

Crosswalk between FCAT assessed benchmarks from the 1996 Sunshine State Science Standards and the new Science Standards

Grades K-5

<p>SC.A.1.2.1: AA The student determines that the properties of materials (e.g., density and volume) can be compared and measured (e.g., using rulers, balances, and thermometers). MC</p>		
BM CODE	Current SSS Benchmark	Strength of correlation
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.	M
SC.2.P.8.5	Measure and compare temperatures taken every day at the same time.	M
SC.2.P.8.6	Measure and compare the volume of liquids using containers of various shapes and sizes.	M
SC.3.P.8.1	Measure and compare temperatures of various samples of solids and liquids.	M
SC.3.P.8.2	Measure and compare the mass and volume of solids and liquids.	M
SC.4.P.8.1	Measure and compare objects and materials based on their physical properties including: mass, shape, volume, color, hardness, texture, odor, taste, attraction to magnets.	S
<p>SC.A.1.2.2: CS The student knows that common materials (e.g., water) can be changed from one state to another by heating and cooling. MC</p>		
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.	S
<p>SC.A.1.2.3: CS The student knows that the weight of an object always equals the sum of its parts. MC</p>		
SC.4.P.8.3	Explore the Law of Conservation of Mass by demonstrating that the mass of a whole object is always the same as the sum of the masses of its parts.	S

SC.A.1.2.4: AA The student knows that different materials are made by physically combining substances and that different objects can be made by combining different materials. MC		
SC.5.P.8.3	Demonstrate and explain that mixtures of solids can be separated based on observable properties of their parts such as particle size, shape, color, and magnetic attraction.	W
SC.A.1.2.5: CS The student knows that materials made by chemically combining two or more substances may have properties that differ from the original materials. MC		
SC.4.P.9.1	Identify some familiar changes in materials that result in other materials with different characteristics, such as decaying animal or plant matter, burning, rusting, and cooking.	M
SC.A.2.2.1: CS The student knows that materials may be made of parts too small to be seen without magnification. MC		
SC.5.P.8.4	Explore the scientific theory of atoms (also called atomic theory) by recognizing that all matter is composed of parts that are too small to be seen without magnification.	S
SC.B.1.2.1: AA The student knows how to trace the flow of energy in a system (e.g., as in an ecosystem). MC,SR		
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.	S
SC.B.1.2.2: AA (Also assesses B.1.2.3, B.1.2.4, B.1.2.5, & B.1.2.6) The student recognizes various forms of energy (e.g., heat, light, and electricity). MC		
SC.3.P.10.1	Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical.	S
SC.4.P.10.1	Observe and describe some basic forms of energy, including light, heat, sound, electrical, and the energy of motion.	M
SC.B.1.2.3: AA (Assessed as B.1.2.2) The student knows that most things that emit light also emit heat. MC		
SC.3.P.11.1	Investigate, observe, and explain that things that give off light often also give off heat.	S

SC.B.1.2.4: AA (Assessed as B.1.2.2) The student knows the many ways in which energy can be transformed from one type to another. MC		
SC.5.P.10.4	Investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion.	M
SC.B.1.2.5: AA (Assessed as B.1.2.2) The student knows that various forms of energy (e.g., mechanical, chemical, electrical, magnetic, nuclear, and radiant) can be measured in ways that make it possible to determine the amount of energy that is transformed. MC		
Measurement of energy is not a K-5 topic in the new standards.		
SC.B.1.2.6: AA (Assessed as B.1.2.2) The student knows ways that heat can move from one object to another. MC		
SC.4.P.11.1	Recognize that heat flows from a hot object to a cold object and that heat flow may cause materials to change temperature.	M
SC.B.2.2.1: CS The student knows that some source of energy is needed for organisms to stay alive and grow. MC		
SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival.	M
SC.3.L.17.2	Recognize that plants use energy from the Sun, air, and water to make their own food.	S
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.	S
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.	S
SC.B.2.2.2: CS (Assessed as D.2.2.1) The student recognizes the costs and risks to society and the environment posed by the use of nonrenewable energy. MC		
SC.4.E.6.3	Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.	M
SC.4.E.6.6	Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).	M
SC.4.L.17.4	Recognize ways plants and animals, including humans, can impact the environment.	M

SC.B.2.2.3: CS (Assessed as D.2.2.1) The student knows that the limited supply of usable energy sources (e.g., fuels such as coal or oil) places great significance on the development of renewable energy sources. MC		
SC.4.E.6.3	Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.	M
SC.4.E.6.6	Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).	M
SC.C.1.2.1: CS (Assessed as D.2.2.1) The student understands that the motion of an object can be described and measured. MC		
SC.K.P.12.1	Investigate that things move in different ways, such as fast, slow, etc.	S
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.	S
SC.4.P.12.1	Recognize that an object in motion always changes its position and may change its direction.	S
SC.4.P.12.2	Investigate and describe that the speed of an object is determined by the distance it travels in a unit of time and that objects can move at different speeds.	S
SC.C.1.2.2: CS The student knows that waves travel at different speeds through different materials. MC		
SC.3.P.10.4	Demonstrate that light can be reflected, refracted, and absorbed.	W
SC.4.P.10.3	Investigate and explain that sound is produced by vibrating objects and that pitch depends on how fast or slow the object vibrates.	W
SC.C.2.2.1: CS The student recognizes that forces of gravity, magnetism, and electricity operate simple machines. MC		
SC.5.P.13.1	Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects.	W
SC.C.2.2.2: AA (Assessed as C.2.2.4) The student knows that an object may move in a straight line at a constant speed, speed up, slow down, or change direction dependent on net force acting on the object. MC,SR,ER		
SC.K.P.13.1	Observe that a push or a pull can change the way an object is moving.	S
SC.1.P.13.1	Demonstrate that the way to change the motion of an object is by applying a push or a pull.	S

SC.2.P.13.1	Investigate the effect of applying various pushes and pulls on different objects.	M
SC.2.P.13.3	Recognize that objects are pulled toward the ground unless something holds them up.	M
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.	S
SC.5.P.13.2	Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object.	S
SC.C.2.2.3: AA (Assessed as C.2.2.4) The student knows that the more massive an object is, the less effect a given force has. MC,SR,ER		
SC.5.P.13.3	Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion.	S
SC.C.2.2.4: AA (Also assesses C.2.2.2 & C.2.2.3) The student knows that the motion of an object is determined by the overall effect of all of the forces acting on the object. MC,SR,ER		
SC.5.P.13.1	Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects.	M
SC.5.P.13.4	Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced.	S
SC.D.1.2.1: AA (Assessed as D.1.2.4) The student knows that larger rocks can be broken down into smaller rocks, which in turn can be broken down to combine with organic material to form soil. MC,SR,ER		
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.	S
SC.D.1.2.2: AA (Assessed as D.1.2.4) The student knows that 75 percent of the surface of the Earth is covered by water. MC,SR,ER		
SC.5.E.7.2	Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation processes.	M

SC.D.1.2.3: CS The student knows that the water cycle is influenced by temperature, pressure, and the topography of the land. MC		
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.	W
SC.2.E.7.3	Investigate, observe and describe how water left in an open container disappears (evaporates), but water in a closed container does not disappear (evaporate).	M
SC.5.E.7.1	Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to another.	S
SC.5.E.7.2	Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation processes.	S
SC.5.E.7.4	Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.	S
SC.5.E.7.5	Recognize that some of the weather-related differences, such as temperature and humidity, are found among different environments, such as swamps, deserts, and mountains.	M
SC.5.E.7.6	Describe characteristics (temperature and precipitation) of different climate zones as they relate to latitude, elevation, and proximity to bodies of water.	S
SC.D.1.2.4: AA (Also assesses D.1.2.1, D.1.2.2, & D.1.2.5) The student knows that the surface of the Earth is in a continuous state of change as waves, weather, and shifts of the land constantly change and produce many new features. MC,SR,ER		
SC.4.E.6.4	Describe the basic differences between physical weathering (breaking down of rock by wind, water, ice, temperature change, and plants) and erosion (movement of rock by gravity, wind, water, and ice).	M
SC.D.1.2.5: AA (Assessed as D.1.2.4) The student knows that some changes in the Earth's surface are due to slow processes and some changes are due to rapid processes. MC,SR,ER		
SC.1.E.6.3	Recognize that some things in the world around us happen fast and some happen slowly.	S

SC.D.2.2.1: CS (Also assesses B.2.2 & B.2.2.3) The student knows that using, recycling, and reducing the use of natural resources improve and protect the quality of life. MC		
SC.4.E.6.3	Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.	M
SC.E.1.2.1: AA The student knows that the tilt of the Earth on its own axis as it rotates and revolves around the sun causes changes in season, length of day, and energy available. MC,SR		
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.	M
SC.2.E.7.2	Investigate by observing and measuring, that the Sun's energy directly and indirectly warms the water, land, and air.	M
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.	M
SC.4.E.5.3	Recognize that Earth revolves around the Sun in a year and rotates on its axis in a 24-hour day.	M
SC.4.E.5.4	Relate that the rotation of Earth (day and night) and apparent movements of the Sun, Moon, and stars are connected.	M
SC.E.1.2.2: CS The student knows that the combination of the Earth's movement and the moon's own orbit around the Earth results in the appearance of cyclical phases of the moon. MC		
SC.K.E.5.4	Observe that sometimes the Moon can be seen at night and sometimes during the day.	M
SC.4.E.5.2	Describe the changes in the observable shape of the moon over the course of about a month.	S
SC.4.E.5.4	Relate that the rotation of Earth (day and night) and apparent movements of the Sun, Moon, and stars are connected.	S
SC.E.1.2.3: CS The student knows that the sun is a star and that its energy can be captured or concentrated to generate heat and light for work on Earth. MC		
SC.1.E.5.4	Identify the beneficial and harmful properties of the Sun.	M
SC.2.E.7.2	Investigate by observing and measuring, that the Sun's energy directly and indirectly warms the water, land, and air.	S

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.	S
SC.3.E.5.2	Identify the Sun as a star that emits energy; some of it in the form of light.	S
SC.3.E.5.3	Recognize that the Sun appears large and bright because it is the closest star to Earth.	M
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.	S
SC.E.1.2.4: CS The student knows that the planets differ in size, characteristics, and composition and that they orbit the sun in our Solar System. (Also assesses E.1.2.5) MC		
SC.5.E.5.2	Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets.	S
SC.E.1.2.5: CS (Assessed as E.1.2.4) The student understands the arrangement of planets in our Solar System. MC		
SC.5.E.5.3	Distinguish among the following objects of the Solar System -- Sun, planets, moons, asteroids, comets -- and identify Earth's position in it.	S
SC.E.2.2.1: CS The student knows that, in addition to the sun, there are many other stars that are far away. MC		
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.	S
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.	S
SC.3.E.5.3	Recognize that the Sun appears large and bright because it is the closest star to Earth.	S
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.	S
SC.4.E.5.1	Observe that the patterns of stars in the sky stay the same although they appear to shift across the sky nightly, and different stars can be seen in different seasons.	W
SC.F.1.2.1: CS The student knows that the human body is made of systems with structures and functions that are related. MC		
SC.K.L.14.1	Recognize the five senses and related body parts.	S

SC.1.L.14.1	Make observations of living things and their environment using the five senses.	M
SC.2.L.14.1	Distinguish human body parts (brain, heart, lungs, stomach, muscles, and skeleton) and their basic functions.	S
SC.5.L.14.1	Identify the organs in the human body and describe their functions, including the skin, brain, heart, lungs, stomach, liver, intestines, pancreas, muscles and skeleton, reproductive organs, kidneys, bladder, and sensory organs.	S
SC.F.1.2.2: CS The student knows how all animals depend on plants. MC		
SC.3.L.17.2	Recognize that plants use energy from the Sun, air, and water to make their own food.	M
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.	S
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.	S
SC.F.1.2.3: AA The student knows that living things are different but share similar structures. MC,SR		
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.	S
SC.1.L.14.2	Identify the major parts of plants, including stem, roots, leaves, and flowers.	S
SC.1.L.16.1	Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.	S
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.	M
SC.3.L.14.1	Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.	S
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.	S
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.	S

SC.5.L.14.2	Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support -- some with internal skeletons others with exoskeletons -- while some plants have stem	S
SC.F.1.2.4: CS The student knows that similar cells form different kinds of structures. MC		
Cells are not discussed in grades K-5 in the new standards.		
SC.F.2.2.1: CS The student knows that many characteristics of an organism are inherited from the parents of the organism, but that other characteristics are learned from an individual's interactions with the environment. MC		
SC.1.L.16.1	Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.	S
SC.4.L.16.2	Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment.	S
SC.4.L.16.3	Recognize that animal behaviors may be shaped by heredity and learning.	S
SC.G.1.2.1: CS The student knows ways that plants, animals, and protists interact. MC		
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.	M
SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival.	M
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.	M
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.	S
SC.4.L.17.4	Recognize ways plants and animals, including humans, can impact the environment.	S
SC.G.1.2.2: AA The student knows that living things compete in a climatic region with other living things and that structural adaptations make them fit for an environment. MC,SR		
SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival.	M

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.	S
SC.4.L.17.4	Recognize ways plants and animals, including humans, can impact the environment.	M
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.	S
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.	S
SC.G.1.2.3: AA The student knows that green plants use carbon dioxide, water, and sunlight energy to turn minerals and nutrients into food for growth, maintenance, and reproduction. MC,SR		
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.	M
SC.3.L.14.1	Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.	M
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.	M
SC.3.L.17.2	Recognize that plants use energy from the Sun, air, and water to make their own food.	S
SC.G.1.2.4: CS (Assessed as G.1.2.6) The student knows that some organisms decompose dead plants and animals into simple minerals and nutrients for use by living things and thereby recycle matter. MC		
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.	M
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.	W
SC.G.1.2.5: CS The student knows that animals eat plants or other animals to acquire the energy they need for survival. MC		
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.	S

<p>SC.G.1.2.6: CS (Also assesses G.1.2.4) The student knows that organisms are growing, dying, and decaying and that new organisms are being produced from the materials of dead organisms. MC</p>		
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.	W
<p>SC.G.1.2.7: CS The student knows that variations in light, water, temperature, and soil content are largely responsible for the existence of different kinds of organisms and population densities in an ecosystem. MC</p>		
SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival.	M
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.	S
SC.4.L.17.4	Recognize ways plants and animals, including humans, can impact the environment.	M
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.	S
<p>SC.G.2.2.1: AA The student knows that all living things must compete for Earth's limited resources; organisms best adapted to compete for the available resources will be successful and pass their adaptations (traits) to their offspring. MC,SR</p>		
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.	S
SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival.	S
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.	M
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.	S
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.	S

SC.G.2.2.2: CS The student knows that the size of a population is dependent upon the available resources within its community. MC		
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.	M
SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival.	M
SC.G.2.2.3: CS The student understands that changes in the habitat of an organism may be beneficial or harmful. MC		
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.	M
SC.H.1.2.1: AA The student knows that it is important to keep accurate records and descriptions to provide information and clues on causes of discrepancies in repeated experiments. MC		
SC.K.N.1.3	Keep records as appropriate -- such as pictorial records -- of investigations conducted.	S
SC.1.N.1.3	Keep records as appropriate - such as pictorial and written records - of investigations conducted.	S
SC.2.N.1.4	Explain how particular scientific investigations should yield similar conclusions when repeated.	S
SC.3.N.1.3	Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted.	S
SC.4.N.1.6	Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations.	S
SC.5.N.1.3	Recognize and explain the need for repeated experimental trials.	S
SC.H.1.2.2: AA (Also assesses H.1.2.4 & H.3.2.2) The student knows that a successful method to explore the natural world is to observe and record, and then analyze and communicate the results. MC,SR,ER		
SC.K.N.1.2	Make observations of the natural world and know that they are descriptors collected using the five senses.	M
SC.K.N.1.4	Observe and create a visual representation of an object which includes its major features.	M
SC.K.N.1.5	Recognize that learning can come from careful observation.	S

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.	S
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.	S
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.	S
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.	S
SC.3.N.1.4	Recognize the importance of communication among scientists.	S
SC.3.N.1.5	Recognize that scientists question, discuss, and check each others' evidence and explanations.	S
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,	S
SC.4.N.1.2	Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups.	S
SC.4.N.1.7	Recognize and explain that scientists base their explanations on evidence.	M
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 an	S
SC.5.N.1.3	Recognize and explain the need for repeated experimental trials.	S
SC.H.1.2.4: AA (Assessed as H.1.2.2) The student knows that to compare and contrast observations and results is an essential skill in science. MC,SR,ER		
SC.K.N.1.5	Recognize that learning can come from careful observation.	S
SC.2.N.1.2	Compare the observations made by different groups using the same tools.	S
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.	M
SC.3.N.1.4	Recognize the importance of communication among scientists.	S
SC.3.N.1.5	Recognize that scientists question, discuss, and check each others' evidence	S

	and explanations.	
SC.4.N.1.2	Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups.	S
SC.4.N.1.5	Compare the methods and results of investigations done by other classmates.	S
SC.H.1.2.5: CS The student knows that a model of something is different from the real thing, but can be used to learn something about the real thing. MC		
SC.3.N.3.2	Recognize that scientists use models to help understand and explain how things work.	S
SC.3.N.3.3	Recognize that all models are approximations of natural phenomena; as such, they do not perfectly account for all observations.	S
SC.4.N.3.1	Explain that models can be three dimensional, two dimensional, an explanation in your mind, or a computer model.	M
SC.H.2.2.1: CS (Assessed as H.1.2.2) The student knows that natural events are often predictable and logical. MC		
SC.4.N.2.1	Explain that science focuses solely on the natural world.	M
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.	M
SC.H.3.2.1: AA (Also assesses H.3.2.3) The student understands that people, alone or in groups, invent new tools to solve problems and do work that affects aspects of life outside of science. MC,SR		
SC.2.N.1.6	Explain how scientists alone or in groups are always investigating new ways to solve problems.	S
SC.H.3.2.2: AA (Also assesses H.1.2.2) The student knows that data are collected and interpreted in order to explain an event or concept. MC,SR,ER		
SC.3.N.1.5	Recognize that scientists question, discuss, and check each others' evidence and explanations.	M
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.	S
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	M

	empirical evidence.	
SC.4.N.1.4	Attempt reasonable answers to scientific questions and cite evidence in support.	S
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.	S
SC.H.3.2.3: AA (Assessed as H.3.2.1) The student knows that before a group of people build something or try something new, they should determine how it may affect other people. MC,SR		
This is not a K-5 topic in the new standards.		
SC.H.3.2.4: AA The student knows that through the use of science processes and knowledge, people can solve problems, make decisions, and form new ideas. MC,SR		
SC.2.N.1.6	Explain how scientists alone or in groups are always investigating new ways to solve problems.	S
SC.4.E.6.5	Investigate how technology and tools help to extend the ability of humans to observe very small things and very large things.	S

Crosswalk between FCAT assessed benchmarks from the 1996 Sunshine State Science Standards and the new Science Standards

Grades 6-8

SC.A.1.3.1: AA (Also assesses A.1.3.2 & A.1.3.6) The student identifies various ways in which substances differ (e.g., mass, volume, shape, density, texture, and reaction to temperature and light). MC,GR,SR		
BM CODE	Current SSS Benchmark	Strength of correlation
SC.8.P.8.3	Explore and describe the densities of various materials through measurement of their masses and volumes.	M
SC.8.P.8.4	Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample.	S
SC.A.1.3.2: AA (Assessed as A.1.3.1) The student understands the difference between weight and mass. MC,GR,SR		
SC.8.P.8.2	Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to, mass.	S
SC.A.1.3.3: CS The student knows that temperature measures the average energy of motion of the particles that make up the substance. MC		
	Temperature is not specifically defined until grades 9-12 in the new standards.	
SC.A.1.3.4: CS The student knows that atoms in solids are close together and do not move around easily; in liquids, atoms tend to move farther apart; in gas, atoms are quite far apart and move around freely. MC		
SC.8.P.8.1	Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases.	S

SC.A.1.3.5: CS The student knows the difference between a physical change in a substance (i.e., altering the shape, form, volume, or density) and a chemical change (i.e., producing new substances with different characteristics). MC		
SC.8.P.9.2	Differentiate between physical changes and chemical changes.	S
SC.8.P.9.3	Investigate and describe how temperature influences chemical changes.	M
SC.A.1.3.6: AA (Assessed as A.1.3.1) The student knows that equal volumes of different substances may have different masses. MC,GR,SR		
SC.8.P.8.3	Explore and describe the densities of various materials through measurement of their masses and volumes.	S
SC.A.2.3.1: CS The student describes and compares the properties of particles and waves. MC		
	This concept is not specifically addressed in the new science standards.	
SC.A.2.3.2: CS The student knows the general properties of the atom (a massive nucleus of neutral neutrons and positive protons surrounded by a cloud of negative electrons) and accepts that single atoms are not visible. MC		
SC.8.P.8.1	Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases.	M
SC.8.P.8.7	Explore the scientific theory of atoms (also known as atomic theory) by recognizing that atoms are the smallest unit of an element and are composed of sub-atomic particles (electrons surrounding a nucleus containing protons and neutrons).	S
SC.A.2.3.3: AA (Assessed as B.1.3.1) The student knows that radiation, light, and heat are forms of energy used to cook food, treat diseases, and provide energy. MC,GR,SR,ER		
SC.6.E.7.1	Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system.	W
SC.7.P.10.1	Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.	W
SC.B.1.3.1: AA (Also assesses A.2.3.3, B.1.3.2, B.1.3.3, & B.1.3.4) The student identifies forms of energy and explains that they can be measured and compared. MC,GR,SR,ER		

SC.6.P.11.1	Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.	S
SC.7.P.10.1	Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.	M
SC.7.P.11.4	Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.	M
SC.B.1.3.2: AA (Assessed as B.1.3.1) The student knows that energy cannot be created or destroyed, but only changed from one form to another. MC,GR,SR,ER		
SC.7.P.11.3	Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.	S
SC.B.1.3.3: AA (Assessed as B.1.3.1) The student knows the various forms in which energy comes to Earth from the sun (e.g., visible light, infrared, and microwave). MC,GR,SR,ER		
SC.7.P.10.1	Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.	M
SC.B.1.3.4: AA (Assessed as B.1.3.1) The student knows that energy conversions are never 100% efficient (i.e., some energy is transformed to heat and is unavailable for further useful work). MC,GR,SR,ER		
SC.6.P.11.1	Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.	M
SC.7.P.11.2	Investigate and describe the transformation of energy from one form to another.	M
SC.B.1.3.5: CS The student knows the processes by which thermal energy tends to flow from a system of higher temperature to a system of lower temperature. MC		
SC.7.P.11.4	Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.	S
SC.B.1.3.6: AA (Also assesses C.1.3.2) The student knows the properties of waves (e.g., frequency, wavelength, and amplitude); that each wave consists of a number of crests and troughs; and the effects of different media on waves. MC,GR,SR		

SC.7.P.10.2	Observe and explain that light can be reflected, refracted, and/or absorbed.	M
SC.7.P.10.3	Recognize that light waves, sound waves, and other waves move at different speeds in different materials.	S
<p>SC.B.2.3.1: AA The student knows that most events in the universe (e.g., weather changes, moving cars, and the transfer of a nervous impulse in the human body) involve some form of energy transfer and that these changes almost always increase the total disorder of the system and its surroundings, reducing the amount of useful energy). MC</p>		
	The topic of entropy is not addressed until grades 9-12 in the new standards. (Ref. SC.912.P.10.8)	
<p>SC.B.2.3.2: CS (Assessed as G.2.3.1) The student knows that most of the energy used today is derived from burning stored energy collected by organisms millions of years ago (i.e., nonrenewable fossil fuels). MC</p>		
	This topic is not addressed until grades 9-12 in the new standards. (Ref. SC.912.L.17.11)	
<p>SC.C.1.3.1: CS The student knows that the motion of an object can be described by its position, direction of motion, and speed. MC,GR</p>		
SC.6.P.12.1	Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship.	S
<p>SC.C.1.3.2: AA (Assessed as B.1.3.6) The student knows that vibrations in materials set up wave disturbances that spread away from the source (e.g., sound and earthquake waves). MC,GR,SR</p>		
	This topic is not specifically addressed in the new science standards, but is essential to any understanding of mechanical waves.	
<p>SC.C.2.3.1: CS The student knows that many forces (e.g., gravitational, electrical, and magnetic) act at a distance (i.e., without contact). MC</p>		
SC.6.P.13.1	Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational.	S
<p>SC.C.2.3.2: AA (Assessed as C.2.3.6) The student knows common contact forces. MC,GR,SR</p>		
SC.6.P.13.1	Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational.	S

<p>SC.C.2.3.3: AA (Assessed as C.2.3.6) The student knows that if more than one force acts on an object, then the forces can reinforce or cancel each other, depending on their direction and magnitude. MC,GR,SR</p>		
SC.6.P.13.3	Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both.	S
<p>SC.C.2.3.4: CS The student knows that simple machines can be used to change the direction or size of a force. MC,SR</p>		
	The specific topic of simple machines is not addressed in the new science standards.	
<p>SC.C.2.3.5: AA (Assessed as C.2.3.6) The student understands that an object in motion will continue at a constant speed and in a straight line until acted upon by a force and that an object at rest will remain at rest until acted upon by a force. MC,GR,SR</p>		
SC.6.P.13.3	Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both.	S
<p>SC.C.2.3.6: AA (Also assesses C.2.3.2, C.2.3.3, & C.2.3.5) The student explains and shows the ways in which a net force (i.e., the sum of all acting forces) can act on an object (e.g., speeding up an object traveling in the same direction as the net force). MC,GR,SR</p>		
SC.6.P.13.3	Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both.	S
<p>SC.C.2.3.7: CS The student knows that gravity is a universal force that every mass exerts on every other mass. MC</p>		
SC.6.P.13.2	Explore the Law of Gravity by recognizing that every object exerts gravitational force on every other object and that the force depends on how much mass the objects have and how far apart they are.	S
SC.8.E.5.4	Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions.	S
<p>SC.D.1.3.1: CS The student knows that mechanical and chemical activities shape and reshape the Earth's land surface by eroding rock and soil in some areas and depositing them in other areas, sometimes in seasonal layers. MC</p>		
SC.6.E.6.1	Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition.	S

SC.7.E.6.2	Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).	S
SC.7.E.6.4	Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.	M
SC.7.E.6.5	Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building.	M
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.	M
SC.7.E.6.7	Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.	M
<p>SC.D.1.3.2: AA (Assessed as D.1.3.4) The student knows that over the whole Earth, organisms are growing, dying, and decaying as new organisms are produced by the old ones. MC</p>		
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.	S
<p>SC.D.1.3.3: CS The student knows how conditions that exist in one system influence the conditions that exist in other systems. MC</p>		
SC.6.E.7.2	Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate.	S
SC.6.E.7.3	Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation.	S
SC.6.E.7.4	Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.	S
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.	S
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.	S

SC.8.L.18.3	Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment.	S
SC.8.L.18.4	Cite evidence that living systems follow the Laws of Conservation of Mass and Energy.	S
SC.D.1.3.4: AA (Also assesses D.1.3.2) The student knows the ways in which plants and animals reshape the landscape (e.g., bacteria, fungi, worms, rodents, and other organisms add organic matter to the soil, increasing soil fertility, encouraging plant growth, and strengthening resistance to erosion). MC		
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.	M
SC.8.L.18.3	Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment.	S
SC.8.L.18.4	Cite evidence that living systems follow the Laws of Conservation of Mass and Energy.	S
	(Soil formation addressed in SC.1.E.6.1, SC.2.E.6.2, & SC.2.E.6.3 in grades K-5)	
SC.D.1.3.5: CS The student understands concepts of time and size relating to the interaction of Earth's processes (e.g., lightning striking in a split second as opposed to the shifting of the Earth's plates altering the landscape, distance between atoms measured in Angstrom units as opposed to distance between stars measured in light-years). MC,GR		
SC.7.E.6.4	Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.	S
SC.8.E.5.1	Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance.	S
SC.8.E.5.3	Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition.	M
	This concept is introduced in K-5. (Ref. SC.K.E.5.5, SC.K.E.6.6, & SC.1.E.6.3)	

SC.D.2.3.2: AA (Assessed as G.2.3.2) The student knows the positive and negative consequences of human action on the Earth's systems. MC,GR,SR		
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.	S
SC.7.L.16.4	Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.	S
	This concept is introduced in grades K-5. (Ref. SC.4.L.7.4)	
SC.E.1.3.1: AA (Also assesses E.1.3.2) The student understands the vast size of our Solar System and the relationship of the planets and their satellites. MC,GR,SR		
SC.8.E.5.3	Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition.	S
SC.E.1.3.2: AA (Assessed as E.1.3.1) The student knows that available data from various satellite probes show the similarities and differences among planets and their moons in the Solar System. MC,GR,SR		
SC.8.E.5.7	Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions.	S
SC.8.E.5.10	Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information.	S
SC.8.E.5.11	Identify and compare characteristics of the electromagnetic spectrum such as wavelength, frequency, use, and hazards and recognize its application to an understanding of planetary images and satellite photographs.	M
SC.E.1.3.3: CS (Assessed as E.2.3.1) The student understands that our sun is one of many stars in our galaxy. MC		
SC.8.E.5.2	Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars.	S
	This concept is introduced in grades K-5 (Ref. SC.3.E.5.1 & SC.3.E.5.3)	

<p>SC.E.1.3.4: CS The student knows that stars appear to be made of similar chemical elements, although they differ in age, size, temperature, and distance. MC</p>		
SC.8.E.5.5	Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).	S
<p>SC.E.2.3.1: CS (Also assesses E.1.3.3) The student knows that thousands of other galaxies appear to have the same elements, forces, and forms of energy found in our Solar System. MC</p>		
SC.8.E.5.2	Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars.	M
SC.8.E.5.3	Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition.	S
SC.8.E.5.4	Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions.	S
SC.8.E.5.5	Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).	S
<p>SC.F.1.3.1: AA The student understands that living things are composed of major systems that function in reproduction, growth, maintenance, and regulation. MC,SR</p>		
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.	W
SC.6.L.14.5	Identify and investigate the general functions of the major systems of the human body (digestive, respiratory, circulatory, reproductive, excretory, immune, nervous, and musculoskeletal) and describe ways these systems interact with each other to maintain homeostasis.	S
<p>SC.F.1.3.2: CS The student knows that the structural basis of most organisms is the cell and most organisms are single cells, while some, including humans, are multicellular. MC</p>		
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.	M

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.	S
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.	S
SC.F.1.3.3: CS The student knows that in multicellular organisms cells grow and divide to make more cells in order to form and repair various organs and tissues. MC		
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.	S
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.	M
SC.F.1.3.4: CS The student knows that the levels of structural organization for function in living things include cells, tissues, organs, systems, and organisms. MC		
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.	S
SC.F.1.3.5: CS The student explains how the life functions of organisms are related to what occurs within the cell. MC		
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.	S
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.	S
SC.8.L.18.2	Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide.	M

<p>SC.F.1.3.6: CS The student knows that the cells with similar functions have similar structures, whereas those with different structures have different functions. MC</p>		
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.	S
<p>SC.F.1.3.7: CS The student knows that behavior is a response to the environment and influences growth, development, maintenance, and reproduction. MC</p>		
SC.7.L.17.2	Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.	M
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.	M
	This concept is introduced in grades K-5 (Ref. SC.K.L.14.2, SC.3.L.15.1, SC.4.L.16.3, & SC.5.L.17.1)	
<p>SC.F.2.3.1: CS The student knows the patterns and advantages of sexual and asexual reproduction in plants and animals. MC</p>		
SC.7.L.16.3	Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.	S
<p>SC.F.2.3.2: AA The student knows that the variation in each species is due to the exchange and interaction of genetic information as it is passed from parent to offspring. MC,SR</p>		
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.	S
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.	S
<p>SC.F.2.3.3: AA (Also assesses F.2.3.4 & G.1.3.2) The student knows that generally organisms in a population live long enough to reproduce because they have survival characteristics. MC</p>		
	This topic is not addressed until grades 9-12 in the new standards. (Ref. SC.912.L.15.13 & SC.912.17.1)	

<p>SC.F.2.3.4: AA (Assessed as F.2.3.3) The student knows that the fossil record provides evidence that changes in the kinds of plants and animals in the environment have been occurring over time. MC</p>		
SC.7.L.15.1	Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.	S
<p>SC.G.1.3.1: AA (Assessed as G.1.3.4) The student knows that viruses depend on other living things. MC,SR</p>		
SC.6.L.14.6	Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi, and parasites.	S
<p>SC.G.1.3.2: AA (Assessed as F.2.3.3) The student knows that biological adaptations include changes in structures, behaviors, or physiology that enhance reproductive success in a particular environment. MC</p>		
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.	S
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.	S
<p>SC.G.1.3.3: CS The student understands that the classification of living things is based on a given set of criteria and is a tool for understanding biodiversity and interrelationships. MC</p>		
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.	S
	This topic is introduced in K-5 (Ref. SC.3.L.15.1 & SC.3.L.15.2)	
<p>SC.G.1.3.4: AA (Also assesses G.1.3.1 & G.1.3.5) The student knows that the interactions of organisms with each other and with the nonliving parts of their environments result in the flow of energy and the cycling of matter throughout the system. MC,SR</p>		
SC.8.L.18.3	Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment.	S
SC.8.L.18.4	Cite evidence that living systems follow the Laws of Conservation of Mass and Energy.	S

<p>SC.G.1.3.5: AA (Assessed as G.1.3.4) The knows that life is maintained by a continuous input of energy from the sun and by the recycling of the atoms that make up the molecules of living organisms. MC,SR</p>		
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.	S
	This topic is introduced in grades K-5. (Ref. SC.3.L.17.2 & SC.4.L.17.3)	
<p>SC.G.2.3.1: CS (Also assesses B.2.3.2) The student knows that some resources are renewable and others are nonrenewable. MC</p>		
	This topic is introduced in grades K-5 and continued in 9-12. (Ref. SC.4.E.6.3, SC.912.L.17.11, & SC.912.17.19)	
<p>SC.G.2.3.2: AA (Also assesses D.2.3.2, G.2.3.3, & G.2.3.4) The student knows that all biotic and abiotic factors are interrelated and that if one factor is changed or removed, it impacts the availability of other resources within the system. MC,GR,SR</p>		
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.	W
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.	S
	The terms biotic & abiotic are introduced in grades 9-12 in the new standards. (Ref. SC.912.L.17.5)	
<p>SC.G.2.3.3: AA (Assessed as G.2.3.2) The student knows that a brief change in the limited resources of an ecosystem may alter the size of a population or the average size of individual organisms and that long-term change may result in the elimination of animal and plant populations inhabiting the Earth. MC,GR,SR</p>		
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.	M
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.	S
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.	S

<p>SC.G.2.3.4: AA (Assessed as G.2.3.2) The student understands that humans are a part of an ecosystem and their activities may deliberately or inadvertently alter the equilibrium in ecosystems. MC,GR,SR</p>		
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.	S
<p>SC.H.1.3.1: AA The student knows that scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way. MC,SR</p>		
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.	S
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.	S
<p>SC.H.1.3.2: CS The student knows that the study of the events that led scientists to discoveries can provide information about the inquiry process and its effects. MC</p>		
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.	M
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.	S
<p>SC.H.1.3.3: CS The student knows that science disciplines differ from one another in topic, techniques, and outcomes, but that they share a common purpose, philosophy, and enterprise. MC</p>		
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.	S
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.	S
SC.8.N.2.2	Discuss what characterizes science and its methods.	S
<p>SC.H.1.3.4: AA (Also assesses H.1.3.7) The student knows that accurate record keeping, openness, and replication are essential to maintaining an investigator's credibility with other scientists and society. MC,SR</p>		
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	S

	graphics, analyze information, make predictions, and defend conclusions.	
SC.6.N.1.2	Explain why scientific investigations should be replicable.	S
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.	S
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.	S
SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials).	S
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.	S
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.	S
SC.8.N.1.2	Design and conduct a study using repeated trials and replication.	S
SC.H.1.3.5: AA The student knows that a change in one or more variables may alter the outcome of an investigation. MC,GR,SR,ER		
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.	S
SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.	S
SC.H.1.3.7: AA (Assessed as H.1.3.4) The student knows that when similar investigations give different results, the scientific challenge is to verify whether the differences are significant by further study. MC,SR		
SC.6.N.1.2	Explain why scientific investigations should be replicable.	S
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.	S
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.	S

<p>SC.H.2.3.1: CS The student recognizes that patterns exist within and across systems. MC</p>		
SC.6.E.7.2	Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate.	S
SC.6.E.7.3	Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation.	S
SC.6.E.7.5	Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land.	S
SC.7.E.6.2	Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).	S
<p>SC.H.3.3.1: CS The student knows that science ethics demand that scientists must not knowingly subject coworkers, students, the neighborhood, or the community to health or property risks. MC</p>		
	This topic is not addressed in the new science standards.	
<p>SC.H.3.3.2: CS The student knows that special care must be taken in using animals in scientific research. MC</p>		
	This topic is not addressed in the new science standards.	
<p>SC.H.3.3.3: CS The student knows that in research involving human subjects, the ethics of science require that potential subjects be fully informed about the risks and benefits associated with the research and of their right to refuse to participate. MC</p>		
	This topic is not addressed in the new science standards.	
<p>SC.H.3.3.4: CS (Also assesses H.3.3.6 & H.3.3.7) The student knows that technological design should require taking into account constraints such as natural laws, the properties of the materials used, and economic, political, social, ethical, and aesthetic values. MC</p>		
SC.8.N.4.1	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.	M
SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa.	S
<p>SC.H.3.3.6: CS (Assessed as H.3.3.4) The student knows that no matter who does science and mathematics or invents things, or when or where they do it, the knowledge and technology that result can eventually become available to everyone. MC</p>		

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.	S
SC.8.N.4.1	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.	S
SC.H.3.3.7: CS (Assessed as H.3.3.4) The student knows that computers speed up and extend people's ability to collect, sort, and analyze data; prepare research reports; and share data and ideas with others. MC		
SC.8.E.5.10	Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information.	S

Crosswalk between FCAT assessed benchmarks from the 1996 Sunshine State Science Standards and the new Science Standards

Grades 9-12

<p>SC.A.1.4.1: CS The student knows that the electron configuration in atoms determines how a substance reacts and how much energy is involved in its reactions. MC,GR</p>		
BM CODE	Current SSS Benchmark	Strength of correlation
SC.912.P.8.5	Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.	M
SC.912.P.8.8	Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions.	S
<p>SC.A.1.4.2: CS (Also assesses A.1.4.5) The student knows that the vast diversity of the properties of materials is primarily due to variations in the forces that hold molecules together. MC</p>		
SC.912.P.8.6	Distinguish between bonding forces holding compounds together and other attractive forces, including hydrogen bonding and van der Waals forces.	S
<p>SC.A.1.4.3: AA (Also assesses B.1.4.3) The student knows that a change from one phase of matter to another involves a gain or loss of energy. MC,GR</p>		
SC.912.P.10.4	Describe heat as the energy transferred by convection, conduction, and radiation, and explain the connection of heat to change in temperature or states of matter.	S
	This topic is introduced in K-8 (Ref. SC.3.P.9.1 & SC.7.P.11.1)	
<p>SC.A.1.4.4: AA The student experiments and determines that the rates of reaction among atoms and molecules depend on the concentration, pressure, and temperature of the reactants and the presence or absence of catalysts. MC,GR,SR</p>		
SC.912.P.12.12	Explain how various factors, such as concentration, temperature, and presence of a catalyst affect the rate of a chemical reaction.	S
<p>SC.A.1.4.5: CS (Assessed as A.1.4.2) The student knows that connections (bonds) form between substances when outer-shell electrons are either transferred or shared between their atoms, changing the properties of substances. MC</p>		

SC.912.P.8.8	Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions.	M
SC.A.2.4.1: CS The student knows that the number and configuration of electrons will equal the number of protons in an electrically neutral atom and when an atom gains or loses electrons, the charge is unbalanced. MC,GR		
SC.912.P.8.4	Explore the scientific theory of atoms (also known as atomic theory) by describing the structure of atoms in terms of protons, neutrons and electrons, and differentiate among these particles in terms of their mass, electrical charges and locations within the atom.	S
SC.A.2.4.2: CS The student knows the difference between an element, a molecule, and a compound. MC		
SC.912.P.8.7	Interpret formula representations of molecules and compounds in terms of composition and structure.	S
	This topic is introduced in K-8 in the new standards. (Ref. SC.8.P.8.5)	
SC.A.2.4.3: CS (Also assesses A.2.4.4) The student knows that a number of elements have heavier, unstable nuclei that decay, spontaneously giving off smaller particles and waves that result in a small loss of mass and release a large amount of energy. MC		
SC.912.P.10.11	Explain and compare nuclear reactions (radioactive decay, fission and fusion), the energy changes associated with them and their associated safety issues.	S
SC.A.2.4.4: CS (Assessed as A.2.4.3) The student knows that nuclear energy is released when small, light atoms are fused into heavier ones. MC		
SC.912.P.10.11	Explain and compare nuclear reactions (radioactive decay, fission and fusion), the energy changes associated with them and their associated safety issues.	S

SC.A.2.4.5: AA The student knows that elements are arranged into groups and families based on similarities in electron structure and that their physical and chemical properties can be predicted. MC		
SC.912.P.8.5	Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.	S
SC.A.2.4.6: CS The student understands that matter may act as a wave, a particle, or something else entirely different with its own characteristic behavior. MC		
	The concept of particle/wave duality is not specifically addressed in the new science standards.	
SC.B.1.4.1: AA (Also assesses B.1.4.2) The student understands how knowledge of energy is fundamental to all the scientific disciplines (e.g., the energy required for biological processes in living organisms and the energy required for the building, erosion, and rebuilding of the Earth). MC,GR,SR		
SC.912.E.7.1	Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon.	S
SC.B.1.4.2: AA (Assessed as B.1.4.1) The student understands that there is conservation of mass and energy when matter is transformed. MC,GR,SR		
SC.912.P.10.2	Explore the Law of Conservation of Energy by differentiating among open, closed, and isolated systems and explain that the total energy in an isolated system is a conserved quantity.	S
SC.912.E.7.1	Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon.	S
SC.B.1.4.3: AA (Assessed as A.1.4.3) The student knows that temperature is a measure of the average translational kinetic energy of motion of the molecules in an object. MC,GR		
SC.912.P.10.5	Relate temperature to the average molecular kinetic energy.	S
SC.B.1.4.4: CS The student knows that as electrical charges oscillate, they create time-varying electric and magnetic fields that propagate away from the source as an electromagnetic wave. MC,GR		
SC.912.P.10.17	Explore the theory of electromagnetism by explaining electromagnetic waves in terms of oscillating electric and magnetic fields.	S

<p>SC.B.1.4.5: AA (Assessed as G.2.4.2) The student knows that each source of energy presents advantages and disadvantages to its use in society (e.g., political and economic implications may determine a society’s selection of renewable or nonrenewable energy sources). MC,SR,ER</p>		
SC.912.E.6.6	Analyze past, present, and potential future consequences to the environment resulting from various energy production technologies.	S
<p>SC.B.1.4.6: CS (Assessed as B.1.4.7) The student knows that the first law of thermodynamics relates the transfer of energy to the work done and the heat transferred. MC,GR</p>		
SC.912.P.10.2	Explore the Law of Conservation of Energy by differentiating among open, closed, and isolated systems and explain that the total energy in an isolated system is a conserved quantity.	M
	The first law of thermodynamics is a special case of the conservation of energy and is not explicitly stated in the new science standards.	
<p>SC.B.1.4.7: CS (Also assesses B.1.4.6) The student knows that the total amount of usable energy always decreases, even though the total amount of energy is conserved in any transfer. MC,GR</p>		
SC.912.P.10.8	Explain entropy’s role in determining the efficiency of processes that convert energy to work.	S
<p>SC.B.2.4.1: CS The student knows that the structure of the universe is the result of interactions involving fundamental particles (matter) and basic forces (energy) and that evidence suggests that the universe contains all of the matter and energy that ever existed. MC</p>		
SC.912.E.5.1	Cite evidence used to develop and verify the scientific theory of the Big Bang (also known as the Big Bang Theory) of the origin of the universe.	S
SC.912.E.5.2	Identify patterns in the organization and distribution of matter in the universe and the forces that determine them.	S
<p>SC.C.1.4.1: AA (Also assesses C.1.4.2 & C.2.4.6) The student knows that all motion is relative to whatever frame of reference is chosen and that there is no absolute frame of reference from which to observe all motion. MC,GR</p>		
SC.912.P.12.2	Analyze the motion of an object in terms of its position, velocity, and acceleration (with respect to a frame of reference) as functions of time.	M

<p>SC.C.1.4.2: AA (Assessed as C.1.4.1) The student knows that any change in velocity is an acceleration. MC,GR</p>		
SC.912.P.12.2	Analyze the motion of an object in terms of its position, velocity, and acceleration (with respect to a frame of reference) as functions of time.	S
<p>SC.C.2.4.1: AA The student knows that acceleration due to gravitational force is proportional to mass and inversely proportional to the square of the distance between the objects. MC,GR</p>		
SC.912.P.12.4	Describe how the gravitational force between two objects depends on their masses and the distance between them.	S
<p>SC.C.2.4.2: CS (Assessed as 2.4.3) The student knows that electrical forces exist between any two charged objects. MC</p>		
SC.912.P.10.13	Relate the configuration of static charges to the electric field, electric force, electric potential, and electric potential energy.	S
<p>SC.C.2.4.3: CS (Also assesses C.2.4.2) The student describes how magnetic force and electrical force are two aspects of a single force. MC</p>		
SC.912.P.10.16	Explain the relationship between moving charges and magnetic fields, as well as changing magnetic fields and electric fields, and their application to modern technologies.	S
SC.912.P.10.17	Explore the theory of electromagnetism by explaining electromagnetic waves in terms of oscillating electric and magnetic fields.	S
<p>SC.C.2.4.4: CS The student knows that the forces that hold the nucleus of an atom together are much stronger than electromagnetic force and that this is the reason for the great amount of energy released from the nuclear reactions in the sun and other stars. MC</p>		
SC.912.P.10.10	Compare the magnitude and range of the four fundamental forces (gravitational, electromagnetic, weak nuclear, strong nuclear).	S
<p>SC.C.2.4.5: CS The student knows that most observable forces can be traced to electric forces acting between atoms or molecules. MC</p>		
SC.912.P.10.10	Compare the magnitude and range of the four fundamental forces (gravitational, electromagnetic, weak nuclear, strong nuclear).	W

<p>SC.C.2.4.6: AA (Assessed as C.1.4.1) The student explains that all forces come in pairs commonly called action and reaction. MC,GR</p>		
SC.912.P.12.3	Interpret and apply Newton's three laws of motion.	S
<p>SC.D.1.4.1: AA The student knows how climatic patterns on Earth result from an interplay of many factors (Earth's topography, its rotation on its axis, solar radiation, the transfer of heat energy where the atmosphere interfaces with lands and oceans, and wind and ocean currents). MC,SR</p>		
SC.912.E.7.4	Summarize the conditions that contribute to the climate of a geographic area, including the relationships to lakes and oceans.	S
<p>SC.D.1.4.2: AA The student knows that the solid crust of Earth consists of slow-moving, separate plates that float on a denser, molten layer of Earth and that these plates interact with each other, changing the Earth's surface in many ways (e.g., forming mountain ranges and rift valleys, causing earthquake and volcanic activity, and forming undersea mountains that can become ocean islands). MC,SR</p>		
SC.912.E.6.2	Connect surface features to surface processes that are responsible for their formation.	S
SC.912.E.6.3	Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving plates.	S
<p>SC.D.1.4.3: CS The student knows that changes in Earth's climate, geological activity, and life forms may be traced and compared. MC</p>		
SC.912.E.6.5	Describe the geologic development of the present day oceans and identify commonly found features.	S
SC.912.E.7.7	Identify, analyze, and relate the internal (Earth system) and external (astronomical) conditions that contribute to global climate change.	M
SC.912.E.7.9	Cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water.	S
SC.912.L.17.4	Describe changes in ecosystems resulting from seasonal variations, climate change and succession.	S
<p>SC.D.1.4.4: AA (Assessed as F.2.4.3) The student knows that Earth's systems and organisms are the result of a long, continuous change over time. MC,SR</p>		
SC.912.E.6.3	Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving plates.	S

SC.912.E.6.5	Describe the geologic development of the present day oceans and identify commonly found features.	S
SC.912.L.15.8	Describe the scientific explanations of the origin of life on Earth.	S
SC.D.2.4.1: AA (Also assesses G.2.4.4) The student understands the interconnectedness of the systems on Earth and the quality of life. MC,SR		
SC.912.L.17.7	Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems.	S
SC.912.L.17.10	Diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle.	S
SC.912.E.7.3	Differentiate and describe the various interactions among Earth systems, including: atmosphere, hydrosphere, cryosphere, geosphere, and biosphere.	S
SC.912.E.7.8	Explain how various atmospheric, oceanic, and hydrologic conditions in Florida have influenced and can influence human behavior, both individually and collectively.	S
SC.912.E.7.9	Cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water.	S
	This concept is introduced in grades K-8. (Ref. SC.6E.7.4)	
SC.E.1.4.1: AA (Also assesses E.1.4.2 & E.1.4.3) The student understands the relationships between events on Earth and the movements of the Earth, its moon, the other planets, and the sun. MC,SR		
SC.912.E.5.4	Explain the physical properties of the Sun and its dynamic nature and connect them to conditions and events on Earth.	S
SC.912.E.5.6	Develop logical connections through physical principles, including Kepler's and Newton's Laws about the relationships and the effects of Earth, Moon, and Sun on each other.	S
SC.E.1.4.2: AA (Assessed as E.1.4.1) The student knows how the characteristics of other planets and satellites are similar to and different from those of the Earth. MC,SR		
SC.912.E.5.5	Explain the formation of planetary systems based on our knowledge of our Solar System and apply this knowledge to newly discovered planetary systems.	S
	This concept is introduced in K-8 in the new standards. (Ref. SC.8.E.5.3 & SC.8.E.5.7)	

<p>SC.E.1.4.3: AA (Assessed as E.1.4.1) The student knows the various reasons that Earth is the only planet in our Solar System that appears to be capable of supporting life as we know it. MC,SR</p>		
SC.912.E.5.5	Explain the formation of planetary systems based on our knowledge of our Solar System and apply this knowledge to newly discovered planetary systems.	M
SC.912.E.5.6	Develop logical connections through physical principles, including Kepler's and Newton's Laws about the relationships and the effects of Earth, Moon, and Sun on each other.	M
	This concept is introduced in K-8 in the new standards. (Ref. SC.8.E.5.7)	
<p>SC.E.2.4.1: CS The student knows that the stages in the development of three categories of stars are based on mass: stars that have the approximate mass of our sun, stars that are two-to-three-stellar masses and develop into neutron stars, and stars that are five-to-six-stellar masses and develop into black holes. MC</p>		
SC.912.E.5.3	Describe and predict how the initial mass of a star determines its evolution.	S
<p>SC.E.2.4.2: CS The student identifies the arrangement of bodies found within and outside our galaxy. MC</p>		
SC.912.E.5.2	Identify patterns in the organization and distribution of matter in the universe and the forces that determine them.	S
SC.912.E.5.5	Explain the formation of planetary systems based on our knowledge of our Solar System and apply this knowledge to newly discovered planetary systems.	S
	This concept is introduced in K-8 in the new standards. (Ref. SC.8.E.5.2 - SC.8.E.5.4)	
<p>SC.E.2.4.3: CS The student knows astronomical distance and time. MC,GR</p>		
SC.912.E.5.11	Distinguish the various methods of measuring astronomical distances and apply each in appropriate situations.	S
SC.6.L.14.5	This topic is introduced in K-8 in the new standards. (Ref. SC.8.E.5.1)	S
<p>SC.E.2.4.6: AA (Assessed as H.1.4.1) The student knows the various ways in which scientists collect and generate data about our universe (e.g., Xray telescopes, computer simulations of gravitational systems, nuclear reactions, space probes, and supercollider simulations). MC,GR,SR,ER</p>		

SC.912.E.5.1	Cite evidence used to develop and verify the scientific theory of the Big Bang (also known as the Big Bang Theory) of the origin of the universe.	M
SC.912.E.5.7	Relate the history of and explain the justification for future space exploration and continuing technology development.	S
SC.912.E.5.8	Connect the concepts of radiation and the electromagnetic spectrum to the use of historical and newly-developed observational tools.	S
SC.E.2.4.7: AA (Assessed as H.1.4.1) The student knows that mathematical models and computer simulations are used in studying evidence from many sources to form a scientific account of the universe. MC,GR,SR,ER		
	This topic is not specifically addressed in the new science standards.	
SC.F.1.4.1: AA (Also assesses F.1.4.3 & F.1.4.5) The student knows that the body processes involve specific biochemical reactions governed by biochemical principles. MC,SR		
SC.912.L.18.1	Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules.	M
SC.912.L.18.2	Describe the important structural characteristics of monosaccharides, disaccharides, and polysaccharides and explain the functions of carbohydrates in living things.	S
SC.912.L.18.3	Describe the structures of fatty acids, triglycerides, phospholipids, and steroids. Explain the functions of lipids in living organisms. Identify some reactions that fatty acids undergo. Relate the structure and function of cell membranes.	S
SC.912.L.18.4	Describe the structures of proteins and amino acids. Explain the functions of proteins in living organisms. Identify some reactions that amino acids undergo. Relate the structure and function of enzymes.	S
SC.F.1.4.2: AA (Assessed as F.2.4.3) The student knows that body structures are uniquely designed and adapted for their function. MC,SR		
SC.912.L.14.7	Relate the structure of each of the major plant organs and tissues to physiological processes.	S
SC.912.L.14.9	Relate the major structure of fungi to their functions.	S
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.	S

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.	M
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SC.F.1.4.3: AA (Assessed as F.1.4.1) The student knows that membranes are sites for chemical synthesis and essential energy conversions. MC,SR		
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).	S
SC.F.1.4.4: CS The student understands that biological systems obey the same laws of conservation as physical systems. MC		
	This concept is developed in K-8 in the new standards. (Ref. SC.8.L.18.4)	
SC.F.1.4.5: AA (Assessed as F.1.4.1) The student knows that complex interactions among the different kinds of molecules in the cell cause distinct cycles of activity governed by proteins. MC,SR		
SC.912.L.18.4	Describe the structures of proteins and amino acids. Explain the functions of proteins in living organisms. Identify some reactions that amino acids undergo. Relate the structure and function of enzymes.	S
SC.F.1.4.6: CS (Assessed as F.1.4.7) The student knows that separate parts of the body communicate with each other using electrical and/or chemical signals. MC		
SC.912.L.14.21	Describe the anatomy, histology, and physiology of the central and peripheral nervous systems and name the major divisions of the nervous system.	S
SC.912.L.14.22	Describe the physiology of nerve conduction, including the generator potential, action potential, and the synapse.	S
SC.912.L.14.23	Identify the parts of a reflex arc.	M
SC.F.1.4.7: CS (Also assesses F.1.4.6 & F.1.4.8) The student knows that organisms respond to internal and external stimuli. MC		
	While a large number of the new Life Science benchmarks address specific stimulus/response relationships, there is no specific statement that parallels SC.F.1.4.7.	
SC.F.1.4.8: CS (Assessed as F.1.4.7) The student knows that cell behavior can be affected by molecules from other parts of the organism or even from other organisms. MC		
SC.912.L.18.1	Describe the basic molecular structures and primary functions of the four	M

	major categories of biological macromolecules.	
SC.F.2.4.1: CS The student understands the mechanisms of asexual and sexual reproduction and knows the different genetic advantages and disadvantages of asexual and sexual reproduction. MC,GR		
SC.912.L.16.17	Compare and contrast mitosis and meiosis and relate to the processes of sexual and asexual reproduction and their consequences for genetic variation.	S
SC.F.2.4.2: CS The student knows that every cell contains a "blueprint"; coded in DNA molecules that specify how proteins are assembled to regulate cells. MC		
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.	S
	This concept is introduced in K-8 in the new standards. (Ref. SC.7.L.16.1)	
SC.F.2.4.3: AA (Also assesses D.1.4.4 & F.1.4.2) The student understands the mechanisms of change (e.g., mutation and natural selection) that lead to adaptations in a species and their ability to survive naturally in changing conditions and to increase species diversity. MC,SR		
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.	S
SC.912.L.15.15	Describe how mutation and genetic recombination increase genetic variation.	S
	This topic is introduced in K-8 in the new standards. (Ref. SC.7.L.15.2)	
SC.G.1.4.1: AA (Also assesses G.1.4.2) The student knows of the great diversity and interdependence of living things. MC,SR		
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.	M
SC.912.L.15.4	Describe how and why organisms are hierarchically classified and based on evolutionary relationships.	S
SC.912.L.15.5	Explain the reasons for changes in how organisms are classified.	M

SC.912.L.15.6	Discuss distinguishing characteristics of the domains and kingdoms of living organisms.	S
SC.912.L.15.7	Discuss distinguishing characteristics of vertebrate and representative invertebrate phyla, and chordate classes using typical examples.	M
SC.912.L.17.6	Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.	S
SC.G.1.4.2: AA (Assessed as G.1.4.1) The student understands how the flow of energy through an ecosystem made up of producers, consumers, and decomposers carries out the processes of life and that some energy dissipates as heat and is not recycled. MC,SR		
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.	S
SC.G.1.4.3: CS The student knows that the chemical elements that make up the molecules of living things are combined and recombined in different ways. MC		
SC.912.L.18.1	Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules.	S
SC.G.2.4.1: CS The student knows that layers of energy-rich organic materials have been gradually turned into great coal beds and oil pools (fossil fuels) by the pressure of the overlying earth and that humans burn fossil fuels to release the stored energy as heat and carbon dioxide. MC		
SC.912.L.17.11	Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.	M
SC.912.L.17.19	Describe how different natural resources are produced and how their rates of use and renewal limit availability.	S
SC.G.2.4.2: AA (Also assesses B.1.4.5 & G.2.4.5) The student knows that changes in a component of an ecosystem will have unpredictable effects on the entire system but that the components of the system tend to react in a way that will restore the ecosystem to its original condition. MC,SR,ER		
SC.912.L.17.4	Describe changes in ecosystems resulting from seasonal variations, climate change and succession.	S
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.	S

<p>SC.G.2.4.3: CS The student understands how genetic variation of offspring contributes to population control in an environment and that natural selection ensures that those who are best adapted to their surroundings survive to reproduce. MC</p>		
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.	S
SC.912.L.15.15	Describe how mutation and genetic recombination increase genetic variation.	M
<p>SC.G.2.4.4: AA (Assessed as D.2.4.1) The student knows that the world ecosystems are shaped by physical factors that limit their productivity. MC,SR</p>		
SC.912.L.17.5	Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity.	S
SC.912.L.17.19	Describe how different natural resources are produced and how their rates of use and renewal limit availability.	S
<p>SC.G.2.4.5: AA (Assessed as G.2.4.2) The student understands that the amount of life any environment can support is limited and that human activities can change the flow of energy and reduce the fertility of the Earth. MC,SR,ER</p>		
SC.912.L.17.20	Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability.	S
<p>SC.G.2.4.6: CS The student knows the ways in which humans today are placing their environmental support systems at risk (e.g., rapid human population growth, environmental degradation, and resource depletion). MC</p>		
SC.912.L.17.15	Discuss the effects of technology on environmental quality.	S
SC.912.L.17.16	Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution.	S
SC.912.L.17.20	Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability.	S
<p>SC.H.1.4.1: AA (Also assesses H.1.2.1, H.1.2.2, H.2.4.2, E.3.4.6, & E.2.4.7) The student knows that investigations are conducted to explore new phenomena, to check on previous results, to test how well a theory predicts, and to compare different theories. MC,GR,SR,ER</p>		

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.	S
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<p>SC.H.1.4.2: CS (Also assesses H.1.3.2, H.1.4.3, H.1.4.5, & H.1.4.6) The student knows that from time to time, major shifts occur in the scientific view of how the world works, but that more often the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. MC</p>		
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.	S
<p>SC.H.1.4.3: CS (Assessed as H.1.4.2) The student understands that no matter how well one theory fits observations, a new theory might fit them as well or better, or might fit a wider range of observations, because in science, the testing, revising, and occasional discarding of theories, new and old, never ends and leads to an increasingly better understanding of how things work in the world, but not to absolute truth. MC</p>		
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.	S
SC.912.N.3.1	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.	S
SC.912.N.3.2	Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science.	S
<p>SC.H.1.4.4: CS The student knows that scientists in any one research group tend to see things alike and that therefore scientific teams are expected to seek out the possible sources of bias in the design of their investigations and in their data analysis. The student knows that scientists in any one research group tend to see things alike and that therefore scientific teams are expected to seek out the possible sources of bias in the design of their investigations and in their data analysis. MC</p>		
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	S

	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.	
<p>SC.H.1.4.5: CS (Assessed as H.1.4.2) The student understands that new ideas in science are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and usually grow slowly from many contributors. MC</p>		
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.	M
SC.912.N.3.2	Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science.	S
<p>SC.H.1.4.6: CS (Assessed as H.1.4.2) The student understands that, in the short run, new ideas that do not mesh well with mainstream ideas in science often encounter vigorous criticism and that, in the long run, theories are judged by how they fit with other theories, the range of observations they explain, how well they explain observations, and how effective they are in predicting new findings. MC</p>		
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.	S
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.	M
SC.912.N.3.1	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.	M
SC.912.N.3.2	Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science.	S

<p>SC.H.1.4.7: CS The student understands the importance of a sense of responsibility, a commitment to peer review, truthful reporting of the methods and outcomes of investigations, and making the public aware of the findings. MC</p>		
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 present	S
SC.912.N.4.1	Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.	S
<p>SC.H.2.4.1: AA The student knows that scientists assume that the universe is a vast system in which basic rules exist that may range from very simple to extremely complex, but that scientists operate on the belief that the rules can be discovered by careful, systemic study. MC</p>		
SC.912.N.1.2	Describe and explain what characterizes science and its methods.	S
<p>SC.H.2.4.2: AA (Assessed as H.1.4.1) The student knows that scientists control conditions in order to obtain evidence, but when that is not possible for practical or ethical reasons, they try to observe a wide range of natural occurrences to discern patterns. MC,GR,SR,ER</p>		
SC.912.N.1.2	Describe and explain what characterizes science and its methods.	W
SC.912.N.1.6	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.	
<p>SC.H.3.4.1: CS The student knows that performance testing is often conducted using small-scale models, computer simulations, or analogous systems to reduce the chance of system failure. MC</p>		
SC.912.N.3.5	Describe the function of models in science, and identify the wide range of models used in science.	S
<p>SC.H.3.4.2: AA The student knows that technological problems often create a demand for new scientific knowledge and that new technologies make it possible for scientists to extend their research in a way that advances science. MC,SR</p>		
SC.912.N.4.1	Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.	M

SC.H.3.4.3: CS The student knows that scientists can bring information, insights, and analytical skills to matters of public concern and help people understand the possible causes and effects of events. MC		
SC.912.N.4.1	Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.	S
SC.H.3.4.5: AA (Assessed as H.3.4.2) The student knows that the value of a technology may differ for different people and at different times. MC,SR		
This is not specifically addressed in the new science standards.		
SC.H.3.4.6: AA (Assessed as H.3.4.2) The student knows that scientific knowledge is used by those who engage in design and technology to solve practical problems, taking human values and limitations into account. MC,SR		
SC.912.N.4.1	Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.	M
SC.912.N.4.2	Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic, and environmental.	S