

Florida Next Generation Sunshine State Standards

Kindergarten

Big Idea 1: The Practice of Science

Benchmark Number	Descriptor
SC.K.N.1.1	Collaborate with a partner to collect information.
SC.K.N.1.2	Make observations of the natural world and know that they are descriptors collected using the five senses.
SC.K.N.1.3	Keep records as appropriate -- such as pictorial records -- of investigations conducted.
SC.K.N.1.4	Observe and create a visual representation of an object which includes its major features.
SC.K.N.1.5	Recognize that learning can come from careful observation.

Big Idea 14: Organization and Development of Living Organisms

Benchmark Number	Descriptor
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.

Florida Next Generation Sunshine State Standards

Grade 1

Big Idea 1: The Practice of Science

Benchmark Number	Descriptor
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.
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.
SC.1.N.1.3	Keep records as appropriate - such as pictorial and written records - of investigations conducted.
SC.1.N.1.4	Ask "how do you know?" in appropriate situations.

Big Idea 14: Organization and Development of Living Organisms

Benchmark Number	Descriptor
SC.1.L.14.1	Make observations of living things and their environment using the five senses.
SC.1.L.14.3	Differentiate between living and nonliving things.

Big Idea 16: Heredity and Reproduction

Benchmark Number	Descriptor
SC.1.L.16.1	Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.

Florida Next Generation Sunshine State Standards

Big Idea 17: Interdependence

Benchmark Number	Descriptor
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.

Grade 2

Big Idea 1: The Practice of Science

Benchmark Number	Descriptor
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 based on those explorations.
SC.2.N.1.2	Compare the observations made by different groups using the same tools.
SC.2.N.1.3	Ask "how do you know?" in appropriate situations and attempt reasonable answers when asked the same question by others.
SC.2.N.1.4	Explain how particular scientific investigations should yield similar conclusions when repeated.
SC.2.N.1.5	Distinguish between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think).
SC.2.N.1.6	Explain how scientists alone or in groups are always investigating new ways to solve problems.

Big Idea 16: Heredity and Reproduction

Benchmark Number	Descriptor
SC.2.L.16.1	Observe and describe major stages in the life cycles of plants and animals, including beans and butterflies.

Florida Next Generation Sunshine State Standards

Big Idea 17: Interdependence

Benchmark Number	Descriptor
SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival.
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.

Grade 3

Big Idea 1: The Practice of Science

Benchmark Number	Descriptor
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.

Florida Next Generation Sunshine State Standards

Big Idea 15: Diversity and Evolution of Living Organisms

Benchmark Number	Descriptor
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.

Grade 4

Big Idea 1: The Practice of Science

Benchmark Number	Descriptor
SC.4.N.1.1	Raise questions about the natural world, use appropriate reference materials that support understanding to obtain information (identifying the source), conduct both individual and team investigations through free exploration and systematic investigations, and generate appropriate explanations based on those explorations.
SC.4.N.1.2	Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups.
SC.4.N.1.3	Explain that science does not always follow a rigidly defined method ("the scientific method") but that science does involve the use of observations and empirical evidence.
SC.4.N.1.4	Attempt reasonable answers to scientific questions and cite evidence in support.
SC.4.N.1.5	Compare the methods and results of investigations done by other classmates.
SC.4.N.1.6	Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations.
SC.4.N.1.7	Recognize and explain that scientists base their explanations on evidence.
SC.4.N.1.8	Recognize that science involves creativity in designing experiments.

Florida Next Generation Sunshine State Standards

Big Idea 2: The Characteristics of Scientific Knowledge

Benchmark Number	Descriptor
SC.4.N.2.1	Explain that science focuses solely on the natural world.

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

Benchmark Number	Descriptor
SC.4.N.3.1	Explain that models can be three dimensional, two dimensional, an explanation in your mind, or a computer model.

Big Idea 16: Heredity and Reproduction

Benchmark Number	Descriptor
SC.4.L.16.2	Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment.
SC.4.L.16.3	Recognize that animal behaviors may be shaped by heredity and learning.

Big Idea 17: Interdependence

Benchmark Number	Descriptor
SC.4.L.17.2	Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.
SC.4.L.17.3	Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.
SC.4.L.17.4	Recognize ways plants and animals, including humans, can impact the environment.

Florida Next Generation Sunshine State Standards

Grade 5

Big Idea 1: The Practice of Science

Benchmark Number	Descriptor
SC.5.N.1.1	Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
SC.5.N.1.2	Explain the difference between an experiment and other types of scientific investigation.
SC.5.N.1.3	Recognize and explain the need for repeated experimental trials.
SC.5.N.1.4	Identify a control group and explain its importance in an experiment.
SC.5.N.1.5	Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method."
SC.5.N.1.6	Recognize and explain the difference between personal opinion/interpretation and verified observation.

Big Idea 2: The Characteristics of Scientific Knowledge

Benchmark Number	Descriptor
SC.5.N.2.1	Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.
SC.5.N.2.2	Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others.

Florida Next Generation Sunshine State Standards

Big Idea 15: Diversity and Evolution of Living Organisms

Benchmark Number	Descriptor
SC.5.L.15.1	Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.

Big Idea 17: Interdependence

Benchmark Number	Descriptor
SC.5.L.17.1	Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.

Grade 6

Big Idea 1: The Practice of Science

Benchmark Number	Descriptor
SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
SC.6.N.1.2	Explain why scientific investigations should be replicable.
SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.

Florida Next Generation Sunshine State Standards

Big Idea 2: The Characteristics of Scientific Knowledge

Benchmark Number	Descriptor
SC.6.N.2.1	Distinguish science from other activities involving thought.
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.

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

Benchmark Number	Descriptor
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life.
SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws.
SC.6.N.3.3	Give several examples of scientific laws.
SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks.

Florida Next Generation Sunshine State Standards

Big Idea 14: Organization and Development of Living Organisms

Benchmark Number	Descriptor
SC.6.L.14.1	Describe and identify patterns in the hierarchical organization of organisms from atoms to molecules and cells to tissues to organs to organ systems to organisms.
SC.6.L.14.2	Investigate and explain the components of the scientific theory of cells (cell theory): all organisms are composed of cells (single-celled or multi-cellular), all cells come from pre-existing cells, and cells are the basic unit of life.
SC.6.L.14.3	Recognize and explore how cells of all organisms undergo similar processes to maintain homeostasis, including extracting energy from food, getting rid of waste, and reproducing.
SC.6.L.14.4	Compare and contrast the structure and function of major organelles of plant and animal cells, including cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria, and vacuoles.

Big Idea 15: Diversity and Evolution of Living Organisms

Benchmark Number	Descriptor
SC.6.L.15.1	Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.

Florida Next Generation Sunshine State Standards

Grade 7

Big Idea 1: The Practice of Science

Benchmark Number	Descriptor
SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials).
SC.7.N.1.3	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.
SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.
SC.7.N.1.5	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.

Big Idea 2: The Characteristics of Scientific Knowledge

Benchmark Number	Descriptor
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.

Florida Next Generation Sunshine State Standards

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

Benchmark Number	Descriptor
SC.7.N.3.1	Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.
SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models.

Big Idea 15: Diversity and Evolution of Living Organisms

Benchmark Number	Descriptor
SC.7.L.15.1	Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.
SC.7.L.15.2	Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms.
SC.7.L.15.3	Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.

Florida Next Generation Sunshine State Standards

Big Idea 16: Heredity and Reproduction

Benchmark Number	Descriptor
SC.7.L.16.1	Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.
SC.7.L.16.3	Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.
SC.7.L.16.4	Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.

Big Idea 17: Interdependence

Benchmark Number	Descriptor
SC.7.L.17.1	Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.
SC.7.L.17.2	Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.
SC.7.L.17.3	Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.

Florida Next Generation Sunshine State Standards

Grade 8

Big Idea 1: The Practice of Science

Benchmark Number	Descriptor
SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
SC.8.N.1.2	Design and conduct a study using repeated trials and replication.
SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.
SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.

Big Idea 2: The Characteristics of Scientific Knowledge

Benchmark Number	Descriptor
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas.
SC.8.N.2.2	Discuss what characterizes science and its methods.

Florida Next Generation Sunshine State Standards

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

Benchmark Number	Descriptor
SC.8.N.3.1	Select models useful in relating the results of their own investigations.
SC.8.N.3.2	Explain why theories may be modified but are rarely discarded.

Florida Next Generation Sunshine State Standards

Grades 9-12

Body of Knowledge: Nature of Science

Standard 1: The Practice of Science

Benchmark Number	Descriptor
	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:
SC.912.N.1.1	<ol style="list-style-type: none">1. pose questions about the natural world,2. conduct systematic observations,3. examine books and other sources of information to see what is already known,4. review what is known in light of empirical evidence,5. plan investigations,6. use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),7. pose answers, explanations, or descriptions of events,8. generate explanations that explicate or describe natural phenomena (inferences),9. use appropriate evidence and reasoning to justify these explanations to others,10. communicate results of scientific investigations, and11. evaluate the merits of the explanations produced by others.
SC.912.N.1.2	Describe and explain what characterizes science and its methods.
SC.912.N.1.3	Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented.
SC.912.N.1.4	Identify sources of information and assess their reliability according to the strict standards of scientific investigation.
SC.912.N.1.5	Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome.
SC.912.N.1.6	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.

Florida Next Generation Sunshine State Standards

Benchmark Number	Descriptor
SC.912.N.1.7	Recognize the role of creativity in constructing scientific questions, methods and explanations.

Standard 2: The Characteristics of Scientific Knowledge

Benchmark Number	Descriptor
SC.912.N.2.1	Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science).
SC.912.N.2.2	Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion.
SC.912.N.2.3	Identify examples of pseudoscience (such as astrology, phrenology) in society.
SC.912.N.2.4	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.
SC.912.N.2.5	Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations.

Florida Next Generation Sunshine State Standards

Standard 3: The Role of Theories, Laws, Hypotheses, and Models

Benchmark Number	Descriptor
SC.912.N.2.1	Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science).
SC.912.N.2.2	Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion.
SC.912.N.3.3	Explain that scientific laws are descriptions of specific relationships under given conditions in nature, but do not offer explanations for those relationships.
SC.912.N.3.4	Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions.
SC.912.N.3.5	Describe the function of models in science, and identify the wide range of models used in science.

Florida Next Generation Sunshine State Standards

Body of Knowledge: Life Science

Standard 14: Organization and Development of Living Organisms

Benchmark Number	Descriptor
SC.912.L.14.1	Describe the scientific theory of cells (cell theory) and relate the history of its discovery to the process of science.
SC.912.L.14.2	Relate structure to function for the components of plant and animal cells. Explain the role of cell membranes as a highly selective barrier (passive and active transport).
SC.912.L.14.3	Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells.
SC.912.L.14.10	Discuss the relationship between the evolution of land plants and their anatomy.

Standard 15: Diversity and Evolution of Living Organisms

Benchmark Number	Descriptor
SC.912.L.15.1	Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change.
SC.912.L.15.2	Discuss the use of molecular clocks to estimate how long ago various groups of organisms diverged evolutionarily from one another.
SC.912.L.15.3	Describe how biological diversity is increased by the origin of new species and how it is decreased by the natural process of extinction.
SC.912.L.15.4	Describe how and why organisms are hierarchically classified and based on evolutionary relationships.
SC.912.L.15.5	Explain the reasons for changes in how organisms are classified.
SC.912.L.15.6	Discuss distinguishing characteristics of the domains and kingdoms of living organisms.
SC.912.L.15.7	Discuss distinguishing characteristics of vertebrate and representative invertebrate phyla, and chordate classes using typical examples.

Florida Next Generation Sunshine State Standards

Benchmark Number	Descriptor
SC.912.L.15.8	Describe the scientific explanations of the origin of life on Earth.
SC.912.L.15.9	Explain the role of reproductive isolation in the process of speciation.
SC.912.L.15.10	Identify basic trends in hominid evolution from early ancestors six million years ago to modern humans, including brain size, jaw size, language, and manufacture of tools.
SC.912.L.15.11	Discuss specific fossil hominids and what they show about human evolution.
SC.912.L.15.13	Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success.
SC.912.L.15.14	Discuss mechanisms of evolutionary change other than natural selection such as genetic drift and gene flow.
SC.912.L.15.15	Describe how mutation and genetic recombination increase genetic variation.

Standard 16: Heredity and Reproduction

Benchmark Number	Descriptor
SC.912.L.16.3	Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic information.
SC.912.L.16.4	Explain how mutations in the DNA sequence may or may not result in phenotypic change. Explain how mutations in gametes may result in phenotypic changes in offspring.
SC.912.L.16.5	Explain the basic processes of transcription and translation, and how they result in the expression of genes.
SC.912.L.16.9	Explain how and why the genetic code is universal and is common to almost all organisms.

Florida Next Generation Sunshine State Standards

Standard 17: Interdependence

Benchmark Number	Descriptor
SC.912.L.17.1	Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution.
SC.912.L.17.4	Describe changes in ecosystems resulting from seasonal variations, climate change and succession.
SC.912.L.17.8	Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.
SC.912.L.17.9	Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.