

CURRICULUM MAP

Subject: Science	2009	Grade Level: 6th
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Portales Municipal Schools

ESSENTIAL QUESTIONS: What are the effects of the movements of Earth and the Moon?

STRAND Strand II: Content of Science	BENCHMARK 5-8 Benchmark I: Describe how the concepts of energy, matter, and force can be used to explain the observed behavior of the solar system, the universe, and their structures.
Standard III (Earth and Space Science): Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.	

1 st 9 weeks	PERFORMANCE STANDARD	CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted I = Introduce R= Review AND Extend M = Master	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
	<p>Solar System</p> <p>3. Identify the components of the solar system, and describe their defining characteristics and motions in space, including:</p> <ul style="list-style-type: none"> • sun as a medium sized star • sun's composition (i.e., hydrogen, helium) and energy production • nine planets, their moons, asteroids. <p>4. Know that the regular and predictable motions of the Earth-moon-sun system explain phenomena on Earth, including: Earth's motion in relation to a year, a day, the seasons, the phases of the moon, eclipses, tides, and shadows moon's orbit around Earth once in 28 days in relation to the phases of the moon.</p> <p>*See page 12 for Scientific method standards, technology, mathematical tools, and careers in science</p>	<p>Utilize strategies to determine meaning and increase vocabulary for reading.</p> <p>Explain how the Sun provides Earth with heat and light to sustain life.</p> <p>Explain how the regular motions of the Moon cause Moon phases.</p> <p>Demonstrate how Earth's tilt on its axis and its rotation cause changes on Earth, how Earth's orbit causes seasons.</p> <p>Describe the causes and effects of solar and lunar eclipses. Demonstrate the phases of the moon.</p>	<p>Construct a vocabulary booklet to develop definitions, illustrations, and write a concrete detail using the vocabulary word in the sentence.</p> <p>Complete a vocabulary preview, Lesson 1 and Lesson 2 review to emphasize main ideas of each section.</p> <p>Use manipulatives to demonstrate the 8 phases of the moon.</p>	<p>Vocabulary booklet/rubric</p> <p>Worksheet page 172, 184a, and 185a.</p> <p>Model and Lab Sheet</p> <p>Chapter 19 Assessment</p>	<p>Graphic Organizer Transparency 3</p> <p>Overhead projector, flashlights, softball, ping-pong ball</p> <p>Workbook http://rubistar4teachers.org</p> <p>Discovery Video clip www.pearsonsuccessnet.com</p> <p>Moon phase calendar http://www.sciencenetlinks.com/tools.cfm?DocID=39&Grade=3-5</p>

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ESSENTIAL QUESTIONS: What is Earth's place in the universe?					
	STRAND Strand II: Content of Science	BENCHMARK 5-8 Benchmark III: Describe and explain forces that produce motion in objects. 5-8 Benchmark I: Describe how the concepts of energy, matter, and force can be used to explain the observed behavior of the solar system, the universe, and their structures.			
Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.					
Standard III (Earth and Space Science): Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.					
1 st 9 weeks	PERFORMANCE STANDARD	CONCEPTS/SKILLS I = Introduce R = Review AND Extend M = Master	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
	<p>Universe 1. Describe the objects in the universe, including:</p> <ul style="list-style-type: none"> • billions of galaxies, each containing billions of stars • different sizes, temperatures, and colors of stars in the Milky Way galaxy. <p>Solar System 2. Locate the solar system in the Milky Way galaxy.</p> <p>a. Know that every object exerts gravitational force on every other object dependent on the masses and distance of separation (e.g., motions of celestial objects, tides). Know that gravitational force is hard to detect unless one of the objects (e.g., Earth) has a lot of mass.</p> <p>*See page 12 for Scientific method standards, technology, mathematical tools, and careers in science</p>	<p>Utilize simple strategies to determine meaning and increase vocabulary for reading through scaffolded questions.</p> <p>Draw conclusions from a science article to enhance reading strategies and the scientific method.</p> <p>Compare and contrast the universe, galaxies and planets.</p> <p>Compare and contrast the different types of stars including their size, masses, temperatures, colors, and life cycles.</p> <p>Explain and describe the constellations.</p> <p>Design/construct a celestial body in space (planet, comet, asteroid, moon)</p>	<p>Complete graphic organizer using facts from the science article.</p> <p>Complete Venn Diagram to compare and contrast the universe, galaxies, and planets.</p> <p>Complete a Venn Diagram to compare and contrast the type of stars.</p> <p>Discuss the constellations and their positions in the sky.</p> <p>Complete a vocabulary preview, Lesson reviews to emphasize main ideas of each section.</p> <p>Make a model</p> <p>Use a variety of resources/text to research, compare and contrast, and categorize their celestial body. Construct two Shaffer paragraphs explaining their model using concrete details.</p>	<p>Drawing Conclusion graphic organizer</p> <p>Venn Diagram</p> <p>Venn Diagram</p> <p>Lesson Checkpoint Worksheet questions</p> <p>Model/rubric</p> <p>Shaffer paragraph/rubric</p> <p>Ch. 20 Assessment</p>	<p>Graphic Organizer http://www.graphic.org/links.html</p> <p>Workbook</p> <p>Rubrics</p> <p>Nine planet research information www.nineplanets.org www.space.com/planets/ http://pds.jpl.nasa.gov/planets/</p> <p>Moon research information http://nssdc.gsfc.nasa.gov/imgcat http://starchild.gsfc.nasa.gov</p> <p>Star research information http://antwrp.gsfc.nasa.gov/apod/lib/aptree.html</p>

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Subject: Science	2009	Grade Level: 6th
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ESSENTIAL QUESTIONS: How can robots help us now and in the future?					
Strand: Science and Society				5-8 Benchmark I: Explain how scientific discoveries and inventions have changed individuals and societies.	
STANDARD I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.					
1 st 9 weeks	PERFORMANCE STANDARD	CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted I = Introduce R= Review AND Extend M = Master	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
	1. Examine the role of scientific knowledge in decisions (e.g., space exploration, what to eat, preventive medicine and medical treatment). 2. Describe the technologies responsible for revolutionizing information processing and communications (e.g., computers, cellular phones, Internet).	Explain how robots speed up or extend people’s ability to accomplish tasks, the relationship between robots and technologies, and how robots enable people to access information from places humans are unable to go.	Research a robot that is currently being used in space. Identify various robots and their benefits.	Research presentation Checkpoint questions Workbook pages Ch. 21 Assessment	Current robots in space www.learnaboutrobots.com/space.htm Science articles about robots www.sciencedaily.com/releases/2004/11/041130081240.htm workbook

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ESSENTIAL QUESTIONS: How does the theory of plate tectonics explain Earth's landforms?

Strand II: Content of Science	<p>5-8 Benchmark II: Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth's systems.</p> <p>5-8 Benchmark II: Explain the physical processes involved in the transfer, change, and conservation of energy.</p>
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Standard III (Earth and Space Science): Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.

Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.

1 st 9 weeks	PERFORMANCE STANDARD	CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted I = Introduce R= Review AND Extend M = Master	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
	<p>Structure of Earth</p> <ol style="list-style-type: none"> Know that Earth is composed of layers that include a crust, mantle, and core. Know that Earth's crust is divided into plates that move very slowly, in response to movements in the mantle. <p>Changes to Earth</p> <ol style="list-style-type: none"> Know that landforms are created and change through a combination of constructive and destructive forces, including: <ul style="list-style-type: none"> weathering of rock and soil, transportation, deposition of sediment, and tectonic activity similarities and differences between current and past processes on Earth's surface (e.g., erosion, plate tectonics, changes in atmospheric composition) impact of volcanoes and faults on New Mexico geology. Understand that heat energy can be transferred through conduction, radiation and convection. <p><small>*See page 12 for Scientific method standards, technology, mathematical tools, and careers in science</small></p>	<p>Model seismic waves.</p> <p>Utilize facts from a science article to draw conclusions.</p> <p>Use strategies to determine meaning and increase vocabulary for reading and comprehension.</p> <p>Explain the composition of Earth's layers. Describe the plates that make up the lithosphere.</p> <p>Evaluate the evidence of seafloor spreading, convection currents, and continental drift.</p> <p>Illustrate the types of plate boundaries.</p> <p>Compare the relationship between an earthquake's epicenter and its focus.</p> <p>Determine the factors that are caused by plate movement.</p> <p>Predict the causes and effects of earthquake and volcanic occurrences.</p> <p>Create and observe convection current and analyze the differences and movements of the current.</p>	<p>Construct a vocabulary booklet where the students will develop their own definitions, illustrations, and write a concrete detail using the vocabulary word in the sentence.</p> <p>Complete graphic organizer to draw conclusion using a science article.</p> <p>Design a diagram of the layer's of Earth.</p> <p>Complete lesson review activities to emphasize main ideas.</p> <p>Draw a diagram of the plate boundaries and explain the causes of effects of their movements.</p> <p>Use a T-chart to compare and contrast an earthquakes epicenter and focus.</p> <p>Make a model of earth's layers to explore, evaluate, and explain the movement of waves through the layers.</p> <p>Create a model of a volcano and compare and contrast the similarities and differences between the explosion and lava composition of a real volcano.</p> <p>Formulate a convection current model, make predictions, and record and analyze results.</p>	<p>Vocabulary booklet/rubric</p> <p>Venn Diagram</p> <p>Diagram Rubric</p> <p>Review Lesson Checkpoint question</p> <p>Diagram Rubric</p> <p>T-Chart</p> <p>Lab Rubrics Activity workbook pages</p> <p>Lab Rubrics Activity workbook pages</p> <p>Lab Rubrics Activity workbook pages</p> <p>Ch. 8 Assessment</p> <p>Leveled Readers</p>	<p>Teacher resource manual</p> <p>Natural Disasters www.nationalgeographic.com/forcesofnature/interactive/index.html</p> <p>Volcanoes and earthquakes http://online.wr.usgs.gov/kiosk/vlef.html</p> <p>Lab rubrics http://www.teach-nology.com/web_tools/rubrics/lab_report/</p> <p>Graphic organizer http://www.edhelper.com/teachers/General_graphic_organizers.htm</p> <p>Discovery Video Clip on Plate boundaries www.pearsonsuccessnet.com</p> <p>Animations and step-by-step text explanations of key concepts relating to earthquakes. http://www.sciencenetlinks.com/tools.cfm?DoCID=58&Grade=6-8</p>

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ESSENTIAL QUESTIONS: What are rocks and minerals?					
Strand II: Content of Science		5-8 Benchmark II: Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth's systems. 5-8 Benchmark I: Know the forms and properties of matter and how matter interacts. 5-8 Benchmark III: Understand the structure of organisms and the function of cells in living systems.			
Standard III (Earth and Space Science): Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems. Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy. Standard II (Life Science): Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.					
2nd 9 weeks	PERFORMANCE STANDARD	CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted I = Introduce R= Review AND Extend M = Master	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
	4. Know that sedimentary, igneous, and metamorphic rocks contain evidence of the materials, temperatures, and forces that created them. Changes to Earth 8. Understand the history of Earth and how information about it comes from layers of sedimentary rock, including: <ul style="list-style-type: none"> • sediments and fossils as a record of a very slowly changing world evidence of asteroid impact, volcanic and glacial activity. 3. Use properties to identify substances (e.g., for minerals: the hardness, streak, color, reactivity to acid, cleavage, fracture). 2. Describe the differences between substances that were produced by living organisms (e.g., fossil fuels) and substances that result from nonliving processes (e.g., igneous rocks). *See page 12 for Scientific method standards, technology, mathematical tools, and careers in science	<p style="color: green;">Compare crystal structures of two substances.</p> <p style="color: green;">Compare and Contrast two items from a Science article.</p> <p style="color: green;">Test the characteristics/properties of minerals.</p> <p style="color: green;">Identify the types of rocks and how they differ.</p> <p style="color: green;">Describe the process of the rock cycle and the characteristics of the rocks involved.</p> <p style="color: green;">Explain how rocks and fossils are used to determine the age and geologic history of Earth.</p> <p style="color: green;">Explain rock breakdown to form soil.</p> <p style="color: green;">Recall the different factors that affect soil and that there are different types of soil.</p>	<p>Construct a vocabulary booklet to develop definitions, illustrations, and write a concrete detail using the vocabulary word in the sentence.</p> <p>Utilize a Venn diagram to compare and contrast gold and pyrite.</p> <p>Conduct an experiment to test the properties of different minerals.</p> <p>Manipulate different types of rocks to determine their classification.</p> <p>Complete lesson review activities to emphasize main ideas.</p> <p>Watch Discovery video clips to evaluate the change over time.</p> <p>Restate information learned from level readers.</p>	Vocabulary booklet/rubric Venn Diagram Lab/Activity Worksheet Lesson review worksheets Leveled Readers comprehension questions Ch. 9 Review Ch. 9 Assessment	<p>Discovery video clips www.pearsonsuccessnet.com</p> <p>Student Workbook</p> <p>Activity Workbook</p> <p>Participation rubric http://rubistar4teachers.org</p> <p>Graphic organizer transparencies</p>

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ESSENTIAL QUESTIONS: What processes change Earth's landforms?					
Strand II: Content of Science	5-8 Benchmark II: Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth's systems. 5-8 Benchmark I: Explain the diverse structures and functions of living things and the complex relationships between living things and their environments. 5-8 Benchmark II: Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth's systems.				
Standard III (Earth and Space Science): Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems. Standard II (Life Science): Understand the properties, structures, and processes of living things and the interdependence of living things and their environments. Standard III (Earth and Space Science): Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.					
2 nd 9 Weeks	PERFORMANCE STANDARD	CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted I = Introduce R= Review AND Extend M = Master	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
	Changes to Earth 5. Know that landforms are created and change through a combination of constructive and destructive forces, including: <ul style="list-style-type: none"> • weathering of rock and soil, transportation, deposition of sediment, and tectonic activity • similarities and differences between current and past processes on Earth's surface (e.g., erosion, plate tectonics, changes in atmospheric composition) • impact of volcanoes and faults on New Mexico geology. 2. Describe how weather and geologic events (e.g., volcanoes, earthquakes) affect the function of living systems. Changes to Earth Know that landforms are created and change through a combination of constructive and destructive forces, including: <ul style="list-style-type: none"> • weathering of rock and soil, transportation, deposition of sediment, and tectonic activity • similarities and differences between current and past processes on Earth's surface (e.g., erosion, plate tectonics, changes in atmospheric composition) • impact of volcanoes and faults on New Mexico geology. *See page 12 for Scientific method standards, technology, mathematical tools, and careers in science	Draw conclusions using facts from a science article and previous knowledge. Compare and contrast the gradual and rapid processes that change Earth. Evaluate how weathering and erosion change Earth's features. Describe how water changes Earth's features. Explain how river systems change and how flooding can move sediments to places that generally do not receive sediments. Create a model of a stalactite formation to observe change.	Construct vocabulary cards to develop definitions, illustrations, and write a concrete detail using the vocabulary word in the sentence. Create a concept web to organize ideas about processes that reshape Earth. Analyze a Science article to draw conclusions on water erosion. Complete lesson review activities to emphasize main ideas. Conduct an experiment and observe and document changes in the stalactite.	Vocabulary cards Graphic Organizer Web Analysis of article Lesson Review worksheets Checkpoint Questions Lab/activity worksheet/ rubric Leveled Reader Comprehension questions Chapter review Ch.10 assessments	Student workbook Transparencies 32, 33, 34 Assessment book Carlsbad Caverns http://www.nps.gov/cave/photosmultimedia/index.htm Stalactites and Stalagmite differences http://science.howstuffworks.com/stalactite-stalagmite.htm

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ESSENTIAL QUESTIONS: How do factors in Earth's atmosphere produce weather?

Strand II: Content of Science	5-8 Benchmark II: Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth's systems.
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Standard III (Earth and Space Science): Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.

3 rd 9 Weeks	PERFORMANCE STANDARD	CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted I = Introduce R= Review AND Extend M = Master	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
	<p>Weather and Climate</p> <p>7. Describe the composition (i.e., nitrogen, oxygen, water vapor) and strata of Earth's atmosphere, and differences between the atmosphere of Earth and those of other planets.</p> <p>8. Understand factors that create and influence weather and climate, including:</p> <ul style="list-style-type: none"> • heat, air movement, pressure, humidity, oceans • how clouds form by condensation of water vapor • how weather patterns are related to atmospheric pressure • global patterns of atmospheric movement (e.g., El Niño) • factors that can impact Earth's climate (e.g., volcanic eruptions, impacts of asteroids, glaciers). <p>9. Understand how to use weather maps and data (e.g., barometric pressure, wind speeds, humidity) to predict weather.</p> <p> *See page 12 for Scientific method standards, technology, mathematical tools, and careers in science</p>	<p>Utilize simple strategies to determine meaning and increase vocabulary for reading.</p> <p>Recognize that air occupies space and exerts pressure.</p> <p>Identify causes and effects in a newspaper article.</p> <p>Identify the main gases in air and describe their origin in the atmosphere.</p> <p>Compare similarities and the relationship between temperature and air pressure.</p> <p>Explain the causes of global and local winds.</p> <p>Describe how clouds form.</p> <p>Explain how different kinds of precipitation form.</p> <p>Determine how air masses and fronts interact to cause weather.</p> <p>Classify the causes and characteristics of different types of severe weather.</p> <p>Manipulate tools scientists use to make weather predictions.</p> <p>Describe the factors that determine climate.</p> <p>Design an experiment to show the presence of air.</p>	<p>Examine a science article and identify causes and effects on wind.</p> <p>Label a graphic organizer/web on vocabulary words listing characteristics, student definitions, examples, and non-examples.</p> <p>Complete a graphic organizer to identify causes and effects in a newspaper article.</p> <p>Utilize a Venn Diagram to compare and contrast temperature and air pressure.</p> <p>Demonstrate lesson knowledge through lesson reviews.</p> <p>Conduct a lab to analyze weather conditions and make weather predictions.</p>	<p>Vocabulary booklet/rubric</p> <p>Graphic organizer/web</p> <p>Cause and Effect organizer</p> <p>Venn Diagram</p> <p>Checkpoint Questions Lesson Review worksheets</p> <p>Lab/activity worksheet/rubric</p> <p>Leveled Reader Comprehension questions</p> <p>Chapter review</p> <p>Ch.12 assessments</p>	<p>Student workbook</p> <p>Transparencies 38, 39, 40</p> <p>Assessment book</p> <p>Lab Rubrics http://rubistar4teachers.org</p> <p>Global warming video clips, weather clips, etc. http://climate.weather.com/video/index.html?collection=247</p> <p>Current weather conditions http://www.weather.com/services/</p> <p>Student friendly website on weather and all components. http://www.weatherwizkids.com/wxstruments.htm</p>

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ESSENTIAL QUESTIONS: How do energy, organisms, and the environment interact in an ecosystem?

Strand II: Content of Science	<p>5-8 Benchmark I: Explain the diverse structures and functions of living things and the complex relationships between living things and their environments.</p> <p>5-8 Benchmark II: Explain the physical processes involved in the transfer, change, and conservation of energy.</p>
<p>Standard II (Life Science): Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.</p> <p>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</p>	

3 rd 9 weeks	PERFORMANCE STANDARD	CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted I = Introduce R= Review AND Extend M = Master	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
	<p>1. Understand how organisms interact with their physical environments to meet their needs (i.e., food, water, air) and how the water cycle is essential to most living systems.</p> <p>2. Describe how weather and geologic events (e.g., volcanoes, earthquakes) affect the function of living systems.</p> <p>3. Describe how organisms have adapted to various environmental conditions.</p> <p>3. Know that there are many forms of energy transfer but that the total amount of energy is conserved (i.e., that energy is neither created nor destroyed).</p> <p>4. Understand that some energy travels as waves (e.g., seismic, light, sound), including:</p> <ul style="list-style-type: none"> • the sun as source of energy for many processes on Earth <p>*See page 12 for Scientific method standards, technology, mathematical tools, and careers in science</p>	<p>Explain how organisms develop a unique set of adaptations that help them survive in their environments.</p> <p>Analyze and describe how energy is transferred through an ecosystem.</p> <p>Describe how organisms with similar needs compete with one another for resources.</p> <p>Know how nitrogen, carbon, and water cycles through ecosystems.</p> <p>Examine how ecosystems undergo natural changes over time.</p> <p>Analyze ecological consequences of human interaction.</p>	<p>Design a flow chart to show how energy travels through ecosystems.</p> <p>List causes and effects of environmental conditions on ecosystems.</p> <p>Draw and illustrate the nitrogen, carbon, and water cycles through ecosystems.</p> <p>Complete a Venn Diagram to compare the different cycles in an ecosystem.</p> <p>Discuss and list in small groups how ecosystems and organisms change over time.</p> <p>Complete lesson review to emphasize main ideas and key concepts.</p>	<p>Flow Chart</p> <p>Graphic organizer-cause and effect</p> <p>Illustration/Rubric</p> <p>Venn Diagram</p> <p>Lesson Review Worksheets</p> <p>Ch. 6 and 7 Assessment</p>	<p>Student workbook</p> <p>Adaptation and biome video clips www.pearsonsuccessnet.com</p> <p>Watch live footage of animals http://www.sandiegozoo.org/zoo/index.html</p> <p>Assessment book</p> <p>Textbook</p>

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ESSENTIAL QUESTIONS: How can energy change from one form to another?					
Strand II: Content of Science			5-8 Benchmark II: Explain the physical processes involved in the transfer, change, and conservation of energy.		
Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.					
4 th 9 Weeks	PERFORMANCE STANDARD	CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted I = Introduce R= Review AND Extend M = Master	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
	<ol style="list-style-type: none"> 1. Identify various types of energy (e.g., heat, light, mechanical, electrical, chemical, nuclear). 2. Understand that heat energy can be transferred through conduction, radiation and convection. 3. Know that there are many forms of energy transfer but that the total amount of energy is conserved (i.e., that energy is neither created nor destroyed). 4. Understand that some energy travels as waves (e.g., seismic, light, sound), including: <ul style="list-style-type: none"> •the sun as source of energy for many processes on Earth •different wavelengths of sunlight (e.g., visible, ultraviolet, infrared) •vibrations of matter (e.g., sound, earthquakes) different speeds through different materials. <p style="font-size: small; margin-top: 10px;">*See page 12 for Scientific method standards, technology, mathematical tools, and careers in science</p>	<p style="color: red; margin: 0;">Identify ways energy changes from one form to another and how it exists in many different forms.</p> <p style="color: red; margin: 5px 0 0 0;">Understand how electricity flows in an electric current.</p> <p style="color: red; margin: 5px 0 0 0;">Describe magnetic fields and magnetic domains.</p> <p style="color: red; margin: 5px 0 0 0;">Compare the relationship between electricity and magnetism in an electromagnet.</p> <p style="color: red; margin: 5px 0 0 0;">Infer that both light and heat are forms of energy.</p> <p style="color: red; margin: 5px 0 0 0;">Compare and contrast the thermal energy, heat, and temperature.</p> <p style="color: red; margin: 5px 0 0 0;">Explain how heat travels through convection, radiation, and conduction.</p> <p style="color: red; margin: 5px 0 0 0;">Know that light can be reflected, refracted, transmitted, and absorbed by matter.</p>	<p>Complete a T-chart to compare electricity and magnetism in an electromagnet.</p> <p>Complete lesson review worksheets to recall main ideas from each section.</p>	<p>T-chart</p> <p>Lesson review worksheets</p> <p>Ch. 17 and 18 assessment</p>	<p>Transparencies 52, 53</p> <p>Workbook</p> <p>Assessment book</p> <p>Different frequencies of the electromagnetic spectrum and applications http://imagers.gsfc.nasa.gov/ems/</p> <p>Internet field trip on conduction, convection, and radiation www.nasa.gov</p>

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ESSENTIAL QUESTIONS: How would I develop an experiment using the Scientific Method?					
Strand I: Scientific Thinking and Practice Strand III: Science and Society		5-8 Benchmark I: Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings. 5-8 Benchmark II: Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge. 5-8 Benchmark III: Use mathematical ideas, tools, and techniques to understand scientific knowledge. 5-8 Benchmark I: Explain how scientific discoveries and inventions have changed individuals and societies.			
Standard I: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.					
Standard I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.					
On going	PERFORMANCE STANDARD	CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
Throughout the Year	1. Construct appropriate graphs from data and develop qualitative and quantitative statements about the relationships between variables being investigated. 2. Examine the reasonableness of data supporting a proposed scientific explanation. Justify predictions and conclusions based on data. 1. Understand that scientific knowledge is continually reviewed, critiqued, and revised as new data become available. 2. Understand that scientific investigations use common processes that include the collection of relevant data and observations, accurate measurements, the identification and control of variables, and logical reasoning to formulate hypotheses and explanations. Understand that not all investigations result in defensible scientific explanations. 1. Evaluate the usefulness and relevance of data to an investigation. 2. Use probabilities, patterns, and relationships to explain data and observations. 1. Examine the role of scientific knowledge in decisions (e.g., space exploration, what to eat, preventive medicine and medical treatment). 2. Describe the technologies responsible for revolutionizing information processing and communications (e.g., computers, cellular phones, Internet).	Formulate a hypothesis, make predictions, compare and contrast, and analyze data collected in backpack lab. Differentiate multiple variables while using the steps of the scientific method. Observe and evaluate 2 sunflower seeds and monitor/graph growth. Develop/design a science fair project. Explore connections between science, technology, society, and career opportunities. Describe the contributions of research scientists to the research to the development of science. Express a given quantity in a variety of ways, such as fractions, decimals, or numbers expressed as percent. (Ch. 9, Ch. 18) Find patterns in real-world situations (Ch. 12, Ch. 18) Explore uses and misuses of statistics in real-world situations such as advertisements and polls (Ch. 11). Interpret and explain displays of data, such as tables and graphs (Ch. 13)	Lab sheet-Use scales to measure backpack weight daily, record data, analyze, and draw conclusions. Lab sheet/report-Grow plants, give different amounts of water, no sunlight, partial sunlight, full sunlight. Journal, student graph Project board, abstract report Design a poster (Ch. 8 and Ch. 6) Make a list of jobs that would require a college education (Ch. 18) Make a map (Ch. 11) Make a drawing (Ch. 20) Make a flow chart that shows the methods of science and how they connect to one another. (Ch.13) Make a map, research a type of tree and its adaptations to this area, and how it would benefit the environment (Ch. 7) Analyze graph and answer questions (Ch. 9, 12, 11, 13, and 18)	Lab sheet Lab sheet/report Journal Project board Abstract report Poster List graphic organizer Map illustration Drawing illustration Flow chart graphic organizer Map, illustration, and paragraph Review questions worksheet	Scales http://www.sciencenetlinks.com/ Cups, seeds, potting soil Petri dishes, sunflower seeds, journal Science fair board, construction paper Science Fair project ideas www.all-science-fair-projects.com/ www.sciencebuddies.org/ www.all-science-fair-projects.com/ http://school.discoveryeducation.com/sciencefaircentral/