as a liquid.
SC.2.P.8.3	Recognize that solids have a definite shape and that liquids and gases take the shape
	of their container.
	<u>Content Complexity:</u> Level 1: Recall
	Related Access Point(s)
	SC.2.P.8.In.3
	Recognize that solids have a definite shape and liquids take the shape of their
	container.

	SC.2.P.8.Su.3
	Recognize that solids have a definite shape.
	SC.2.P.8.Pa.3
	Recognize different containers that hold liquids.
SC.2.P.8.4	Observe and describe water in its solid, liquid, and gaseous states.
	<u>Content Complexity:</u> Level 1: Recall
	Related Access Point(s)
	SC.2.P.8.In.2
	Identify objects and materials as solid or liquid.
	SC.2.P.8.Su.2
	Recognize water in solid or liquid states.
	SC 2 P.8 Pa 2
	Recognize water as a liquid.
SC.2.P.8.5	Measure and compare temperatures taken every day at the same time.
30.2.1 .0.3	vieasure and compare temperatures taken every day at the same time.
	Content Complexity: Level 2: Basic Application of Skills & Concepts
	Related Access Point(s)
	SC.2.P.8.In.4
	Describe and compare outside daily temperatures as warm or cold.
	SC.2.P.8.Su.4
	Identify outside temperatures as warm or cold. SC.2.P.8.Pa.4
	Recognize common objects or materials as warm or cold.
SC.2.P.8.6	Measure and compare the volume of liquids using containers of various shapes and
	sizes.
	Content Complexity: Level 2: Basic Application of Skills & Concepts
	Related Access Point(s)
	SC.2.P.8.Pa.3
	Recognize different containers that hold liquids.
	SC.2.P.8.In.5
	Compare the volume of liquid in a variety of containers.
	SC.2.P.8.Su.5
	Recognize different volumes of liquids in identical containers.

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 the 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.2.P.9.1	Investigate that materials can be altered to change some of their properties, but not all materials respond the same way to any one alteration.
	Content Complexity: Level 3: Strategic Thinking & Complex Reasoning Related Access Point(s)

SC.2.P.9.In.1 Explore and identify that observable properties of materials can be changed.
SC.2.P.9.Su.1
Recognize changes in observable properties of materials.
SC.2.P.9.Pa.1
Recognize that the appearance of an object or material has changed.