

5th Grade Pacing Guide/Scope and Sequence

1st Nine Weeks

<p>Strand: Nature of Science</p> <p>Concept: Processes of Science</p> <p>Resource: Scott Foresman AR Science – AR-3</p> <p><i>Ongoing throughout each nine weeks within inquiry activities</i></p>	<p>NS.1.5.1 Make accurate observations</p> <p>NS.1.5.2 Identify and define components of <i>experimental design</i> used to produce <i>empirical evidence</i>:</p> <ul style="list-style-type: none"> • <i>hypothesis</i> • replication • sample size • appropriate use of <i>control</i> • use of standardized <i>variables</i> <p>NS.1.5.3 Calculate mean, median, mode, and range from scientific data using <i>SI units</i></p> <p>NS.1.5.4 Interpret scientific data using</p> <ul style="list-style-type: none"> • data tables/charts • bar graphs • circle graphs • line graphs • <i>stem and leaf plots</i> • Venn diagrams <p>NS.1.5.5 Communicate results and conclusions from scientific inquiry</p> <p>NS.1.5.6 Develop and implement strategies for long-term, accurate data collection</p> <p>NS.1.5.7 Summarize the characteristics of science</p> <p>NS.1.5.8 Explain the role of observation in the development of a theory</p> <p>NS.1.5.9 Define and give examples of hypotheses</p>
<p>Strand: Earth and Space Science</p> <p>Concept: Structure and Properties/ Cycles</p> <p>Resource: Scott Foresman AR Science – Chapter 9, Lesson 5; AR-10, AR-11</p>	<p>ESS.8.5.1 Identify some basic <i>elements</i> composing minerals:</p> <ul style="list-style-type: none"> • silicon • oxygen • iron • sodium • chlorine • calcium • carbon • hydrogen • aluminum <p>ESS.8.5.2 Investigate the growth of crystals</p>

ESS.8.5.3

Identify characteristics of minerals

ESS.8.5.4

Conduct investigations on mineral properties:

- luster
- hardness
- streak
- acid test for calcite
- fluorescence

ESS.8.5.5

Identify the following minerals:

- halite (salt)
- feldspar
- sulfur
- quartz
- diamonds
- gypsum
- calcite
- talc
- hematite (iron)
- precious metals (gold, silver)

ESS.8.5.6

Identify minerals found in Arkansas:

- bauxite
- diamonds
- quartz
- galena

ESS.8.5.7

Identify characteristics of sedimentary, igneous, and metamorphic rocks

ESS.8.5.8

Compare and contrast by investigation characteristics of the three basic types of rocks:

- sedimentary
- igneous
- metamorphic

ESS.8.5.9

Classify the three basic types of rocks

ESS.8.5.13

Describe and illustrate the rock cycle

ESS.8.5.11

Investigate the formation of soil

ESS.8.5.12

Conduct investigations on sedimentation

ESS.8.5.10

Investigate careers, scientists, and historical breakthroughs related to minerals and rocks

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2nd Nine Weeks

<p>Strand: Nature of Science</p> <p>Concept: Processes of Science</p> <p>Resource: Scott Foresman AR Science</p> <p><i>Ongoing throughout each nine weeks within inquiry activities</i></p>	<p>NS.1.5.1 Make accurate observations</p> <p>NS.1.5.2 Identify and define components of <i>experimental design</i> used to produce <i>empirical evidence</i>:</p> <ul style="list-style-type: none"> • <i>hypothesis</i> • replication • sample size • appropriate use of <i>control</i> • use of standardized <i>variables</i> <p>NS.1.5.3 Calculate mean, median, mode, and range from scientific data using <i>SI units</i></p> <p>NS.1.5.4 Interpret scientific data using</p> <ul style="list-style-type: none"> • data tables/charts • bar graphs • circle graphs • line graphs • <i>stem and leaf plots</i> • Venn diagrams <p>NS.1.5.5 Communicate results and conclusions from scientific inquiry</p> <p>NS.1.5.6 Develop and implement strategies for long-term, accurate data collection</p> <p>NS.1.5.7 Summarize the characteristics of science</p> <p>NS.1.5.8 Explain the role of observation in the development of a theory</p> <p>NS.1.5.9 Define and give examples of hypotheses</p>
<p>Strand: Earth and Space Science</p> <p>Concept:</p> <p>Resource:</p>	<p>ESS.9.5.1 Explain and give examples of how physical <i>evidence</i> from <i>fossils</i> supports the <i>theory</i> that Earth has changed over time</p> <p>ESS.9.5.2 Analyze <i>fossil record evidence</i> about plants and animals that lived long ago</p> <p>ESS.9.5.3 Infer the nature of ancient <i>environments</i> based on <i>fossil record evidence</i></p> <p>ESS.8.5.10 Investigate careers, scientists, and historical breakthroughs related to minerals and rocks</p>

<p>Strand: Earth and Space Science</p> <p>Concept: Properties of the Universe</p> <p>Resource: Scott Foresman AR Science – Chapter 17, Lesson 2, 3; Math in Science pg. 564; AR-19</p>	<p>ESS.10.5.1 Compare the physical characteristics of the sun to other stars:</p> <ul style="list-style-type: none"> • size • color • brightness <p>ESS.10.5.2 Demonstrate the order of planets and other space objects in our <i>solar system</i></p> <p>ESS.10.5.3 Compare the properties of planets in our <i>solar system</i>:</p> <ul style="list-style-type: none"> • size • shape • <i>density</i> • <i>atmosphere</i> • distance from the sun • orbital path • moons • surface • composition <p>ESS 10.5.4 Distinguish between <i>mass</i> and <i>weight</i></p> <p>ESS.10.5.5 Compare the human body's <i>mass</i> to <i>weight</i> on Earth, the moon, and other planets in our <i>solar system</i></p> <p>ESS.10.5.6 Investigate careers, scientists, and historical breakthroughs related to planets</p>
<p>Strand: Life Science</p> <p>Concept: Structure and Function of Cells</p> <p>Resource: Scott Foresman AR Science – Chapter 2, Lesson 1; AR-1</p>	<p>LS.2.5.1 Compare the <i>cell theory</i> to the characteristics of a scientific <i>theory</i></p> <p>LS.2.5.2 Examine cells on a microscopic level</p> <p>LS.2.5.3 Describe the similarities of basic <i>cell</i> functions in all <i>organisms</i></p> <p>LS.2.5.4 Model and identify the parts of animal <i>cells</i> and plant <i>cells</i>:</p> <ul style="list-style-type: none"> • <i>cell wall</i> • <i>cell membrane</i> • <i>nucleus</i> • cytoplasm • chloroplast <p>LS.2.5.5 Compare and contrast plant and animal <i>cells</i></p> <p>LS.2.5.6 Conduct investigations to separate plant pigments from the <i>cell</i></p> <p>LS.2.5.11 Investigate careers, scientists, and historical breakthroughs related to <i>cells</i></p>

Strand: Life Science	LS.2.5.7 Identify the role of chlorophyll in the process of photosynthesis
Concept: Energy Transfer	LS.2.5.8 Explain and illustrate photosynthesis
Resource: Scott Foresman AR Science – Chapter 4, Lesson 1; AR-2	LS.2.5.9 Explain <i>cellular respiration</i>
	LS.2.5.10 Conduct investigations demonstrating the process of <i>cellular respiration</i>

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3rd Nine Weeks

<p>Strand: Nature of Science</p> <p>Concept: Processes of Science</p> <p>Resource: Scott Foresman AR Science - Lesson AR-4; Lab pg. 124</p> <p><i>Ongoing throughout each nine weeks within inquiry activities</i></p>	<p>NS.1.5.1 Make accurate observations</p> <p>NS.1.5.2 Identify and define components of <i>experimental design</i> used to produce <i>empirical evidence</i>:</p> <ul style="list-style-type: none"> • <i>hypothesis</i> • replication • sample size • appropriate use of <i>control</i> • use of standardized <i>variables</i> <p>NS.1.5.3 Calculate mean, median, mode, and range from scientific data using <i>SI units</i></p> <p>NS.1.5.4 Interpret scientific data using</p> <ul style="list-style-type: none"> • data tables/charts • bar graphs • circle graphs • line graphs • <i>stem and leaf plots</i> • Venn diagrams <p>NS.1.5.5 Communicate results and conclusions from scientific inquiry</p> <p>NS.1.5.6 Develop and implement strategies for long-term, accurate data collection</p> <p>NS.1.5.7 Summarize the characteristics of science</p> <p>NS.1.5.8 Explain the role of observation in the development of a theory</p> <p>NS.1.5.9 Define and give examples of hypotheses</p>
<p>Strand: Life Science</p> <p>Concept: Populations and Ecosystems/ Energy Transfer</p> <p>Resource: Scott Foresman AR Science- Chapter 5, Lesson 1, 5; Lab pg. 124; AR-6, AR-7</p>	<p>LS.4.5.1 Distinguish among and model</p> <ul style="list-style-type: none"> • <i>organisms</i> • <i>populations</i> • <i>communities</i> • <i>ecosystems</i> • <i>biosphere</i> <p>LS.4.5.2 Identify the transfer of <i>energy</i> using <i>energy</i> pyramids:</p> <ul style="list-style-type: none"> • terrestrial • aquatic <p>LS.4.5.3 Design food webs in specific <i>habitats</i> to show the flow of <i>energy</i> within <i>communities</i>:</p> <ul style="list-style-type: none"> • terrestrial • aquatic

	<p>LS.4.5.4 Evaluate food webs under conditions of stress:</p> <ul style="list-style-type: none"> • overgrazing • overpopulation • natural disaster • introduction of non-native <i>species</i> • human impact/urban development <p>LS.4.5.5 Examine the role of <i>limiting factors</i> on the <i>carrying capacity</i> of an <i>ecosystem</i>:</p> <ul style="list-style-type: none"> • food • space • water • shelter
<p>Strand: Life Science</p> <p>Concept: Cycles within Ecosystems</p> <p>Resource: Scott Foresman AR Science – Chapter 5, Lesson 6; Lab pg. 154; AR-8, AR-9</p>	<p>LS.4.5.6 Describe and diagram the nitrogen cycle in <i>ecosystems</i></p> <p>LS.4.5.7 Describe and diagram the <i>carbon cycle</i> in <i>ecosystems</i></p> <p>LS.4.5.8 Describe and diagram the <i>carbon dioxide-oxygen cycle</i> in <i>ecosystems</i></p> <p>LS.4.5.9 Conduct investigations demonstrating the role of the <i>carbon dioxide-oxygen cycle</i> in <i>ecosystems</i></p> <p>LS.4.5.10 Analyze the concept of conservation of <i>mass</i> as related to the amount of <i>matter</i> in an <i>ecosystem</i></p>
<p>Strand: Life Science</p> <p>Concept: Properties and Interactions within Ecosystems</p> <p>Resource: Scott Foresman AR Science – Lesson AR-4, AR-5</p>	<p>LS.4.5.11 Create ecosystems in which plants can exist without animals</p> <p>LS.4.5.12 Conduct investigations in which plants are encouraged to thrive</p> <p>LS.4.5.13 Construct, compare, and contrast environments in open and closed aquaria</p> <p>LS.4.5.14 Categorize organisms by the function they serve in ecosystems and food webs:</p> <ul style="list-style-type: none"> • predator/prey • parasitism • producer/consumer/decomposer • scavenger • herbivore/carnivore/ omnivore <p>LS.4.5.15 Conduct field studies identifying and categorizing organisms in a given area of an ecosystem</p>
<p>Strand: Life Science</p>	<p>LS.4.5.16</p>

<p>Concept: Relationships within Populations and Ecosystems</p> <p>Resource: Scott Foresman AR Science – Chapter 5, Lesson 4</p>	<p>Evaluate positive and negative human effects on <i>ecosystems</i> LS.4.5.17 Describe and illustrate various symbiotic relationships:</p> <ul style="list-style-type: none">• <i>parasitism</i>• <i>mutualism</i>• <i>commensalism</i> <p>LS.4.5.18 Investigate careers, scientists, and historical breakthroughs related to <i>populations</i> and <i>ecosystems</i></p>
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4th Nine Weeks

<p>Strand: Nature of Science</p> <p>Concept: Processes of Science</p> <p>Resource: Scott Foresman AR Science</p> <p><i>Ongoing throughout each nine weeks within inquiry activities</i></p>	<p>NS.1.5.1 Make accurate observations</p> <p>NS.1.5.2 Identify and define components of <i>experimental design</i> used to produce <i>empirical evidence</i>:</p> <ul style="list-style-type: none"> • <i>hypothesis</i> • replication • sample size • appropriate use of <i>control</i> • use of standardized <i>variables</i> <p>NS.1.5.3 Calculate mean, median, mode, and range from scientific data using <i>SI units</i></p> <p>NS.1.5.4 Interpret scientific data using</p> <ul style="list-style-type: none"> • data tables/charts • bar graphs • circle graphs • line graphs • <i>stem and leaf plots</i> • Venn diagrams <p>NS.1.5.5 Communicate results and conclusions from scientific inquiry</p> <p>NS.1.5.6 Develop and implement strategies for long-term, accurate data collection</p> <p>NS.1.5.7 Summarize the characteristics of science</p> <p>NS.1.5.8 Explain the role of observation in the development of a theory</p> <p>NS.1.5.9 Define and give examples of hypotheses</p>
<p>Strand: Physical Science</p> <p>Concept: Properties of Matter</p> <p>Resource: Scott Foresman AR Science – chapter 11, Lesson 1; AR-12</p>	<p>PS.5.5.1 Identify the relationship of <i>atoms</i> to all <i>matter</i></p> <p>PS.5.5.2 Conduct <i>scientific investigations</i> on <i>physical properties</i> of objects</p> <p>PS.5.5.3 Identify common examples of <i>physical properties</i>:</p> <ul style="list-style-type: none"> • length • <i>mass</i> • area • perimeter • texture • taste • odor • color • elasticity

	<p>PS.5.5.4 State characteristics of physical changes</p> <p>PS.5.5.5 Identify characteristics and common examples of physical changes</p>
<p>Strand: Physical Science</p> <p>Concept: Change within Matter</p> <p>Resource: Scott Foresman AR Science – chapter 11, Lesson 3, 4; Chapter 12, Lesson 1; AR-13</p>	<p>PS.5.5.6 Explain how heat influences the states of matter of a substance:</p> <ul style="list-style-type: none"> • solid • liquid • gas • plasma <p>PS.5.5.7 Demonstrate the effect of changes in the <i>physical properties of matter</i></p> <p>PS.5.5.8 Model the motion and position of <i>molecules</i> in solids, liquids, and gases in terms of <i>kinetic energy</i></p> <p>PS.5.5.9 Conduct investigations demonstrating expansion and contraction</p> <p>PS.5.5.10 Investigate scientists, careers, and historical breakthroughs related to <i>physical properties</i>, physical changes, and states of <i>matter</i></p>
<p>Strand: Physical Science</p> <p>Concept: Forces and Motion</p> <p>Resource: Scott Foresman AR Science – Chapter 13, Lesson 4; AR-14, AR-15, AR-16, AR-17</p>	<p>PS.6.5.1 Classify <i>simple machines</i></p> <p>PS.6.5.2 Conduct investigations using</p> <ul style="list-style-type: none"> • levers (e.g., toothbrush) • pulleys • inclined planes-ramps, wedges, and screws • wheels and axles <p>PS.6.5.3 Relate <i>simple machines</i> to inventions and discoveries</p> <p>PS.6.5.4 Compare and contrast <i>potential energy</i> and <i>kinetic energy</i> as applied to motion</p> <p>PS.6.5.5 Classify real world examples as <i>potential energy</i> or <i>kinetic energy</i> as applied to motion</p> <p>PS.6.5.6 Conduct investigations using <i>potential energy</i> and <i>kinetic energy</i></p> <p>PS.6.5.7 Investigate careers, scientists, and historical breakthroughs related to <i>simple machines</i> and <i>potential</i> and <i>kinetic energy</i></p>
<p>Strand: Physical Science</p> <p>Concept: Forces and Motion</p> <p>Resource: Scott Foresman AR Science – Chapter 13, pg. 440; AR-18</p>	<p>PS.7.5.1 Summarize how light can interact with <i>matter</i> through <i>absorption</i>, <i>refraction</i>, and <i>reflection</i></p> <p>PS.7.5.2 Investigate how light travels and interacts with an object or material</p> <p>PS.7.5.3 Conduct investigations demonstrating how an object can be seen</p>

PS.7.5.4

Design and conduct investigations of transparent, *translucent*, and *opaque* as applied to light

PS.7.5.5

Investigate physical interactions of light and *matter* and the effect on color perception:

- *refraction*
- *absorption*
- transmission
- scattering

PS.7.5.6

Investigate careers, scientists, and historical breakthroughs related to light *energy*