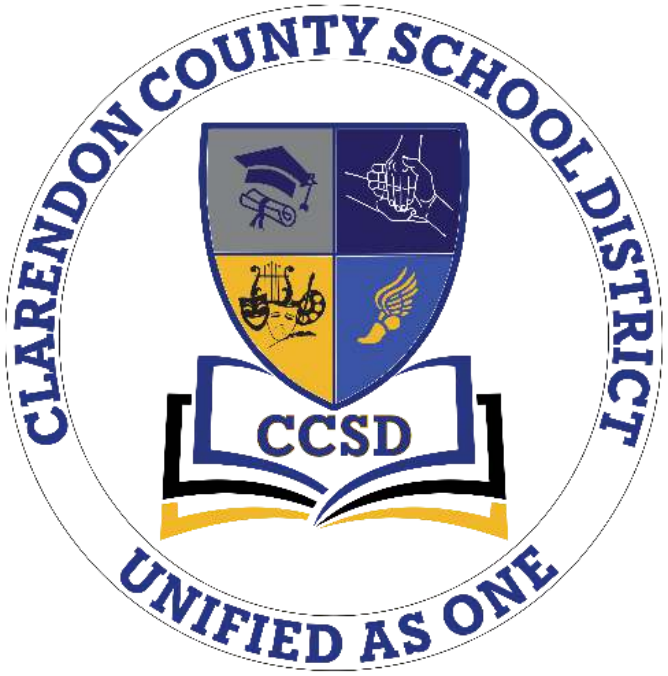


# 4th Grade Science

# Curriculum Guide

# 2022-2023

**Subject: 4th Grade Science**

**Teacher Curriculum Guide**

| Energy (PS3) 4 | | |
|---|---|---|
| **4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object.**<br><br>***State Assessment Boundary:*** *Assessment does not include quantitative measures of changes in the speed of an object or on any precise or quantitative definition of energy.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Constructing Explanations and Designing Solutions**<br>Constructing explanations and designing solutions in 3-5 builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.<br><br>Use evidence (e.g., measurements, observations, patterns) to construct an explanation.<br>NRC Framework Link | **PS3.A: Definitions of Energy**<br>The faster a given object is moving, the more energy it possesses.<br>NRC Framework Link | **Energy and Matter**<br>Energy can be transferred in various ways and between objects.<br>NRC Framework Link |

| Energy (PS3) 4 | | |
|---|---|---|
| **4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.**<br><br>***State Assessment Boundary:*** *Assessment does not include quantitative measurements of energy or the difference between transferring and transforming energy.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Planning and Carrying Out Investigations**<br>Planning and carrying out investigations to answer questions or test solutions to problems in 3-5 builds on K-2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.<br><br>Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.<br>NRC Framework Link | **PS3.A: Definitions of Energy**<br>Energy can be moved [transferred] from place to place by moving objects or through sound, light, or electric currents.<br>NRC Framework Link<br><br>**PS3.B: Conservation of Energy and Energy Transfer**<br>Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced.<br><br>Light also transfers energy from place to place.<br><br>Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light.<br>NRC Framework Link | **Energy and Matter**<br>Energy can be transferred in various ways and between objects.<br>NRC Framework Link |

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| Energy (PS3) 4 | | |
|---|---|---|
| **4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide.**<br><br>***Clarification Statement:*** *Emphasis is on the change in the energy due to the change in speed, not on the forces, as objects interact.*<br>***State Assessment Boundary:*** *Assessment does not include quantitative measures of changes in the speed of an object (acceleration) or quantitative measurements of energy.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Asking Questions and Defining Problems**<br>Asking questions and defining problems in grades 3-5 builds on grades K-2 experiences and progresses to specifying qualitative relationships.<br><br>Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause-and-effect relationships.<br>NRC Framework Link | **PS3.A: Definitions of Energy**<br>Energy can be moved from place to place by moving objects or through sound, light, or electric currents.<br>NRC Framework Link<br><br>**PS3.B: Conservation of Energy and Energy Transfer**<br>Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced.<br>NRC Framework Link<br><br>**PS3.C: Relationship Between Energy and Forces**<br>When objects collide, the contact forces transfer energy so as to change the objects' motions.<br>NRC Framework Link | **Energy and Matter**<br>Energy can be transferred in various ways and between objects.<br>NRC Framework Link |

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| Energy (PS3) 4 | | |
|---|---|---|
| ETS1 **4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.**<br>***Clarification Statement:*** *Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and a passive solar heater that converts light into heat. Examples of constraints could include the materials, cost, and time to design the device.*<br>***State Assessment Boundary:*** *Devices should be limited to those that convert motion energy to electric energy or use stored energy (batteries) to cause motion or produce light or sound.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Constructing Explanations and Designing Solutions**<br>Constructing explanations and designing solutions in 3-5 builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.<br><br>Apply scientific ideas to solve design problems.<br>NRC Framework Link | **PS3.B: Conservation of Energy and Energy Transfer**<br>Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy.<br>NRC Framework Link<br><br>**PS3.D: Energy in Chemical Processes and Everyday Life**<br>The expression "produce energy" typically refers to the conversion of stored energy into a desired form for practical use.<br>NRC Framework Link<br><br>**ETS1.A: Defining and Delimiting an Engineering Problem**<br>Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria).<br>(Continued Next Page) | **Energy and Matter**<br>Energy can be transferred in various ways and between objects.<br>NRC Framework Link |
| | **ETS1.A: Defining and Delimiting an Engineering Problem (Cont.)**<br>Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.<br>NRC Framework Link<br><br>**ETS1.B: Developing Possible Solution**<br>At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.<br>NRC Framework Link<br><br>ETS2 **ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World**<br>Engineers improve existing technologies or develop new ones. *(secondary)*<br>NRC Framework Link | |

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| Waves and their Applications in Technologies for Information Transfer (PS4) | | 4 |
|---|---|---|
| **4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.**<br><br>***Clarification Statement:*** *Examples of models include diagrams, analogies, or physical models using (but not limited to) stringed beads, rubber bands, wire, or yarn to illustrate amplitude of waves and wavelength.*<br>***State Assessment Boundary:*** *Assessment does not include interference effects, electromagnetic waves, non-periodic waves, or quantitative models of amplitude and wavelength.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Developing and Using Models**<br>Modeling in 3-5 builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.<br><br>Develop a model using an analogy, example, or abstract representation to describe a scientific principle.<br>NRC Framework Link | **PS4.A: Wave Properties**<br>Waves, which are regular patterns of motion, can be made in water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the wave except when the water meets a beach.<br><br>Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks).<br>NRC Framework Link | **Patterns**<br>Similarities and differences in patterns can be used to sort and classify natural phenomena.<br>NRC Framework Link |

| Waves and their Applications in Technologies for Information Transfer (PS4) | | 4 |
|---|---|---|
| **4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.**<br><br>***State Assessment Boundary:*** *Assessment does not include knowledge of specific colors reflected and seen, the cellular mechanisms of vision, or how the retina works.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Developing and Using Models**<br>Modeling in 3-5 builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.<br><br>Develop a model to describe phenomena.<br>NRC Framework Link | **PS4.B: Electromagnetic Radiation**<br>An object can be seen when light reflected from its surface enters the eyes.<br>NRC Framework Link | **Cause and Effect**<br>Cause-and-effect relationships are routinely identified.<br>NRC Framework Link |

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| Waves and their Applications in Technologies for Information Transfer (PS4) | | |
|---|---|---|
| **4-PS4-3. Generate and compare multiple solutions that use patterns to transmit information.**<br>***Clarification Statement:*** *Examples of solutions include drums sending coded information through sound waves, using a grid of 0s and 1s representing black and white to send information about a picture, QR codes, barcodes, and using Morse code to send text. The coding method does not need to be electronic or digital, and the code should only be two possible values such as on/off, 0/1, black/white.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Constructing Explanations and Designing Solutions**<br>Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.<br><br>Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.<br>NRC Framework Link | **PS4.C: Information Technologies and Instrumentation**<br>Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information—convert it from digitized form to voice—and vice versa.<br><br>When in digitized form, information can be recorded, stored for future recovery, and transmitted over long distances without significant degradation of the wave.<br>NRC Framework Link<br><br>**ETS1.C: Optimizing the Design Solution**<br>Different solutions need to be tested in order to determine which of the best solves the problem, given the criteria and the constraints.<br>NRC Framework Link<br><br>**ETS2.A: Interdependence of Science, Engineering, and Technology**<br>Knowledge of relevant scientific concepts and research findings is important in engineering.<br>NRC Framework Link | **Patterns**<br>Similarities and differences in patterns can be used to sort and classify designed products.<br>NRC Framework Link |

| From Molecules to Organisms: Structures and Processes (LS1) | | |
|---|---|---|
| **4-LS1-1. Construct an argument that plants and animals have internal and external structures that function together in a system to support survival, growth, behavior, and reproduction.**<br><br>***Clarification Statement:*** *Examples of structures could include thorns, roots, heart, lungs, or skin.*<br>***State Assessment Boundary:*** *Assessment does not include microscopic structures within plant and animal systems.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Engaging in Argument from Evidence**<br>Engaging in argument from evidence in 3-5 builds on K-2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).<br><br>Construct an argument with evidence, data, and/or a model.<br>NRC Framework Link | **LS1.A: Structure and Function**<br>Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.<br>NRC Framework Link | **Systems and System Models**<br>A system can be described in terms of its components and their interactions.<br>NRC Framework Link |

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| From Molecules to Organisms: Structures and Processes (LS1) | | 4 |
|---|---|---|
| **4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.**<br><br>***Clarification Statement:*** *Emphasis is on systems of information transfer.*<br>***State Assessment Boundary:*** *Assessment does not include the mechanisms by which the brain stores and recalls information or the mechanisms of how sensory receptors function.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Developing and Using Models**<br>Modeling in 3-5 builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.<br><br>Use a model to test interactions concerning the functioning of a natural system.<br>NRC Framework Link | **LS1.D: Information Processing**<br>Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain.<br><br>Animals are able to use their perceptions and memories to guide their actions.<br>NRC Framework Link | **Systems and System Models**<br>A system can be described in terms of its components and their interactions.<br>NRC Framework Link |

| Earth's Place in the Universe (ESS1) | | 4 |
|---|---|---|
| **4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.**<br><br>***Clarification Statement:*** *Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.*<br>***State Assessment Boundary:*** *Assessment does not include specific knowledge of the mechanism of rock formation or memorization of specific rock formations and layers. Assessment is limited to relative time.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Constructing Explanations and Designing Solutions**<br>Constructing explanations and designing solutions in 3-5 builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.<br><br>Identify the evidence that supports particular points in an explanation.<br>NRC Framework Link | **ESS1.C: The History of Planet Earth**<br>Local, regional, and global patterns of rock formations reveal changes over time due to Earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed.<br>NRC Framework Link | **Patterns**<br>Patterns can be used as evidence to support an explanation.<br>NRC Framework Link |

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| Earth's Systems (ESS2) 4 | | |
|---|---|---|
| **4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.**<br><br>***Clarification Statement:*** *Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow.*<br>***State Assessment Boundary:*** *Assessment is limited to a single form of weathering or erosion.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Planning and Carrying Out Investigations**<br>Planning and carrying out investigations to answer questions or test solutions to problems in 3-5 builds on K-2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.<br><br>Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon.<br>NRC Framework Link | **ESS2.A: Earth Materials and Systems**<br>Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.<br>NRC Framework Link<br><br>**ESS2.E: Biogeology**<br>Living things affect the physical characteristics of their regions.<br>NRC Framework Link | **Cause and Effect**<br>Cause-and-effect relationships are routinely identified, tested, and used to explain change.<br>NRC Framework Link |

| Earth's Systems (ESS2) 4 | | |
|---|---|---|
| **4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.**<br><br>***Clarification Statement:*** *Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, or earthquakes.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Analyzing and Interpreting Data**<br>Analyzing data in 3-5 builds on K-2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.<br><br>Analyze and interpret data to make sense of phenomena using logical reasoning.<br>NRC Framework Link | **ESS2.B: Plate Tectonics and Large-Scale System Interactions**<br>The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth.<br>NRC Framework Link | **Patterns**<br>Patterns can be used as evidence to support an explanation.<br>NRC Framework Link |

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| Earth and Human Activity (ESS3) 4 | | |
|---|---|---|
| **4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and how their uses affect the environment.**<br><br>***Clarification Statement:*** *Examples of renewable resources could include wind energy, water behind dams, and sunlight; non-renewable resources are fossil and nuclear fuels.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Obtaining, Evaluating, and Communicating Information**<br>Obtaining, evaluating, and communicating information in 3-5 builds on K-2 experiences and progresses to evaluate the merit and accuracy of ideas and methods.<br><br>Obtain and combine information from books and other reliable media to explain phenomena.<br>NRC Framework Link | **ESS3.A: Natural Resources**<br>All materials, energy, and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not.<br>NRC Framework Link<br><br>**ETS2.A: Interdependence of Science, Engineering, and Technology**<br>Knowledge of relevant scientific concepts and research findings is important in engineering.<br>NRC Framework Link<br><br>**ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World**<br>Over time, people's needs and wants change, as do their demands for new and improved technologies.<br>NRC Framework Link | **Cause and Effect**<br>Cause-and-effect relationships are routinely identified and used to explain change.<br>NRC Framework Link |

| Earth and Human Activity (ESS3) 4 | | |
|---|---|---|
| **4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.**<br><br>***Clarification Statement:*** *Examples of solutions could include designing earthquake or hurricane resistant buildings, improving the monitoring of tornadic or volcanic activity, and constructing waterways for floodwaters.*<br>***State Assessment Boundary:*** *Assessment is limited to earthquakes, floods, hurricanes, tornadoes, and coastal erosion.* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
| **Constructing Explanations and Designing Solutions**<br>Constructing explanations and designing solutions in 3-5 builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Use evidence in creating multiple solutions to design problems.<br><br>Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.<br>NRC Framework Link | **ESS3.B Natural Hazards**<br>A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts.<br>NRC Framework Link<br><br>**ETS1.B: Developing Possible Solutions**<br>Testing a solution involves investigating how well it performs under a range of likely conditions. Communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.<br>NRC Framework Link<br><br>**ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World**<br>Engineers improve existing technologies or develop new ones to increase their benefits, to decrease known risks, and to meet societal demands.<br>NRC Framework Link | **Cause and Effect**<br>Cause-and-effect relationships are routinely identified, tested, and used to explain change.<br>NRC Framework Link |

**Subject: 4th Grade Science**

**Teacher Curriculum Guide**

**Based on 60 Minutes of Daily Instruction**

**Quarter One**

| South Carolina College-and Career-Ready Standards | |
|---|---|
| 4.E.2A.1 Obtain and communicate information about some of the gasses in the atmosphere (including oxygen, nitrogen, and water vapor) to develop models that exemplify the composition of Earth's atmosphere where weather takes place. | 4.E.2B.2 Obtain and communicate information about severe weather phenomena (including thunderstorms, hurricanes, and tornadoes) to explain steps humans can take to reduce the impact of severe weather phenomena |
| 4.E.2A.2 Develop and use models to explain how water changes as it moves between the atmosphere and Earth's surface during each phase of the water cycle (including evaporation, condensation, precipitation, and runoff). | 4.E.2B.3 Construct explanations about regional climate differences using data from the long term weather conditions of the region. |
| 4.E.2B.1 Analyze and interpret data from observations, measurements, and weather maps to describe patterns in local weather conditions (including temperature, precipitation, wind speed/direction, relative humidity, and cloud types) and predict changes in weather over time. | |

**Unit:** Weather
Unit Focus: The student will demonstrate an understanding of the water cycle and weather and climate patterns.

| Standards | Sequenced Objectives | Scope | Content-Location | Resources |
|---|---|---|---|---|
| 4.E.2A.1<br>4.E.2A.2<br>4.E.2B.1<br>4.E.2B.2<br>4.E.2B.3 | I can:<br>• Ask questions<br>• Develop and use models<br>• Plan and carry out investigations<br>• Analyze and interpret data<br>• Use mathematics and computational thinking<br>• Construct explanations | SEPs<br>1 Week<br><br>2 Weeks<br>4.E.2A.1<br>4.E.2A.2<br><br>3 Weeks<br>4.E.2B.1<br><br>3 Weeks<br>4.E.2B.2<br>4.E.2B.3 | 4th Grade Science Support Document<br>Discovery Education:<br>• 4.E.2A.1<br>• 4.E.2A.2<br>• 4.E.2B.1<br>• 4.E.2B.2<br>• 4.E.2B.3<br>Discovery Ed TechBook:<br>• Water cycle<br>• Weather and climate<br>• Severe Weather | Inquiry Lessons<br>Earth's atmosphere<br>Composition of Earth's atmosphere<br>Water cycle song<br>Water cycle diagram<br>Weather Data<br>Severe Weather<br>Flocabulary:<br>• Weather<br>• Clouds<br>• Hurricanes<br>• Tornadoes |

| | | | | |
|---|---|---|---|---|
| | ● Engage in scientific argument from evidence<br>● Obtain, evaluate, and communicate information<br>● Construct devices or design solutions.<br>● Obtain and communicate information about some of the gasses in the atmosphere (including oxygen, nitrogen, and water vapor) to develop models that show the composition of Earth's atmosphere where weather takes place.<br>● Develop and use models to explain how water changes as it moves between the atmosphere and Earth's surface during each phase of the water cycle (including evaporation, condensation, precipitation, and runoff).<br>● Construct explanations about regional climate differences using data from the long term | 3 weeks | | |

| | | | | |
|---|---|---|---|---|
| | weather conditions of the region.<br>● Obtain and communicate information about severe weather phenomena (including thunderstorms, hurricanes, and tornadoes) to explain steps humans can take to reduce the impact of severe weather phenomena. | | | |

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**Based on 60 Minutes of Daily Instruction**

**Quarter Two**

| South Carolina College-and Career-Ready Standards | |
|---|---|
| 4.E.3A.1 Develop and use models of Earth's solar system to show the location and order of the planets as they orbit the Sun and the main composition (rock or gas) of the planets. | 4.E.3B.2 Construct explanations of how day and night result from Earth's rotation on its axis. |
| 4.E.3A.2 Obtain and communicate information to describe how constellations (including Ursa Major, Ursa Minor, and Orion) appear to move from Earth's perspective throughout the seasons. | 4.E.3B.3 Construct explanations of how the Sun appears to move throughout the day using observations of shadows. |
| 4.E.3A.3 Construct scientific arguments to support claims about the importance of astronomy in navigation and exploration (including the use of telescopes, astrolabes, compasses, and sextants). | 4.E.3B.4 Develop and use models to describe the factors (including tilt, revolution, and angle of sunlight) that result in Earth's seasonal changes. |
| 4.E.3B.1 Analyze and interpret data from observations to describe patterns in the (1) location, (2) movement, and (3) appearance of the Moon throughout the year. | |

**Unit:** Space & Our Solar System

Unit Focus: The student will demonstrate an understanding of the locations, movements, and patterns of stars and objects in the solar system.

| Standards | Sequenced Objectives | Scope | Content-Location | Resources |
|---|---|---|---|---|
| 4.E.3A.1<br>4.E.3A.2<br>4.E.3A.3<br>4.E.3B.1<br>4.E.3B.2<br>4.E.3B.3<br>4.E.3B.4 | I can:<br>● Develop and use models of Earth's solar system to show the location and order of the planets as they orbit the Sun and the main composition (rock or gas) of the planets. | 4 Weeks<br>4.E.3A.1<br>4.E.3B.2<br>4.E.3B.4<br><br>4 Weeks<br>4.E.3A.2<br>4.E.3B.3<br>4.E.3B.1<br>4.E.3A.3 | 4th Grade Science Support Document<br>Discovery Education:<br>● 4.E.3A.1<br>● 4.E.3B.2<br>● 4.E.3B.4<br>● 4.E.3A.2<br>● 4.E.3B.3<br>● 4.E.3B.1<br>● 4.E.3A.3<br>Discovery Ed TechBook:<br>● Exploring Our Solar System | Model of solar system<br>Day and Night<br>Earth's orbit<br>Seasons<br>Constellations<br>Shadows<br>Moon phase simulator<br>Flocabulary:<br>● Solar system<br>● Moon phases<br>● Seasons |

| | | | | |
|---|---|---|---|---|
| | • Obtain and communicate information to describe how constellations (including Ursa Major, Ursa Minor, and Orion) appear to move from Earth's perspective throughout the seasons.<br>• Construct scientific arguments to support claims about the importance of astronomy in navigation and exploration (including the use of telescopes, astrolabes, compasses, and sextants).<br>• Analyze and interpret data from observations to describe patterns in the (1) location, (2) movement, and (3) appearance of the Moon throughout the year.<br>• Construct explanations of how day and night result from Earth's rotation on its axis.<br>• Construct explanations of how | | • Seasons, Moon Phases, Day/Night | |

| | | | | |
|---|---|---|---|---|
| | the Sun appears to move throughout the day using observations of shadows.<br>● Develop and use models to describe the factors (including tilt, revolution, and angle of sunlight) that result in Earth's seasonal changes. | | | |

**Subject: 4th Grade Science**

**Teacher Curriculum Guide**

**Based on 60 Minutes of Daily Instruction**

**Quarter Three**

| South Carolina College-and Career-Ready Standards | |
|---|---|
| 4.P.4A.1 Construct scientific arguments to support the claim that white light is made up of different colors. | 4.P.4A.5 Plan and conduct scientific investigations to explain how light behaves when it strikes transparent, translucent, and opaque materials. |
| 4.P.4A.2 Analyze and interpret data from observations and measurements to describe how the apparent brightness of light can vary as a result of the distance and intensity of the light source. | 4.P.4B.1 Plan and conduct scientific investigations to test how different variables affect the properties of sound (including pitch and volume). |
| 4.P.4A.3 Obtain and communicate information to explain how the visibility of an object is related to light. | 4.P.4B.2 Analyze and interpret data from observations and measurements to describe how changes in vibration affects the pitch and volume of sound. |
| 4.P.4A.4 Develop and use models to describe how light travels and interacts when it strikes an object (including reflection, refraction, and absorption) using evidence from observations. | 4.P.4B.3 Engage in the design process to design and test different solutions to solving the problem of communicating sound over different distances. |

| **Unit:** Sound and Light<br>Unit Focus: The student will demonstrate an understanding of the properties of light and sound as forms of energy. | | | | |
|---|---|---|---|---|
| **Standards** | **Sequenced Objectives** | **Scope** | **Content-Location** | **Resources** |
| 4.P.4A.1<br>4.P.4A.2<br>4.P.4A.3<br>4.P.4A.4<br>4.P.4A.5<br>4.P.4B.1<br>4.P.4B.2<br>4.P.4B.3 | I can:<br>● Construct scientific arguments to support the claim that white light is made up of different colors.<br>● Analyze and interpret data from observations and measurements to describe how the apparent brightness of light can vary as a | 4 Weeks<br>Light<br>4.P.4A.1<br>4.P.4A.2<br>4.P.4A.3<br>4.P.4A.4<br>4.P.4A.5<br><br>4 Weeks<br>Sound<br>4.P.4B.1<br>4.P.4B.2<br>4.P.4B.3 | 4th Grade Science Support Document<br>Discovery Education:<br>● 4.P.4A.1<br>● 4.P.4A.2<br>● 4.P.4A.3<br>● 4.P.4A.4<br>● 4.P.4A.5<br>● 4.P.4B.1<br>● 4.P.4B.2<br>● 4.P.4B.3<br>Discovery Ed TechBook:<br>● Light<br>● Sound | ROYG.BIV<br>How light travels<br>Light intensity<br>Reflection, refraction, absorption<br>Translucent, transparent, opaque<br>Sound stem activities<br>Sound Unit<br>Flocabulary:<br>● Light<br>● Sound |

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| | result of the distance and intensity of the light source.<br>● Obtain and communicate information to explain how the visibility of an object is related to light.<br>● Develop and use models to describe how light travels and interacts when it strikes an object (including reflection, refraction, and absorption) using evidence from observations.<br>● Plan and conduct scientific investigations to explain how light behaves when it strikes transparent, translucent, and opaque materials.<br>● Plan and conduct scientific investigations to test how different variables affect the properties of sound (including pitch and volume).<br>● Analyze and interpret data from observations and | | | |

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| | measurements to describe how changes in vibration affects the pitch and volume of sound.<br>● Engage in the design process to design and test different solutions to solving the problem of communicating sound over different distances. | | | |

**Subject: 4th Grade Science**

**Teacher Curriculum Guide**

**Based on 60 Minutes of Daily Instruction**

**Quarter Four**

| South Carolina College-and Career-Ready Standards | |
|---|---|
| 4.L5A.1 Obtain and communicate information about the characteristics of plants and animals to develop models which classify plants as flowering or nonflowering and animals as vertebrate or invertebrate. | 4.L5B.1 Develop and use models to compare how humans and other animals use their senses and sensory organs to detect and respond to signals from the environment. |
| 4.L5A.2 Analyze and interpret data from observations and measurements to compare the stages of development of different seed plants. | 4.L5B.2 Construct explanations for how structural adaptations (such as the types of roots, stems, or leaves; color of flowers; or seed dispersal) allow plants to survive and reproduce. |
| 4.L5A.3 Develop and use models to compare the stages of growth and development in various animals. | 4.L5B.3 Construct explanations for how structural adaptations (such as methods for defense, locomotion, obtaining resources, or camouflage) allow animals to survive in the environment. |
| 4.L5A.4 Construct scientific arguments to support claims that some characteristics of organisms are inherited from parents and some are influenced by the environment. | |

**Unit:** Plants and Animals

Unit Focus: The student will demonstrate an understanding of how the structural characteristics and traits of plants and animals allow them to survive, grow, and reproduce.

| Standards | Sequenced Objectives | Scope | Content-Location | Resources |
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| 4.L5A.1<br>4.L5A.2<br>4.L5A.3<br>4.L5A.4<br>4.L5B.1<br>4.L5B.2<br>4.L5B.3 | I can:<br>● Obtain and communicate information about the characteristics of plants and animals to develop models which classify plants as flowering or nonflowering and | 3 Weeks<br>Plants<br>4.L5A.1<br>4.L5A.2<br>4.L5A.4<br>4.L5B.2<br><br>3 Weeks<br>Animals<br>4.L5A.1 | 4th Grade Science Support Document<br>Discovery Education:<br>● 4.L5A.1<br>● 4.L5A.2<br>● 4.L5A.3<br>● 4.L5A.4<br>● 4.L5B.1<br>● 4.L5B.2<br>● 4.L5B.3<br>Discovery Ed TechBook: | Flowering vs nonflowering<br>Plant life cycle<br>Plant adaptations<br>Inherited traits<br>Life cycles<br>Animal senses<br>Adaptations<br>Animal structural adaptations<br>Flocabulary:<br>● Parts of a plant |

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| | animals as vertebrate or invertebrate.<br>● Analyze and interpret data from observations and measurements to compare the stages of development of different seed plants.<br>● Develop and use models to compare the stages of growth and development in various animals.<br>● Construct scientific arguments to support claims that some characteristics of organisms are inherited from parents and some are influenced by the environment.<br>● Develop and use models to compare how humans and other animals use their senses and sensory organs to detect and respond to signals from the environment.<br>● Construct explanations for how structural adaptations (such as the types of roots, stems, or leaves; color of | 4.L5A.3<br>4.L5A.4<br>4.L5B.1<br>4.L5B.3<br><br>1 Week<br>Review for state testing | ● Plants and Animals | ● Adaptations<br>● Inherited and acquired traits<br>● Life cycles<br>● Vertebrates<br>● Invertebrates |

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| | flowers; or seed dispersal) allow plants to survive and reproduce.<br>● Construct explanations for how structural adaptations (such as methods for defense, locomotion, obtaining resources, or camouflage) allow animals to survive in the environment. | | | |