

SCIENCE K-12 CAPE MAY COUNTY NEW JERSEY (2010)

OBJECTIVE CODE			UNIT CONTENT & PACING	UNIT ESSENTIAL QUESTIONS	UNIT ENDURING UNDERSTANDING WHAT STUDENTS SHOULD KNOW AND BE ABLE TO DO	DIFFERENTIATED ACTIVITIES Tier 1, 2, 3	BENCHMARK ASSESSMENTS
Grade	Standard	Strand					
3-4	5.1 Science Practices <a href="#">Vocab 5.1</a>	A	<b><i>Understand Scientific Explanations</i></b> Sept-June	How do we build and refine models that describe and explain the natural and designed world?	MEASUREMENT AND OBSERVATION TOOLS ARE USED TO CATEGORIZE, REPRESENT AND INTERPRET THE NATURAL WORLD		
3-4		A.1	<b><i>Understand Scientific Explanations</i></b> Fundamental scientific concepts and principles and the links between them are more useful than discrete facts.	How do we build and refine models that describe and explain the natural and designed world?	Demonstrate understanding of the interrelationships among fundamental concepts in the physical, life, and Earth systems sciences.	Build organized and meaningful understandings of the big picture (conceptual framework) that incorporate these concepts, principles and theories.  Plant and Animal Adaptations <a href="http://www.harlan.k12.nj.us/fourth_grade_science_unit.htm">www.harlan.k12.nj.us/fourth_grade_science_unit.htm</a>	
3-4		A.2	<b><i>Understand Scientific Explanations</i></b> Connections developed between fundamental concepts are used to explain, interpret, build, and refine explanations,	How do we build and refine models that describe and explain the natural and designed world?	Use outcomes of investigations to build and refine questions, models, and explanations.	<ul style="list-style-type: none"> <li>Develop models, from evidence obtained, to explain the relationships between fundamental concepts and principles.</li> </ul> Construct a water cycle model <a href="http://www.ucar.edu/learn/1_1_2_4t.htm">http://www.ucar.edu/learn/1_1_2_4t.htm</a>	

			models, and theories.				
3-4		A.3	<p><b>Understand Scientific Explanations</b></p> <p>Outcomes of investigations are used to build and refine questions, models, and explanations.</p>	How do we build and refine models that describe and explain the natural and designed world?	<p>Use scientific facts, measurements, observations, and patterns in nature to build and critique scientific arguments.</p> <ul style="list-style-type: none"> <li>Keep records that describe observations. Carefully distinguish actual observations from speculation and ideas</li> <li>Recognize that when a science investigation is replicated, very similar results are expected</li> </ul>	<ul style="list-style-type: none"> <li>Use tools to observe, measure, and explain natural phenomena.</li> </ul> <p>Predicting weather by looking at clouds and weather patterns</p> <p>Local Weather (Dan Skeldon)  <a href="http://www.nbc40.net/weather.php">http://www.nbc40.net/weather.php</a>  <a href="http://www.weather.gov">http://www.weather.gov</a></p>	
3-4	5.1 Science Practices	B	<p><b>Generate Scientific Evidence Through Active Investigations</b></p> <p>Sept.-June</p>	What constitutes useful scientific evidence?	EVIDENCE IS USED FOR BUILDING, REFINING AND/OR CRITIQUING SCIENTIFIC EXPLANATIONS		
3-4		B.1	<p><b>Generate Scientific Evidence Through Active Investigations</b></p> <p>Building and</p>	What constitutes useful scientific evidence?	Design and following simple plans using systematic observations to explore questions	<ul style="list-style-type: none"> <li>Ask questions and decide what to measure in order to answer the questions.</li> <li>Look at various objects, make predictions about whether they were magnetic, and then test their predictions. This exploration</li> </ul>	

			refining models and explanations requires generation and evaluation of evidence.		and predictions <ul style="list-style-type: none"> <li>• Raise questions about the world around them and be willing to seek answers through careful observations and experimentation</li> </ul>	is an introductory activity to magnets and magnetism. (See ScienceNetLinks: <a href="http://www.sciencenetlinks.com/lessons.php?BenchmarkID=4&amp;DocID=175">Magnets 1: Magnetic Pick-ups</a> )	
3-4		B.2	<b>Generate Scientific Evidence Through Active Investigations</b> Tools and technology are used to gather, analyze, and communicate results.	What constitutes useful scientific evidence?	Measure, gather, evaluate and share evidence using tools and technologies <ul style="list-style-type: none"> <li>• Develop strategies and skills for information gathering and problem solving, using appropriate tools and technologies</li> </ul>	<ul style="list-style-type: none"> <li>• Use mathematics in the collection, organization and analysis of data.</li> <li>• Use tools of data analysis to organize and represent data.</li> </ul> Local Weather (Dan Skeldon) <a href="http://www.nbc40.net/weather.php">http://www.nbc40.net/weather.php</a> <a href="http://www.weather.gov">http://www.weather.gov</a>	
3-4		B.3	<b>Generate Scientific Evidence Through Active</b>	What constitutes useful scientific	Formulate explanations from evidence	<ul style="list-style-type: none"> <li>• Cite evidence and explain the reasoning for a claim.</li> </ul>	

			<p><b>Investigations</b> Evidence is used to construct and defend arguments</p>	evidence?		<p>Living or Nonliving things Sort <a href="http://www.gk-12.osu.edu/Lessons/3rd%20Grade/LivingNonliving%20Life%20Science%203.pdf">http://www.gk-12.osu.edu/Lessons/3rd%20Grade/LivingNonliving%20Life%20Science%203.pdf</a></p>	
3-4		B.4	<p><b>Generate Scientific Evidence Through Active Investigations</b> Reasoning is used to support scientific conclusions</p>	What constitutes useful scientific evidence?	Communicate and justify explanations with reasonable and logical arguments.	<ul style="list-style-type: none"> <li>Justify claims with connections to other fundamental concepts and principles.</li> <li>Use evidence and data to support both a claim and the reasoning behind a scientific argument.</li> </ul> <p>Students will separate a mixture into individual components.</p> <ul style="list-style-type: none"> <li>-sifting</li> <li>-filtration</li> <li>-evaporation</li> <li>-paper chromatography</li> </ul>	

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3-4	5.1 <b>Science Practices</b>	C	<b>Reflect on Scientific Knowledge</b> Sept.-June	How is scientific knowledge constructed?	SCIENTIFIC KNOWLEDGE BUILDS UPON ITSELF OVER TIME		
<b>3-4</b>		C.1	<b>Reflect on Scientific Knowledge</b> Scientific understanding changes over time as new evidence and updated arguments emerge	How is scientific knowledge constructed?	Monitor and reflect on one's own knowledge regarding how ideas change over time.	<ul style="list-style-type: none"> <li>Monitor and reflect on their ideas as those ideas change over time.</li> </ul> <p>Could Mars Support Life?  <a href="http://www.classzone.com/books/earth_science/terc/content/investigations/esu701/esu701page01.cfm?chapter_no=investigation">http://www.classzone.com/books/earth_science/terc/content/investigations/esu701/esu701page01.cfm?chapter_no=investigation</a></p>	
<b>3-4</b>		C.2	<b>Reflect on Scientific Knowledge</b> Revisions of predictions and explanations occur when new arguments emerge that account more completely for available evidence.	How is scientific knowledge constructed?	Revise predictions or explanations on the basis of learning new information.	<ul style="list-style-type: none"> <li>Recognize that explanations are increasingly valuable as they account for the available evidence more completely.</li> </ul> <p>Could Mars Support Life?  <a href="http://www.classzone.com/books/earth_science/terc/content/investigations/esu701/esu701page01.cfm?chapter_no=investigation">http://www.classzone.com/books/earth_science/terc/content/investigations/esu701/esu701page01.cfm?chapter_no=investigation</a></p>	
<b>3-4</b>		C.3	<b>Reflect on Scientific Knowledge</b> Scientific knowledge is a particular kind of	How is scientific knowledge constructed?	Present evidence to interpret and/or predict cause-and-effect outcomes of investigations.	<ul style="list-style-type: none"> <li>Use evidence to uncover cause-and-effect relationships.</li> </ul>	

			knowledge with its own sources, justifications and uncertainties.			Plant and Animal Adaptations <a href="http://www.harlan.k12.ia.us/fourth_grade_science_unit.htm">www.harlan.k12.ia.us/fourth_grade_science_unit.htm</a>	
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3-4	5.1 <b>Science Practices</b>	D	<b>Participate Productively in Science</b> Sept.-June	How does scientific knowledge benefit, deepen, and broaden from scientists sharing and debating ideas and information with peers?	THE GROWTH OF SCIENTIFIC KNOWLEDGE INVOLVES CRITIQUE AND COMMUNICATION – SOCIAL PRACTICES THAT ARE GOVERNED BY A CORE SET OF VALUES AND NORMS.		
3-4		D.1	<b>Participate Productively in Science</b> Science has unique norms for participation. These include adopting a critical stance, demonstrating a willingness to ask questions and seek help, and developing a sense of trust and skepticism.	How does scientific knowledge benefit, deepen, and broaden from scientists sharing and debating ideas and information with peers?	Actively participate in discussions about student data, questions, and understandings. <ul style="list-style-type: none"> <li>Understand that when solving a problem, it is important to plan and get ideas and assistance from others (peers and teachers)</li> </ul>	Practice productive social interactions with peers in the context of science investigations.  Design an investigation to test the electrical conductivity of different substances. Develop a presentation of the results.	
3-4		D.2	<b>Participate Productively in Science</b> In order to determine which arguments and	How does scientific knowledge benefit, deepen, and broaden	Work collaboratively to pose, refine, and evaluate questions, investigations, models, and theories.	<ul style="list-style-type: none"> <li>Persuade peers of the validity of one’s own ideas and the ideas of others.</li> </ul> <a href="http://teachertech.rice.edu/Participants/louviere/Newton/hotwheels.html">http://teachertech.rice.edu/Participants/louviere/Newton/hotwheels.html</a>	

			<p>explanations are most persuasive, communities of learners work collaboratively to pose, refine, and evaluate questions, investigations, models, and theories (e.g., scientific argumentation and representation).</p>	<p>from scientists sharing and debating ideas and information with peers?</p>			
3-4		D.3	<p><b>Participate Productively in Science</b> Instruments of measurement can be used to safely gather accurate information for making scientific comparisons of objects and events.</p>	<p>How does scientific knowledge benefit, deepen, and broaden from scientists sharing and debating ideas and information with peers?</p>	<p>Demonstrate how to safely use tools, instruments, and supplies.</p> <ul style="list-style-type: none"> <li>Recognize that conducting science activities require an awareness of potential hazards and the need for safety procedures</li> <li>Understand and practice safety procedures for conducting science investigations</li> </ul>	<ul style="list-style-type: none"> <li>Minimize the probability of harm by taking appropriate precautions.</li> </ul> <p>Rocks and Minerals <a href="http://www.teachers.ash.org.au/jmresources/rocks/links.html">http://www.teachers.ash.org.au/jmresources/rocks/links.html</a></p>	
3-4		D.4	<p><b>Participate Productively in Science</b> Organisms are treated humanely, responsibly, and ethically.</p>	<p>How does scientific knowledge benefit, deepen, and broaden from scientists sharing and</p>	<p>Handle and treat organisms humanely, responsibly, and ethically.</p>	<ul style="list-style-type: none"> <li>Become knowledgeable about the care of animals so that both students and the animals stay safe and healthy during all activities.</li> </ul> <p>Life Cycles <a href="http://www.ent.iastate.edu/zoo/lessonplans/lifecycles.html">http://www.ent.iastate.edu/zoo/lessonplans/lifecycles.html</a></p>	

				debating ideas and information with peers?			

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				<i>How do the properties of materials determine their use?</i>		Tier 1, 2, 3	
Grade	Standard	Strand					
3-4	5.2 <b>Physical Science</b> <a href="#">Vocab</a> <a href="#">5.2 A-B</a>	A.1	<b>Properties of Matter</b> Some objects are composed of a single substance; others are composed	How can we separate mixtures and/or solutions into their individual substances?	Identify objects that are composed of a single substance and those that are composed of more than one substance using simple tools found in the classroom.	(1) Students will separate a mixture and/or solution into individual components by -sifting (mixture) -filtration (mixture) -evaporation (solution) -paper chromatography	

			of more than one substance.			(solution)	
3-4		A.2	<b>Properties of Matter</b> Each state of matter has unique properties	What are the properties of solids, liquids, and gasses?	Plan and carry out an investigation to distinguish among solids, liquids, and gasses.	(1) experiments that demonstrate the properties of solids, liquids and gases change <a href="http://www.bbc.co.uk/schools/ks2bitesize/science/materials/">http://www.bbc.co.uk/schools/ks2bitesize/science/materials/</a>	
3-4		A.3	<b>Properties of Matter</b>	How is matter measured?	Determine the weight and volume of common objects using appropriate tools.	(1) Rising Water <a href="http://pals.sri.com/tasks/k-4/Risingwater/">http://pals.sri.com/tasks/k-4/Risingwater/</a>	
3-4	5.2	A.4	<b>Properties of Matter</b>	Which substances are able to conduct electricity?	Categorize objects based on the ability to absorb or reflect light and conduct heat or electricity.	(1) Design an investigation to test the electrical conductivity of different substances. Develop a presentation of the results.	
3-4	5.2	B.1	<b>Changes in Matter</b>	How does the heating and cooling of a substance affect its state of matter?	Predict and explain what happens when a common substance, such as shortening or candle wax, is heated to melting and then cooled to a solid.	(1) From Gases to Liquid To Solid <a href="http://www.inquiryinaction.org/classroomactivities/activity.php?id=36">http://www.inquiryinaction.org/classroomactivities/activity.php?id=36</a>	
3-4	5.2 <a href="#">Vocab 5.2 C-E</a>	C.1	<b>Forms of Energy</b>	What are potential and kinetic energies?	Compare various forms of energy as observed in everyday life and describe their applications.	(1) How Roller Coasters Work <a href="http://tlc.howstuffworks.com/family/roller-coaster3.htm">http://tlc.howstuffworks.com/family/roller-coaster3.htm</a>	
3-4	5.2	C.2	<b>Forms of Energy</b>	How is heat transferred through the processes of	Compare the flow of heat through metals and nonmetals by taking and analyzing	(1) Popcorn <a href="http://outreach.physics.utah.edu/labs/atmosphere/popcorn.html">http://outreach.physics.utah.edu/labs/atmosphere/popcorn.html</a>	

				conduction, convection and radiation?	measurements.		
3-4	5.2	C.3	<b>Forms of Energy</b>	How can energy be transformed?	Draw and label diagrams showing several ways that energy can be transferred from one place to another.	(1) Energy Transformation <a href="http://www.sciencenetlinks.com/lessons.php?BenchmarkID=4&amp;DocID=153">http://www.sciencenetlinks.com/lessons.php?BenchmarkID=4&amp;DocID=153</a>	
3-4	5.2	C.4	<b>Forms of Energy</b>	What are reflection and refraction?	Illustrate and explain what happens when light travels from air into water.	<ul style="list-style-type: none"> <li>(1)Observe and record what they see when they stick part of their arm into a clear tube of water. Does the arm in the water appear to be aligned with the part of the arm exposed to the air? In whole class discussion, try to come up with explanations for this.</li> <li>(1)Make ray diagrams to explain what happens when light from the sun travels from air into a window and into a room of a house. Compare with diagrams where light from the sun travels from air into a clear pool. Share diagrams as a whole class.</li> </ul>	<a href="http://www.eduref.org/Virtual/Lessons/Science/Physics/PHS0067.html">http://www.eduref.org/Virtual/Lessons/Science/Physics/PHS0067.html</a>

						<ul style="list-style-type: none"> <li>• (1)Observe light traveling through a series of different substances—a cube filled with water, a cube of solid plastic, a cube of solid glass. Record observations and conclusions.</li> <li>• <a href="http://www.opticsforkids.org/futurescientists/intermediate/guidinglight.html">http://www.opticsforkids.org/futurescientists/intermediate/guidinglight.html</a></li> </ul>	
3-4	5.2	D.1	<b>Energy Transfer and Conservation</b>	<p>What is needed for a complete electric circuit?</p>	<p>Repair an electric circuit by completing a closed loop that includes wires, a battery (or batteries), and at least one other electrical component to produce observable change.</p>	<p>(1) Students will create a circuit using a light bulb, wire, and battery. Students will troubleshoot various circuits.</p> <p><a href="http://www.teachersdomain.org/search/?mode=refined&amp;query=electric+circuits+for+kids">http://www.teachersdomain.org/search/?mode=refined&amp;query=electric+circuits+for+kids</a></p>	
3-4	5.2	E.1	<b>Forces and Motion</b>	<p>What two properties describe the motion of an object? Give two examples of forces?</p> <p>What is friction?</p>	<p>Demonstrate through modeling that motion is a change in position over a period of time.</p>	<p>(1)Conduct an investigation with motion and forces. Using a ramp, toy car, meter stick and stopwatch, record the time it takes for the car to travel down the ramp.</p> <p>(1)Discuss the forces at work on the car and predict ways to make the car travel farther, slower and faster.</p>	

						Generate explanations based on evidence.	
3-4	5.2	E.2	<b>Forces and Motion</b>	What forces affect motion?	Identify the force that starts something moving or changes its speed or direction of motion.	(1) Newton's Three Laws of Motion  <a href="http://teachertech.rice.edu/Participants/louviere/Newton/index.html">http://teachertech.rice.edu/Participants/louviere/Newton/index.html</a>	
3-4	5.2	E.3	<b>Forces and Motion</b>	Which items are attracted by a magnet?	Investigate and categorize materials based on their interaction with magnets.	<ul style="list-style-type: none"> <li>(1) Look at various objects, make predictions about whether they were magnetic, and then test their predictions. This exploration is an introductory activity to magnets and magnetism. (See ScienceNetLinks: <a href="http://www.sciencenetlinks.com/lessons.php?BenchmarkID=4&amp;DocID=175">Magnets 1: Magnetic Pick-ups</a> <a href="http://www.sciencenetlinks.com/lessons.php?BenchmarkID=4&amp;DocID=175">http://www.sciencenetlinks.com/lessons.php?BenchmarkID=4&amp;DocID=175</a>)</li> </ul>	
3-4	5.2	E.4	<b>Forces and Motion</b>	What affects the freefall of an object?	Investigate, construct, and generalize rules for the effect that force of gravity has on balls of different sizes and weights.	<ul style="list-style-type: none"> <li>(1) Investigate techniques to make careful observations of the relative time of fall for objects of different masses that are dropped from the same height at the same instant. Use the evidence to explore generalized rules governing the force</li> </ul>	

						<p>of gravity.</p> <ul style="list-style-type: none"><li>• (1)Predict, with reasoning, which would land first, a feather or a hammer, if they were dropped at the same time.</li></ul>	
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OBJECTIVE CODE			UNIT CONTENT & PACING	UNIT ESSENTIAL QUESTION <i>What do all living things have in common?</i>	UNIT ENDURING UNDERSTANDING WHAT STUDENTS SHOULD KNOW AND BE ABLE TO DO	DIFFERENTIATED ACTIVITIES Tier 1, 2, 3	BENCHMARK ASSESSMENTS
Grade	Standard	Strand					
3-4	5.3 <a href="#">Vocab 5.3 A</a>	A.1	<b>Organization &amp; Development</b>	Is it living or nonliving?	Develop and use evidence-based criteria to determine if an unfamiliar object is living or nonliving.	(1) Living or Nonliving things Sort <a href="http://www.gk-12.osu.edu/Lessons/3rd%20Grade/LivingNonliving%20Life%20Science%203.pdf">http://www.gk-12.osu.edu/Lessons/3rd%20Grade/LivingNonliving%20Life%20Science%203.pdf</a>	
3-4	5.3	A.2	<b>Organization &amp; Development</b>	How does the structure of an organism determine its function?	Compare and contrast structures that have similar functions in various organisms, and explain how those functions may be carried out by structures that have different physical appearances.	(1) Build-a-Fish <a href="http://sea.sheddaquarium.org/sea/interactive_module.asp?id=7#">http://sea.sheddaquarium.org/sea/interactive_module.asp?id=7#</a>  Animal Mouth Structures <a href="http://www.teachersdomain.org/resource/tdc02.sci.life.colt.lp_mouths/">http://www.teachersdomain.org/resource/tdc02.sci.life.colt.lp_mouths/</a>	
3-4	5.3	A.3	Organization & Development	How do our body systems work together to carry out life processes?	Describe the interactions of systems involved in carrying out everyday life activities.	(1) Interaction of body systems <a href="http://www.d11.org/DOI/science/ScienceGrade4/Science4HumanBody.htm">http://www.d11.org/DOI/science/ScienceGrade4/Science4HumanBody.htm</a>	
3-4	5.3 <a href="#">Vocab 5.3 B-E</a>	B.1	Matter & Energy Transformations	How does energy transfer from one organism to another in a food web?	Almost all energy (food) and matter can be traced to the sun.	(1) Food Web Builder <a href="http://www.vtaide.com/png/foodchains.htm">http://www.vtaide.com/png/foodchains.htm</a>	
3-4	5.3	C.1	Interdependence	In what ways do organisms interact	Predict the biotic and abiotic characteristics of an unfamiliar	(1) Biome Investigation <a href="http://www.enchantedlearning.com/biomes/">http://www.enchantedlearning.com/biomes/</a>	

				within ecosystems?	organism's habitat.		
3-4	5.3	C.2	Interdependence	How do changes in an ecosystem affect organisms in that environment?	Explain the consequences of rapid ecosystem change (e.g., flooding, wind storms, snowfall, volcanic eruptions), and compare them to consequences of gradual ecosystem change (e.g., gradual increase or decrease in daily temperatures, change in yearly rainfall).	(1) Interaction and consequences of ecosystem change <a href="http://www.nhptv.org/natureworks/nwepecosystems.htm">http://www.nhptv.org/natureworks/nwepecosystems.htm</a>	
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Grade	Standard	Strand					
3-4	5.3	D.1	Heredity and Reproduction	How do organisms change as they go through their life cycle?	Compare the physical characteristics of the different stages of the life cycle of an individual organism and characteristics of stages among species.	(1) Life Cycles <a href="http://www.ent.iastate.edu/zoo/lessonplans/lifecycles.html">http://www.ent.iastate.edu/zoo/lessonplans/lifecycles.html</a>	
3-4	5.3	E.1	Evolution and Diversity	How do adaptations help organisms survive the conditions of their environment?	Model an adaptation to a species that would increase its chances of survival, should the environment become wetter, dryer, warmer, or colder over time.	(1) Adaptation Video <a href="http://www.youtube.com/watch?v=YX8VQIJVpTg">http://www.youtube.com/watch?v=YX8VQIJVpTg</a>  Adaptation Lesson <a href="http://www.nhptv.org/natureworks/nwep1.htm">http://www.nhptv.org/natureworks/nwep1.htm</a>	
3-4	5.3	E.2	Evolution and Diversity	In What ways are organisms of the same kind different from each other? How does this help them reproduce and survive?	Evaluate similar populations in an ecosystem with regard to their ability to thrive and grow.	(1) Plant and Animal Adaptations <a href="http://www.harlan.k12.ia.us/forth_grade_science_unit.htm">www.harlan.k12.ia.us/forth_grade_science_unit.htm</a>	

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			& PACING	QUESTIONS	WHAT STUDENTS SHOULD KNOW AND BE ABLE TO DO		
Grade	Standard	Strand					
3-4	5.4 <a href="#">Vocab</a> <a href="#">5.4 A</a>	A.1	<p><b>Objects in the Universe</b></p> <p>Objects in the sky have patterns of movement.</p> <p>The Sun and Moon appear to move across the sky on a daily basis.</p> <p>The shadows of an object on Earth change over the course of a day, indicating</p>	<p><i>To what extent are the properties of objects in our solar system predictable?</i></p> <p>How does a sundial work?</p>	<p>Formulate a general description of the daily motion of the Sun across the sky based on shadow observations. Explain how shadows could be used to tell the time of day.</p>	<p>Build a sundial. Explain how &amp; why the dial works.</p> <p><a href="http://www1.eere.energy.gov/kids/roofus/sundial.html">http://www1.eere.energy.gov/kids/roofus/sundial.html</a></p>	

			the changing position of the Sun during the day.				
3-4	5.4	A.2	<p><b>Objects in the Universe</b></p> <p>The observable shape of the moon changes from day to day in a cycle that lasts 29.5 days.</p>	Describe the phases of the moon?	Identify patterns of the Moon's appearance and make predictions about its future appearance based on observational data.	<ul style="list-style-type: none"> <li>(1) Use actual sky observation data, collected over a long period of time, and describe the patterns of the Moon's appearance. (e.g., when the Moon is visible, if the shape is predictable)</li> </ul> <p><a href="http://www.harcourtschool.com/activity/moon_phases/">http://www.harcourtschool.com/activity/moon_phases/</a></p>	
3-4	5.4	A.3	<p><b>Objects in the Universe</b></p> <p>Earth is approximately spherical in shape. Objects fall towards the center of the Earth because of the pull of the force of gravity.</p>	How does gravity affect the motion of objects?	Generate a model with explanatory value that explains both why objects roll down ramps as well as why the Moon orbits Earth.	<ul style="list-style-type: none"> <li>Explore how the earth's and moon's gravity affects the path of a rocket launched into space. <a href="#">Gravity Launch</a> found at: <a href="http://www.sciencenetlinks.com/lessons.php?Grade=3-5&amp;BenchmarkID=4&amp;DocID=405">http://www.sciencenetlinks.com/lessons.php?Grade=3-5&amp;BenchmarkID=4&amp;DocID=405</a></li> </ul>	

3-4	5.4	A.4	<p><b>Objects in the Universe</b> Earth is the third planet from the Sun in our Solar System which includes seven other planets.</p>	How does the position of a planet in our solar system affect its characteristics ?	Analyze and evaluate evidence in the form of data tables and photographs to categorize and relate solar system objects (e.g. planets, dwarf planets, moons, asteroids, and comets).	<ul style="list-style-type: none"> <li>Compare and contrast the planets in the solar system in relationship to the distance each of the planets are from the Sun.</li> </ul> <p><a href="http://www.kidsastronomy.com/solar_system.htm">http://www.kidsastronomy.com/solar_system.htm</a>  <a href="http://www.classzone.com/books/earth_science/terc/content/visualizations/es2701/es2701page01.cfm?chapter_no=visualization">http://www.classzone.com/books/earth_science/terc/content/visualizations/es2701/es2701page01.cfm?chapter_no=visualization</a></p>	
3-4	5.4 <a href="#">Vocab 5.4 B-E</a>	B	<b>History of Earth</b>		Earth's components form systems. These systems continually interact at different rates of time, affecting the shape of the Earth's surface regionally and globally.		
3-4	5.4	B.1	<p><b>History of Earth</b> Fossils provide evidence about the plants and animals that lived long ago, including whether they lived on the land or in the sea, as well as changes to species</p>	What can fossils tell us about our past?	Use data gathered from observations of fossils to argue whether a given fossil is terrestrial or marine in origin.	<p>How Fossils Form <a href="http://www.kinderscience.com/fossils.htm">http://www.kinderscience.com/fossils.htm</a></p> <p>Teacher Reference <a href="http://www.fossils-facts-and-finds.com/">http://www.fossils-facts-and-finds.com/</a></p> <p>When and Where Did dinosaurs live? <a href="http://www.classzone.com/books/earth_science/terc/content/investigations/es3008/es3008page01.cfm?chapter_no=investigation">http://www.classzone.com/books/earth_science/terc/content/investigations/es3008/es3008page01.cfm?chapter_no=investigation</a></p>	

			over time.				
3-4	5.4	C	<p><b>Properties of Earth Materials</b></p> <p>The Earth's composition is unique, related to the origin of our solar system, and provides us with the raw resources needed to sustain life.</p>	<p><i>How do Earth Systems interact to create soil?</i></p> <p><i>How do we use observable characteristics of Earth materials to identify different parts of the Earth System?</i></p>	<p>Soil is a product of the interactions of the Earth Systems.</p> <p>The Earth System includes a variety of materials in solid, liquid and gaseous form.</p>		
3-4	5.4	C.1	<p><b>Properties of Earth Materials</b></p> <p>Rocks can be broken down to make soil.</p>	What is soil?	Create a model to represent how soil is formed.	<p>Soiled Again (A Soil mystery)  <a href="http://urbanext.illinois.edu/gpe/case2/case2.html">http://urbanext.illinois.edu/gpe/case2/case2.html</a></p> <p>How Does Soil Vary from Place to Place?  <a href="http://www.classzone.com/books/earth_science/terc/content/investigations/es1206/es1206page04.cfm?chapter_no=investigation">http://www.classzone.com/books/earth_science/terc/content/investigations/es1206/es1206page04.cfm?chapter_no=investigation</a></p>	

3-4	5.4	C.2	<p><b>Properties of Earth Materials</b></p> <p>Earth materials in nature include rocks, minerals, soils, water, and the gases of the atmosphere.</p> <p>Attributes of rocks and minerals assist in their identification.</p>	<p>Is it a rock or is it a mineral?</p> <p>What are the different types of rocks?</p>	<p>Categorize unknown samples as either rocks or minerals.</p>	<p>Rocks and Soils Interactive  <a href="http://www.bbc.co.uk/schools/scienceclips/ages/7_8/rocks_soils.shtml">http://www.bbc.co.uk/schools/scienceclips/ages/7_8/rocks_soils.shtml</a></p> <p>Rocks and Minerals Links – Fossils, Soils, identification, interactive activities  <a href="http://ethemes.missouri.edu/themes/933">http://ethemes.missouri.edu/themes/933</a></p> <p>Interactive website. Geared toward middle/high school-but excellent for teacher presentation because of demos &amp; background info. Also great for G/T students.  <a href="http://www.classzone.com/books/earth_science/terc/navigation/investigation.cfm">http://www.classzone.com/books/earth_science/terc/navigation/investigation.cfm</a></p> <p>Rocks and Minerals  <a href="http://www.teachers.ash.org.au/jmresources/rocks/links.html">http://www.teachers.ash.org.au/jmresources/rocks/links.html</a>  <a href="http://www.rocksforkids.com">www.rocksforkids.com</a></p>	
3-4	5.4	E	<p><b>Energy in Earth Systems</b></p> <p>Internal and external sources of energy drive the Earth system.</p>	<p><i>Which Earth materials change temperature the most in the sun and shade?</i></p>	<p>Earth materials absorb and reflect the sun's energy differently.</p>		

3-4	5.4	E.1	<p><b>Energy in Earth Systems</b> Land, air, and water absorb the Sun's energy at different rates.</p>	Which Earth materials change temperature the most in the sun and shade?	Develop a general set of rules to predict temperature changes of Earth materials, such as water, soil, and sand, placed in the Sun and shade.	<ul style="list-style-type: none"> <li>• Observe and list the relative temperature characteristics of Earth materials found in the school yard in direct sunlight and in the shade (e.g., with a tree trunk, rocks, soil, turf grass, etc.).</li> <li>• Conduct experiments and analyze the data to compare the changes in temperature of different Earth materials left in the sunlight and the shade</li> </ul> <p><a href="http://www.weatherwizkids.com/weather-temperature.htm">http://www.weatherwizkids.com/weather-temperature.htm</a></p>	
3-4	5.4 <a href="#">Vocab</a> <a href="#">5.4 F</a>	F	<p><b>Weather and Climate</b> Earth's weather and climate system are the result of complex interactions between land, ocean, ice and atmosphere</p>	<i>How do changes in one part of an Earth system affect other parts of the system?</i>	Earth's components form systems. These systems continually interact at different rates of time, affecting the Earth regionally and globally.		

3-4	5.4	F.1	<p><b>Weather and Climate</b> Weather changes from day to day and over the seasons can be measured and documented using basic instruments such as a thermometer, wind vane, anemometer, and rain gauge.</p>	<p>What factors are measured in weather?</p> <p>What weather instruments are used to collect such data?</p> <p>How are weather instruments used to predict weather patterns?</p>	<p>Identify patterns in data collected from basic weather instruments.</p>	<p>Temperature Activity <a href="http://www.weatherwizkids.com/weather-temperature.htm">http://www.weatherwizkids.com/weather-temperature.htm</a>  <a href="http://www.weather.gov/">http://www.weather.gov/</a></p>	
3-4	5.4	G	<p><b>Biogeochemical Cycles</b> <i>The biogeochemical cycles in the Earth System include the flow of microscopic and macroscopic resources from one reservoir in hydrospher</i></p>	<p><i>What is the source of the resources used to meet the basic needs of living organisms?</i></p>	<p>The Earth is a system, continuously moving resources from one part of the system to another.</p>		

			<p><i>e, geosphere, atmosphere, or biosphere to another, are driven by the Earth's internal and external sources of energy, and are impacted by human activity.</i></p>			
3-4	5.4	G.1	<p><b>Biogeochemical Cycles</b>          Clouds and fog are made of tiny droplets of water and at times, tiny particles of ice.</p>	How do clouds form?	Explain how clouds form.	<p>How clouds form  <a href="http://42explore.com/clouds.htm">http://42explore.com/clouds.htm</a></p> <p>Free Downloadable Book  <a href="http://www.takeawalk.com/cloud-walk/">http://www.takeawalk.com/cloud-walk/</a></p>

3-4	5.4	G.2	<p><b>Biogeochemical Cycles</b> Rain, snow, and other forms of precipitation come from clouds; not all clouds produce precipitation.</p>	<p>What are the different types of clouds, and what do they tell us about the weather?</p>	<p>Observe daily cloud patterns, types of precipitation, and temperature, and categorize the clouds by the conditions that form precipitation.</p>	<p>How Clouds Form <a href="http://42explore.com/clouds.htm">http://42explore.com/clouds.htm</a>  <a href="http://www.answers.com/topic/clouds-2">http://www.answers.com/topic/clouds-2</a>  Local Weather (Dan Skeldon) <a href="http://www.nbc40.net/weather.php">http://www.nbc40.net/weather.php</a></p>	
3-4	5.4	G.3	<p><b>Biogeochemical Cycles</b> Most of Earth's surface is covered by water.  Water circulates through the crust, oceans, and atmosphere in what is known as the water cycle.</p>	<p>What are the parts of a water cycle?  How do we get the water we use in our daily lives?</p>	<p>Trace a path a drop of water might follow through the water cycle.</p>	<p>Water Cycle (teacher information and experiment) <a href="http://www.ucar.edu/learn/1124t.htm">http://www.ucar.edu/learn/1124t.htm</a>  Observe Water Cycle <a href="http://www.classzone.com/books/earth_science/terc/content/visualizations/es0105/es0105page01.cfm?chapter_no=visualization">http://www.classzone.com/books/earth_science/terc/content/visualizations/es0105/es0105page01.cfm?chapter_no=visualization</a>  <a href="http://www.answers.com/topic/hydrologic-cycle">http://www.answers.com/topic/hydrologic-cycle</a>  Water, Water Everywhere <a href="http://www.bcps.org/offices/lis/models/watercycle/index.htm">http://www.bcps.org/offices/lis/models/watercycle/index.htm</a></p>	<p>Water, Water Everywhere <a href="http://www.bcps.org/offices/lis/models/watercycle/index.htm">http://www.bcps.org/offices/lis/models/watercycle/index.htm</a></p>

3-4	5.4	G.4	<p><b>Biogeochemical Cycles</b>          Properties of water depend on where the water is located (oceans, rivers, lakes, underground sources and glaciers).</p>	<p>How do the properties of the water change as they travel through the water cycle?</p>	<p>Model how the properties of water can change as it moves through the water cycle</p>	<p>Water Cycle (teacher information and experiment)</p> <p><a href="http://www.ucar.edu/learn/1_1_2_4t.htm">http://www.ucar.edu/learn/1_1_2_4t.htm</a></p>	