

# FLORIDA SCIENCE STANDARDS

## K-8 GRADE-LEVEL STANDARDS

### Big Ideas

The revised science standards include big ideas that flow throughout all grade levels and build in rigor as students move to higher grade levels. The eighteen big ideas used throughout this document are organized as follows:

#### Body of Knowledge: The Nature of Science

Big Idea 1: The Practice of Science

Big Idea 2: The Characteristics of Scientific Knowledge

Big Idea 3: The Role of Theories, Laws, Hypotheses, and Models

Big Idea 4: Science and Society

#### Body of Knowledge: Earth and Space Science

Big Idea 5: Earth in Space in Time

Big Idea 6: Earth Structures

Big Idea 7: Earth Systems and Patterns

#### Body of Knowledge: Physical Science

Big Idea 8: Properties of Matter

Big Idea 9: Changes in Matter

Big Idea 10: Forms of Energy

Big Idea 11: Energy Transfer and Transformations

Big Idea 12: Motion of Objects

Big Idea 13: Forces and Changes in Motion

#### Body of Knowledge: Life Science

Big Idea 14: Organization and Development of Living Organisms

Big Idea 15: Diversity and Evolution of Living Organisms

Big Idea 16: Heredity and Reproduction

Big Idea 17: Interdependence

Big Idea 18: Matter and Energy Transformations

The numbering for the big ideas is consistent throughout the document. Not all big ideas are addressed at each grade level, so the numbering scheme is not consecutive for each grade level.

## Benchmark Coding Scheme

<b>SC.</b>	<b>5.</b>	<b>N.</b>	<b>1.</b>	<b>1</b>
Subject	Grade Level	Body of Knowledge	Big Idea	Benchmark

Body of Knowledge Key:

- N ~ Nature of Science
- E ~ Earth and Space Science
- P ~ Physical Science
- L ~ Life Science

## Access Points Coding Scheme

<b>SC.</b>	<b>5.</b>	<b>P.</b>	<b>1.</b>	<b>In.a</b>
Subject	Grade Level	Body of Knowledge	Big Idea	Access Point

Access Points Key:

- In ~ Independent
- Su ~ Supported
- Pa ~ Participatory

## GRADE 3

### **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.3.N.1.1	Raise questions about the natural world, investigate them individually and in teams through free exploration and systematic investigations, and generate appropriate explanations based on those explorations.
SC.3.N.1.2	Compare the observations made by different groups using the same tools and seek reasons to explain the differences across groups.
SC.3.N.1.3	Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted.
SC.3.N.1.4	Recognize the importance of communication among scientists.
SC.3.N.1.5	Recognize that scientists question, discuss, and check each others' evidence and explanations.
SC.3.N.1.6	Infer based on observation.
SC.3.N.1.7	Explain that empirical evidence is information, such as observations or measurements, that is used to help validate explanations of natural phenomena.

#### Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.N.1.In.a Ask questions, explore, observe, and identify outcomes. SC.3.N.1.In.b Work with a group to make observations and identify results. SC.3.N.1.In.c Record observations to describe findings using written or visual formats, such as picture stories. SC.3.N.1.In.d Recognize that scientists share their knowledge and results with each other.	SC.3.N.1.Su.a Ask literal questions, explore, observe, and share information. SC.3.N.1.Su.b Work with a partner to make observations. SC.3.N.1.Su.c Record observations to describe findings using dictated words and phrases and pictures. SC.3.N.1.Su.d Recognize that people work in different kinds of jobs related to science.	SC.3.N.1.Pa.a Explore, observe, and recognize common objects in the natural world. SC.3.N.1.Pa.b Assist with investigations with a partner. SC.3.N.1.Pa.c Recognize that people share information.

## GRADE 3

### **BIG IDEA 3: The Role of Theories, Laws, Hypotheses, and Models**

*The terms that describe examples of scientific knowledge, for example; "theory," "law," "hypothesis," and "model" have very specific meanings and functions within science.*

BENCHMARK CODE	BENCHMARK
SC.3.N.3.1	Recognize that words in science can have different or more specific meanings than their use in everyday language; for example, energy, cell, heat/cold, and evidence.
SC.3.N.3.2	Recognize that scientists use models to help understand and explain how things work.
SC.3.N.3.3	Recognize that all models are approximations of natural phenomena; as such, they do not perfectly account for all observations.

#### Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.N.3.In.a Recognize meanings of words used in science, such as energy, temperature, and gravity. SC.3.N.3.In.b Use models to identify how things work. SC.3.N.3.In.c Identify that models are representations of things found in the real world.	SC.3.N.3.1.Su.a Recognize meanings of words used in science, such as telescope, environment, and solid. SC.3.N.3.1.Su.b Recognize that models represent real things.	SC.3.N.3.1.Pa.a Recognize common objects related to science by name, such as ice, animal, and plant. SC.3.N.3.1.Pa.b Recognize a model of a real object.

### **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.3.E.5.1	Explain that stars can be different; some are smaller, some are larger, and some appear brighter than others; all except the Sun are so far away that they look like points of light.
SC.3.E.5.2	Identify the Sun as a star that emits energy; some of it in the form of light.
SC.3.E.5.3	Recognize that the Sun appears large and bright because it is the closest star to Earth.
SC.3.E.5.4	Explore the Law of Gravity by demonstrating that gravity is a force that can be overcome.
SC.3.E.5.5	Investigate that the number of stars that can be seen through telescopes is dramatically greater than those seen by the unaided eye.

#### Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.E.5.In.a Recognize that stars in the sky look different from each other. SC.3.E.5.In.b Recognize that the Sun is a star that gives off its own light. SC.3.E.5.In.c Recognize that the Sun is the closest star to Earth. SC.3.E.5.In.d Observe and describe ways to keep an object from falling due to gravity. SC.3.E.5.In.e Recognize that stars appear larger and closer when seen through a telescope.	SC.3.E.5.Su.a Recognize that all stars except the Sun appear very small. SC.3.E.5.Su.b Recognize that the Sun gives off light. SC.3.E.5.Su.c Recognize that the Sun is a star. SC.3.E.5.Su.d Observe and recognize ways to stop a falling object, such as catching a ball. SC.3.E.5.Su.e Recognize a telescope as a tool to view stars in space.	SC.3.E.5.Pa.a Recognize stars in the sky. SC.3.E.5.Pa.b Recognize that the Sun is bright. SC.3.E.5.Pa.c Recognize that an object can be stopped from falling. SC.3.E.5.Pa.d Match a familiar object enlarged by magnification.

## GRADE 3

### **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.3.E.6.1	Demonstrate that radiant energy from the Sun can heat objects and when the Sun is not present, heat may be lost.

#### Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.E.6.In.a Identify that energy from the Sun heats objects.	SC.3.E.6.Su.a Recognize that many things will get hot when left in the Sun.	SC.3.E.6.Pa.a Distinguish between hot and cold objects.

### **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.*

BENCHMARK CODE	BENCHMARK
SC.3.P.8.1	Measure and compare temperatures of various samples of solids and liquids.
SC.3.P.8.2	Measure and compare the mass and volume of solids and liquids.
SC.3.P.8.3	Compare materials and objects according to properties such as size, shape, color, texture, and hardness.

#### Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.P.8.In.a Observe and identify the colder/hotter temperature measured on a thermometer. SC.3.P.8.In.b Measure the weight of solids or liquids. SC.3.P.8.In.c Group objects by two observable properties, such as size and shape or color and texture.	SC.3.P.8.Su.a Recognize that a thermometer measures temperature (cold and hot). SC.3.P.8.Su.b Sort solid objects by weight (heavy and light). SC.3.P.8.Su.c Sort objects by an observable property, such as size, shape, color, and texture.	SC.3.P.8.Pa.a Recognize the temperature of items, such as food, as cool or warm. SC.3.P.8.Pa.b Recognize the larger of two objects. SC.3.P.8.Pa.c Match objects by an observable property, such as size, shape, and color.

## GRADE 3

### **BIG IDEA 9: Changes in Matter**

**A. Matter can undergo a variety of changes.**

**B. Matter can be changed physically or chemically.**

BENCHMARK CODE	BENCHMARK
SC.3.P.9.1	Describe the changes water undergoes when it changes state through heating and cooling by using familiar scientific terms such as melting, freezing, boiling, evaporation, and condensation.

#### Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.P.9.In.a Describe changes in the state of water as a result of freezing and melting.	SC.3.P.9.Su.a Identify that water can change from solid to liquid state by heating.	SC.3.P.9.Pa.a Recognize that ice can change to water.

### **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.3.P.10.1	Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical.
SC.3.P.10.2	Recognize that energy has the ability to cause motion or create change.
SC.3.P.10.3	Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another.
SC.3.P.10.4	Demonstrate that light can be reflected, refracted, and absorbed.

#### Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.P.10.In.a Recognize forms of energy, such as light, heat, electrical, and energy of motion. SC.3.P.10.In.b Recognize examples of the use of energy, such as electrical (radio, freezer) and energy of motion (bowling, wind). SC.3.P.10.In.c Identify that light may come from different sources, such as the Sun or electric lamp.	SC.3.P.10.Su.a Recognize objects that use electricity (television) and the energy of motion (bowling ball). SC.3.P.10.Su.b Recognize examples of sources of light, such as the Sun or a flashlight.	SC.3.P.10.Pa.a Recognize the change in the motion of an object. SC.3.P.10.Pa.b Distinguish light and dark.

## GRADE 3

### **BIG IDEA 11: Energy Transfer and Transformations**

**A. Waves involve a transfer of energy without a transfer of matter.**

**B. Water and sound waves transfer energy through a material.**

**C. Light waves can travel through a vacuum and through matter.**

BENCHMARK CODE	BENCHMARK
SC.3.P.11.1	Investigate, observe, and explain that things that give off light often also give off heat.
SC.3.P.11.2	Investigate, observe, and explain that heat is produced when one object rubs against another, such as rubbing one's hands together.

#### Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.P.11.In.a Identify that objects that give off light often give off heat. SC.3.P.11.In.b Observe and identify that heat is produced when objects are rubbed together.	SC.3.P.11.Su.a Recognize objects that give off both heat and light, such as a light bulb. SC.3.P.11.Su.b Observe and recognize that rubbing objects together causes heat.	SC.3.P.11.Pa.a Recognize sources of light. SC.3.P.11.Pa.b Recognize sources of heat.

### **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.3.L.14.1	Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.
SC.3.L.14.2	Investigate and describe how plants respond to stimuli (heat, light, gravity), such as the way plant stems grow toward light and their roots grow downward in response to gravity.

#### Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.L.14.In.a Identify the major parts of a plant, including seed, root, stem, leaf, and flower, and their functions. SC.3.L.14.In.b Identify behaviors of plants that show they are growing.	SC.3.L.14.Su.a Identify the major parts of a plant, such as the root, stem, leaf, and flower. SC.3.L.14.Su.b Recognize that plants grow toward light and roots grow down in the soil.	SC.3.L.14.Pa.a Recognize the leaf and flower of a plant. SC.3.L.14.Pa.b Recognize that plants grow.

## GRADE 3

### **BIG IDEA 15: Diversity and Evolution of Living Organisms**

**A. Earth is home to a great diversity of living things, but changes in the environment can affect their survival.**

**B. Individuals of the same kind often differ in their characteristics and sometimes the differences give individuals an advantage in surviving and reproducing.**

BENCHMARK CODE	BENCHMARK
SC.3.L.15.1	Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.
SC.3.L.15.2	Classify flowering and nonflowering plants into major groups such as those that produce seeds, or those like ferns and mosses that produce spores, according to their physical characteristics.

#### Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.L.15.In.a Classify animals by a similar physical characteristic, such as fur, feathers, and number of legs. SC.3.L.15.In.b Classify parts of plants into groups based on physical characteristics, such as classifying leaves by shape.	SC.3.L.15.Su.a Sort common animals by observable characteristics. SC.3.L.15.Su.b Sort common plants by observable characteristics.	SC.3.L.15.Pa.a Match animals that are the same. SC.3.L.15.Pa.b Match plants that are the same.

### **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.3.L.17.1	Describe how animals and plants respond to changing seasons.
SC.3.L.17.2	Recognize that plants use energy from the Sun, air, and water to make their own food.

#### Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.L.17.In.a Identify changes in the appearance of animals and plants throughout the year. SC.3.L.17.In.b Recognize that most plants make their own food.	SC.3.L.17.Su.a Recognize that the appearance of some plants in the environment changes throughout the year. SC.3.L.17.Su.b Recognize that plants need light to grow.	SC.3.L.17.Pa.a Recognize clothing worn by humans in different weather (seasons). SC.3.L.17.Pa.b Recognize that plants need water.