

Inquiry Investigations™
Earth's Resources MODULE - 1287232
Grades: 6-9

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Arkansas Curriculum Frameworks
Science
Grade 6

STRAND/CONTENT STANDARD	AR.1.	Nature of Science: Characteristics and Processes of Science: Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.6.2.	<p>Processes of Science: Apply components of experimental design used to produce empirical evidence: hypothesis, replication, sample size, appropriate use of control, use of standardized variables</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils

		<p>and Geologic Time</p> <ul style="list-style-type: none"> • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Virtual Laboratory: Mineral Identification
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.6.5.</p>	<p>Processes of Science: Communicate results and conclusions from scientific inquiry</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils

		<p>and Geologic Time</p> <ul style="list-style-type: none"> • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Virtual Laboratory: Mineral Identification
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.6.6.</p>	<p>Processes of Science: Develop and implement strategies for long-term, accurate data collection</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils

		<p>and Geologic Time</p> <ul style="list-style-type: none"> • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.6.7.	<p>Characteristics of Science: Distinguish between scientific fact and opinion</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Teacher Resource CD: Fossils and Geologic Time
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.6.8.	<p>Characteristics of Science: Explain the role of prediction in the development of a theory</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.6.9.	<p>Characteristics of Science: Define and give examples of laws and theories</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea
STRAND/CONTENT STANDARD	AR.5.	<p>Physical Science: Matter: Properties and Changes: Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology</p>
STANDARD/STUDENT LEARNING EXPECTATION	PS.5.6.1.	<p>Properties of Matter: Identify common examples of chemical properties: ability to burn, ability to produce light, ability to react with other substances</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Teacher Resource CD: Rocks, Minerals, and Earth Processes

		<ul style="list-style-type: none"> Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	PS.5.6.2.	<p>Properties of Matter: Compare and contrast characteristics of physical and chemical properties</p> <ul style="list-style-type: none"> Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig Teacher Resource CD: Rocks, Minerals, and Earth Processes Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	PS.5.6.3.	<p>Properties of Matter: Conduct investigations using acid/base indicators</p> <ul style="list-style-type: none"> Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STANDARD/STUDENT	PS.5.6.4.	Properties of Matter: Apply skills of scientific investigation

LEARNING EXPECTATION		<p>to determine density using SI units</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity
STANDARD/STUDENT LEARNING EXPECTATION	PS.5.6.5.	<p>Properties of Matter: Construct a density column using a minimum of four different liquids (e.g., alcohol, colored water, syrup, oil)</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity
STANDARD/STUDENT LEARNING EXPECTATION	PS.5.6.6.	<p>Properties of Matter: Use a density column to test the density of various solid objects (e.g., piece of candy, cork, candle, paper clip, egg)</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity
STANDARD/STUDENT LEARNING EXPECTATION	PS.5.6.7.	<p>Properties of Matter: Identify characteristics of chemical changes: burning, production of a new substance, production of light, color change, endothermic and exothermic reactions, reactivity</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STANDARD/STUDENT LEARNING EXPECTATION	PS.5.6.8.	<p>Properties of Matter: Conduct investigations comparing and contrasting physical and chemical changes</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STRAND/CONTENT STANDARD	AR.8.	Earth and Space Science: Earth Systems: Students shall demonstrate and apply knowledge of Earth's structure

		and properties using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.6.1.	Structure and Properties: Identify and diagram the layers of the Earth: crust, mantle, inner and outer core <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.6.2.	Structure and Properties: Model the layers of the Earth <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.6.3.	Structure and Properties: Model how convection currents in the mantle affect lithosphere movement <ul style="list-style-type: none"> • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.6.8.	Structure and Properties: Compare and contrast the different land forms caused by Earth's internal forces: mountains, plateaus, trenches, islands <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.6.10.	Structure and Properties: Identify the effects of earthquakes on Earth's surface: tsunamis, floods, changes in natural and man-made structures <ul style="list-style-type: none"> • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.6.11.	Structure and Properties: Investigate and map patterns of earthquake and volcanic activity <ul style="list-style-type: none"> • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.6.12.	Structure and Properties: Locate earthquake belts on Earth: Mediterranean-Trans-Asiatic, Circum-Pacific (Ring of Fire) <ul style="list-style-type: none"> • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.6.13.	Structure and Properties: Analyze how earthquake occurrences are recorded (seismograph) and measured (Richter scale)

		<ul style="list-style-type: none"> Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.6.14.	<p>Structure and Properties: Model the effect of major geological events on land and ocean features: mountain building, ocean trenches, island formation, mid-ocean ridges</p> <ul style="list-style-type: none"> Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering Teacher Resource CD: Rocks, Minerals, and Earth Processes
STRAND/CONTENT STANDARD	AR.9.	Earth and Space Science: Earth's History: Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	ESS.9.6.1.	<p>Earth's History: Research methods of determining geologic time: fossil records, mountain building, rock sequencing</p> <ul style="list-style-type: none"> Teacher Resource CD: Fossils and Geologic Time
STANDARD/STUDENT LEARNING EXPECTATION	ESS.9.6.2.	<p>Earth's History: Model rock layer sequencing based on characteristics of fossils</p> <ul style="list-style-type: none"> Teacher Resource CD: Fossils and Geologic Time
STANDARD/STUDENT LEARNING EXPECTATION	ESS.9.6.3.	<p>Earth's History: Analyze evidence that supports the theory of plate tectonics: matching coastlines, similar rock types, fossil record</p> <ul style="list-style-type: none"> Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea Teacher Resource CD: Rocks, Minerals, and Earth Processes

Arkansas Curriculum Frameworks
Science
Grade 7

STRAND/CONTENT STANDARD	AR.1.	Nature of Science: Characteristics and Processes of Science: Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and
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STANDARD/STUDENT LEARNING EXPECTATION	NS.1.7.1.	<p>Processes of Science: Interpret evidence based on observations</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Virtual Laboratory: Mineral Identification

STANDARD/STUDENT LEARNING EXPECTATION	NS.1.7.2.	<p>Processes of Science: Analyze components of experimental design used to produce empirical evidence: hypothesis, replication, sample size, appropriate use of control, use of standardized variables</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
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		<ul style="list-style-type: none"> • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.7.4.	<p>Processes of Science: Construct and interpret scientific data using histograms, circle graphs, scatter plots, double line graphs, line graphs by approximating line of best fit</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1:

		<p>Geology Dig</p> <ul style="list-style-type: none"> Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.7.5.	<p>Processes of Science: Communicate results and conclusions from scientific inquiry</p> <ul style="list-style-type: none"> Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea Earth Resources: Unit 5 Lab 9 Activity 1:

		<p>Geology Dig</p> <ul style="list-style-type: none"> Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.7.6.	<p>Processes of Science: Develop and implement strategies for long-term, accurate data collection</p> <ul style="list-style-type: none"> Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea Earth Resources: Unit 5 Lab 9 Activity 1:

		<p>Geology Dig</p> <ul style="list-style-type: none"> • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.7.7.	<p>Characteristics of Science: Distinguish between questions that can and cannot be answered by science</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1:

		<p>Geology Dig</p> <ul style="list-style-type: none"> Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.7.8.	<p>Characteristics of Science: Explain the role of testability and modification in the development of a theory</p> <ul style="list-style-type: none"> Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.7.9.	<p>Characteristics of Science: Compare and contrast hypotheses, laws, and theories</p> <ul style="list-style-type: none"> Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea
STRAND/CONTENT STANDARD	AR.5.	<p>Physical Science: Matter: Properties and Changes: Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology</p>
STANDARD/STUDENT LEARNING EXPECTATION	PS.5.7.3.	<p>Properties of Matter: Identify compounds as substances consisting of two or more elements chemically combined</p> <ul style="list-style-type: none"> Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	PS.5.7.4.	<p>Properties of Matter: Compare and contrast properties of compounds to those of the elements that compose them: salt: sodium, chlorine, water: hydrogen, oxygen, carbon dioxide: carbon, oxygen</p> <ul style="list-style-type: none"> Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	PS.5.7.6.	<p>Properties of Matter: Classify substances as elements, compounds, mixtures</p> <ul style="list-style-type: none"> Virtual Laboratory: Mineral Identification
STRAND/CONTENT STANDARD	AR.8.	<p>Earth and Space Science: Earth Systems: Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology</p>
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.7.8.	<p>Structure and Properties: Identify the causes and effects of weather-related phenomena: thunderstorms, tornadoes/hurricanes/cyclones/ typhoons, drought, acid precipitation</p> <ul style="list-style-type: none"> Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks

		<ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.7.14.	<p>Structure and Properties: Describe causes and effects of acid precipitation</p> <ul style="list-style-type: none"> • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STRAND/CONTENT STANDARD	AR.9.	Earth and Space Science: Earth's History: Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	ESS.9.7.4.	<p>Earth's History: Analyze evidence of sea floor spreading: magnetic reversal, molten material, drilling samples</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Teacher Resource CD: Rocks, Minerals, and Earth Processes

Arkansas Curriculum Frameworks

Science

Grade 8

STRAND/CONTENT STANDARD	AR.1.	Nature of Science: Characteristics and Processes of Science: Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.8.1.	<p>Processes of Science: Justify conclusions based on appropriate and unbiased observations</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral

		<ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.8.2.	<p>Processes of Science: Evaluate the merits of empirical evidence based on experimental design: hypothesis, replication, sample size, appropriate use of control, use of standardized independent and dependent variables</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster

		<ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Virtual Laboratory: Mineral Identification
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.8.3.</p>	<p>Processes of Science: Formulate a testable problem using experimental design</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster

		<ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Virtual Laboratory: Mineral Identification
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.8.7.</p>	<p>Processes of Science: Communicate results and conclusions from scientific inquiry following peer review</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster

		<ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Virtual Laboratory: Mineral Identification
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.8.8.</p>	<p>Processes of Science: Develop and implement strategies for long-term, accurate data collection</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster

		<ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.8.9.	<p>Characteristics of Science: Generate questions that can and cannot be answered by science</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster

		<ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.8.10.	<p>Characteristics of Science: Explain the role of peer review, evidence, and modification in the development of a theory</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.8.11.	<p>Characteristics of Science: Evaluate the merit of hypotheses, laws, and theories</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea
STRAND/CONTENT STANDARD	AR.3.	<p>Life Science: Life Cycles, Reproduction, and Heredity: Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology</p>
STANDARD/STUDENT LEARNING EXPECTATION	LS.3.8.10.	<p>Heredity and Reproduction: Distinguish between characteristics of plants and animals through selective breeding</p> <ul style="list-style-type: none"> • Teacher Resource CD: Fossils and Geologic

		Time
STANDARD/STUDENT LEARNING EXPECTATION	LS.3.8.14.	<p>Regulation and Behavior: Explain that the fossil record provides evidence of life forms' appearance, diversification, and extinction</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Teacher Resource CD: Fossils and Geologic Time
STRAND/CONTENT STANDARD	AR.6.	Physical Science: Motion and Forces: Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	PS.6.8.1.	<p>Motion and Forces: Model how motion and forces change Earth's surface: compression, tension, weathering, erosion</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STRAND/CONTENT STANDARD	AR.7.	Physical Science: Energy and Transfer of Energy: Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	PS.7.8.6.	<p>Energy: Explain how energy is transferred through waves: seismic waves, sound waves, water waves, electromagnetic waves</p> <ul style="list-style-type: none"> • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	PS.7.8.8.	<p>Energy: Differentiate among reflection, refraction, and absorption of various types of waves</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 5 Lab 9 Activity 1:

		<p>Geology Dig</p> <ul style="list-style-type: none"> Teacher Resource CD: Rocks, Minerals, and Earth Processes
STRAND/CONTENT STANDARD	AR.8.	Earth and Space Science: Earth Systems: Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.3.	<p>Structure and Properties: Conduct investigations to compare and contrast different landforms found on Earth: mountains, plateaus, plains</p> <ul style="list-style-type: none"> Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.4.	<p>Structure and Properties: Synthesize and model the result of both constructive and destructive forces on land forms: deposition, erosion, weathering, crustal deformation</p> <ul style="list-style-type: none"> Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.5.	<p>Structure and Properties: Compare and contrast the different landforms caused by Earth's external forces: plains, canyons, deltas, valleys, swamps</p> <ul style="list-style-type: none"> Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.8.	<p>Structure and Properties: Demonstrate an understanding of the agents of erosion: gravity, water, ice, wind, animals, including humans</p> <ul style="list-style-type: none"> Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle Earth Resources: Unit 1 Lab 1 Activity 2:

		Creating a Sedimentary Rock
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.9.	<p>Structure and Properties: Using models of rivers, predict changes when variables, such as load, slope, amount of water, or the composition of a stream bed, are changed through erosion or deposition</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.12.	<p>Cycles: Investigate the types of weathering involved in the breakdown of organic and inorganic components of Earth's surface</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.13.	<p>Cycles: Illustrate soil profiles</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.14.	<p>Cycles: Apply knowledge of soil profiles to local soil samples</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.15.	<p>Cycles: Investigate the formation of soil types</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT	ESS.8.8.16.	<p>Cycles: Identify components of soil as inorganic or organic</p>

LEARNING EXPECTATION		<p>through investigations</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.17.	<p>Cycles: Identify the basic nutrients needed by plants that are present in soils: nitrogen, phosphorous, potassium</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.18.	<p>Cycles: Identify ways plants use organic and inorganic components in the soil</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.19.	<p>Cycles: Investigate and analyze the composition of a variety of soils</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.8.8.20.	<p>Cycles: Conduct investigations on soil permeability</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STRAND/CONTENT STANDARD	AR.9.	<p>Earth and Space Science: Earth's History: Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology</p>
STANDARD/STUDENT LEARNING EXPECTATION	ESS.9.8.1.	<p>Earth's History: Explain processes that have changed Earth's surface that have resulted from sudden events (e.g., earthquakes and volcanoes) and gradual changes (e.g., uplift, erosion, and weathering)</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle

		<ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	ESS.9.8.2.	<p>Earth's History: Analyze how rock sequences may be disturbed by the following: erosion, deposition, igneous intrusion, folding, faulting, uplifting</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock
STANDARD/STUDENT LEARNING EXPECTATION	ESS.9.8.3.	<p>Earth's History: Explain how scientists determine the relative ages of fossils found in layers of sedimentary rock: law of superposition, law of cross-cutting</p> <ul style="list-style-type: none"> • Teacher Resource CD: Fossils and Geologic Time
STANDARD/STUDENT LEARNING EXPECTATION	ESS.9.8.4.	<p>Earth's History: Apply geologic laws of superposition and cross-cutting to determine the relative age of rock in a cross section</p> <ul style="list-style-type: none"> • Teacher Resource CD: Fossils and Geologic Time

**Arkansas Curriculum Frameworks
Science
Grade 9**

STRAND/CONTENT STANDARD	AR.2.AP.	Anatomy and Physiology: Cellular Chemistry: Students shall understand the role of chemistry in body processes.
STANDARD/STUDENT LEARNING EXPECTATION	CC.2.AP.3	<p>Distinguish between compounds and mixtures</p> <ul style="list-style-type: none"> • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	CC.2.AP.7	<p>Explain the relationship among acids, bases, and salts</p> <ul style="list-style-type: none"> • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STRAND/CONTENT STANDARD	AR.16.AP.	Anatomy and Physiology: Nature of Science: Students shall demonstrate an understanding that science is a way of knowing.
STANDARD/STUDENT LEARNING EXPECTATION	NS.16.AP.4	Summarize the guidelines of science: explanations are based on observations, evidence, and testing; hypotheses must be testable; understandings and/or conclusions may change

		<p>with additional empirical data; scientific knowledge must have peer review and verification before acceptance</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Virtual Laboratory: Mineral Identification
STRAND/CONTENT	AR.17.AP.	Anatomy and Physiology: Nature of Science: Students shall

STANDARD		design and safely conduct scientific inquiry.
STANDARD/STUDENT LEARNING EXPECTATION	NS.17.AP.2	<p>Research and apply appropriate safety precautions (refer to ADE Guidelines) when designing and/or conducting scientific investigations</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig

STRAND/CONTENT STANDARD	AR.6.B.	Biology: Heredity and Evolution: Students shall examine the development of the theory of biological evolution.
STANDARD/STUDENT LEARNING EXPECTATION	HE.6.B.5	<p>Evaluate evolution in terms of evidence as found in the following: fossil record, DNA analysis, artificial selection, morphology, embryology, viral evolution, geographic distribution of related species, antibiotic and pesticide resistance in various organisms</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Teacher Resource CD: Fossils and Geologic Time
STANDARD/STUDENT LEARNING EXPECTATION	HE.6.B.6	<p>Compare the processes of relative dating and radioactive dating to determine the age of fossils</p> <ul style="list-style-type: none"> • Teacher Resource CD: Fossils and Geologic Time
STRAND/CONTENT STANDARD	AR.10.B.	Biology: Nature of Science: Students shall demonstrate an understanding that science is a way of knowing.
STANDARD/STUDENT LEARNING EXPECTATION	NS.10.B.4	<p>Summarize the guidelines of science: explanations are based on observations, evidence, and testing; hypotheses must be testable; understandings and/or conclusions may change with additional empirical data; scientific knowledge must have peer review and verification before acceptance</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture

		<ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Virtual Laboratory: Mineral Identification
STRAND/CONTENT STANDARD	AR.11.B.	Biology: Nature of Science: Students shall design and safely conduct scientific inquiry.
STANDARD/STUDENT LEARNING EXPECTATION	NS.11.B.2	<p>Research and apply appropriate safety precautions (refer to ADE Guidelines) when designing and/or conducting scientific investigations</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral

		<ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STRAND/CONTENT STANDARD	AR.5.C.	Chemistry: Periodicity: Students shall name and write formulas for binary and ternary compounds.
STANDARD/STUDENT LEARNING EXPECTATION	P.5.C.1	Write formulas for binary and ternary compounds: IUPAC system, Greek prefixes, polyatomic ions <ul style="list-style-type: none"> • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	P.5.C.2	Name binary and ternary compounds <ul style="list-style-type: none"> • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	P.5.C.3	Predict the name and symbol for newly discovered elements using the IUPAC system <ul style="list-style-type: none"> • Virtual Laboratory: Mineral Identification
STRAND/CONTENT STANDARD	AR.6.C.	Chemistry: Periodicity: Students shall explain the changes of matter using physical properties and chemical properties.
STANDARD/STUDENT LEARNING EXPECTATION	P.6.C.2	Distinguish between extensive and intensive physical properties of matter <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2:

		<p>Creating a Sedimentary Rock</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Teacher Resource CD: Rocks, Minerals, and Earth Processes • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	P.6.C.4	<p>Design experiments tracing the energy involved in physical changes and chemical changes</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering
STRAND/CONTENT STANDARD	AR.8.C.	Chemistry: Bonding: Students shall understand the process of ionic bonding.

STANDARD/STUDENT LEARNING EXPECTATION	B.8.C.2	Derive formula units based on the charges of ions <ul style="list-style-type: none"> Virtual Laboratory: Mineral Identification
STRAND/CONTENT STANDARD	AR.14.C.	Chemistry: Stoichiometry: Students shall predict products based upon the type of chemical reaction.
STANDARD/STUDENT LEARNING EXPECTATION	S.14.C.1	Given the products and reactants predict products for the following types of reactions: synthesis, decomposition, single displacement, double displacement, combustion <ul style="list-style-type: none"> Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STRAND/CONTENT STANDARD	AR.19.C.	Chemistry: Acids and Bases: Students shall understand the historical development of the acid/base theories.
STANDARD/STUDENT LEARNING EXPECTATION	AB.19.C.1	Compare and contrast the following acid/base theories: Arrhenius Theory, Bronsted-Lowry Theory, Lewis Theory <ul style="list-style-type: none"> Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STRAND/CONTENT STANDARD	AR.20.C.	Chemistry: Acids and Bases: Students shall demonstrate proficiency in acid, base, and salt nomenclature.
STANDARD/STUDENT LEARNING EXPECTATION	AB.20.C.1	Name and write formulas for acids, bases and salts: binary acids, ternary acids, ionic compounds <ul style="list-style-type: none"> Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STRAND/CONTENT STANDARD	AR.21.C.	Chemistry: Acids and Bases: Students shall apply rules of nomenclature to acids, bases, and salts.
STANDARD/STUDENT LEARNING EXPECTATION	AB.21.C.1	Compare and contrast acid and base properties <ul style="list-style-type: none"> Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STANDARD/STUDENT LEARNING EXPECTATION	AB.21.C.2	Describe the role that dissociation plays in the determination of strong and weak acids or bases <ul style="list-style-type: none"> Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STRAND/CONTENT STANDARD	AR.22.C.	Chemistry: Acids and Bases: Students shall demonstrate an understanding of titration as a laboratory tool.

STANDARD/STUDENT LEARNING EXPECTATION	AB.22.C.2	<p>Use indicators in neutralization reactions</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STRAND/CONTENT STANDARD	AR.33.C.	Chemistry: Nature of Science: Students shall design and safely conduct scientific inquiry.
STANDARD/STUDENT LEARNING EXPECTATION	NS.33.C.2	<p>Research and apply appropriate safety precautions (refer to Arkansas Safety Lab Guide) when designing and/or conducting scientific investigations</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts

		<ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STRAND/CONTENT STANDARD	AR.1.ES.	Environmental Science: Physical Dynamics: Students shall understand the physical dynamics of Earth
STANDARD/STUDENT LEARNING EXPECTATION	PD.1.ES.1	<p>Describe the structure, origin, and evolution of the Earth's components: atmosphere, biosphere, hydrosphere, lithosphere</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	PD.1.ES.2	<p>Relate eras, epochs, and periods of Earth's history to geological development</p> <ul style="list-style-type: none"> • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Teacher Resource CD: Fossils and Geologic Time
STANDARD/STUDENT LEARNING EXPECTATION	PD.1.ES.3	<p>Determine the relative and absolute ages of rock layers</p> <ul style="list-style-type: none"> • Teacher Resource CD: Fossils and Geologic Time
STANDARD/STUDENT LEARNING EXPECTATION	PD.1.ES.4	<p>Categorize the type and composition of various minerals</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral

		<ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Teacher Resource CD: Rocks, Minerals, and Earth Processes • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	PD.1.ES.5	<p>Explain the processes of the rock cycle</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	PD.1.ES.6	<p>Describe the processes of degradation by weathering and erosion</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	PD.1.ES.7	<p>Describe tectonic forces relating to internal energy production and convection currents</p> <ul style="list-style-type: none"> • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	PD.1.ES.8	<p>Describe the relationships of degradation (a general lowering of the earth's surface by erosion or weathering) and tectonic forces: volcanoes, earthquakes</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2:

		<p>Creating a Sedimentary Rock</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STANDARD/STUDENT LEARNING EXPECTATION	PD.1.ES.13	<p>Investigate the evolution of the ocean floor</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Teacher Resource CD: Rocks, Minerals, and Earth Processes
STRAND/CONTENT STANDARD	AR.3.ES.	<p>Environmental Science: Social Perspectives: Students shall understand the impact of human activities on the environment.</p>
STANDARD/STUDENT LEARNING EXPECTATION	SP.3.ES.1	<p>Explain the reciprocal relationships between Earth's processes (natural disasters) and human activities</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea
STRAND/CONTENT STANDARD	AR.1.PS.	<p>Physical Science: Chemistry: Students shall demonstrate an understanding of matter's composition and structure.</p>
STANDARD/STUDENT LEARNING EXPECTATION	C.1.PS.1	<p>Compare and contrast chemical and physical properties of matter, including but not limited to flammability, reactivity, density, buoyancy, viscosity, melting point and boiling point</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral

		<ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig • Teacher Resource CD: Rocks, Minerals, and Earth Processes • Virtual Laboratory: Mineral Identification
STANDARD/STUDENT LEARNING EXPECTATION	C.1.PS.2	<p>Compare and contrast chemical and physical changes, including but not limited to rusting, burning, evaporation, boiling and dehydration</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STANDARD/STUDENT LEARNING EXPECTATION	C.1.PS.12	<p>Name ionic and covalent compounds</p> <ul style="list-style-type: none"> • Virtual Laboratory: Mineral Identification
STRAND/CONTENT STANDARD	AR.3.PS.	Physical Science: Chemistry: Students shall compare and contrast chemical reactions.
STANDARD/STUDENT LEARNING EXPECTATION	C.3.PS.1	<p>Identify and write balanced chemical equations: decomposition reaction, synthesis reaction, single displacement reaction, double displacement reaction, combustion reaction</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 4 Lab 6 Activity 1:

		<p>Mechanical Weathering</p> <ul style="list-style-type: none"> • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STANDARD/STUDENT LEARNING EXPECTATION	C.3.PS.2	<p>Predict the product(s) of a chemical reaction when given the reactants using chemical symbols and words</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STANDARD/STUDENT LEARNING EXPECTATION	C.3.PS.5	<p>Compare and contrast the properties of reactants and products of a chemical reaction</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STANDARD/STUDENT LEARNING EXPECTATION	C.3.PS.8	<p>Identify the observable evidence of a chemical reaction: formation of a precipitate, production of a gas, color change, changes in heat and light</p> <ul style="list-style-type: none"> • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STRAND/CONTENT STANDARD	AR.10.PS.	Physical Science: Nature of Science: Students shall design and safely conduct a scientific inquiry to solve valid problems.
STANDARD/STUDENT	NS.10.PS.2	Research and apply appropriate safety precautions (refer to

LEARNING EXPECTATION		<p>ADE Guidelines) when designing and/or conducting scientific investigations</p> <ul style="list-style-type: none"> • Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle • Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock • Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers • Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization • Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks • Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks • Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks • Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color • Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster • Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral • Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture • Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity • Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals • Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals • Earth Resources: Unit 2 Lab 4 Activity 3: Using the Flame Test to Identify Unknown Mineral Samples • Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time • Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification • Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts • Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering • Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering • Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure • Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons • Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea • Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
STRAND/CONTENT STANDARD	AR.2.P.	Physics: Motion and Forces: Students shall understand two-dimensional motion.

STANDARD/STUDENT LEARNING EXPECTATION	MF.2.P.5	Solve two-dimensional problems using the Pythagorean Theorem or the quadratic formula <ul style="list-style-type: none"> Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity
STRAND/CONTENT STANDARD	AR.10.P.	Physics: Waves and Optics: Students shall compare and contrast the law of reflection and the law of refraction.
STANDARD/STUDENT LEARNING EXPECTATION	WO.10.P.7	Calculate the index of refraction through various media using the following equation: $n=c/v$ (Where n =index of refraction; c =speed of light in vacuum; v =speed of light in medium) <ul style="list-style-type: none"> Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig Teacher Resource CD: Rocks, Minerals, and Earth Processes
STRAND/CONTENT STANDARD	AR.17.P.	Physics: Nature of Science: Students shall safely design and conduct a scientific inquiry to solve valid problems.
STANDARD/STUDENT LEARNING EXPECTATION	NS.17.P.2	Research and apply appropriate safety precautions (ADE Guidelines) when designing and/or conducting scientific investigations <ul style="list-style-type: none"> Earth Resources: Unit 1 Lab 1 Activity 1: The Rock Cycle Earth Resources: Unit 1 Lab 1 Activity 2: Creating a Sedimentary Rock Earth Resources: Unit 1 Lab 1 Activity 3: Effects of Heat and Pressure on Rock Layers Earth Resources: Unit 1 Lab 1 Activity 4: Crystallization Earth Resources: Unit 1 Lab 2 Activity 1: Igneous Rocks Earth Resources: Unit 1 Lab 2 Activity 2: Sedimentary Rocks Earth Resources: Unit 1 Lab 2 Activity 3: Metamorphic Rocks Earth Resources: Unit 2 Lab 3 Activity 1: Identifying Mineral Color Earth Resources: Unit 2 Lab 3 Activity 2: Mineral Luster Earth Resources: Unit 2 Lab 3 Activity 3: The Streak of a Mineral Earth Resources: Unit 2 Lab 3 Activity 4: Testing the Hardness of a Mineral Earth Resources: Unit 2 Lab 3 Activity 5: Cleavage and Fracture Earth Resources: Unit 2 Lab 3 Activity 6: Specific Gravity Earth Resources: Unit 2 Lab 4 Activity 1: Idiochromatic and Allochromatic Minerals Earth Resources: Unit 2 Lab 4 Activity 2: Chemical Analysis of Minerals Earth Resources: Unit 2 Lab 4 Activity 3: Using

		<p>the Flame Test to Identify Unknown Mineral Samples</p> <ul style="list-style-type: none">• Earth Resources: Unit 3 Lab 5 Activity 1: Fossils and Geologic Time• Earth Resources: Unit 3 Lab 5 Activity 2: Fossil Sorting and Identification• Earth Resources: Unit 3 Lab 5 Activity 3: Fossil Formation - Preparing Molds and Casts• Earth Resources: Unit 4 Lab 6 Activity 1: Mechanical Weathering• Earth Resources: Unit 4 Lab 6 Activity 2: Chemical Weathering• Earth Resources: Unit 4 Lab 7 Activity 1: Soil Structure• Earth Resources: Unit 4 Lab 7 Activity 2: Soil Horizons• Earth Resources: Unit 4 Lab 8 Activity 1: Recreating Pangaea• Earth Resources: Unit 5 Lab 9 Activity 1: Geology Dig
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