

**SCIENCE**  
**RHINEBECK PRIORITIZED CURRICULUM**  
Grade 7  
The Physical Setting

**Standard 4:** Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.

**Key Idea 2:** Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.

**Background:**

Students should develop an understanding of Earth as a set of closely coupled systems. The concept of systems provides a framework in which students can investigate three major interacting components: lithosphere, hydrosphere, and atmosphere. Processes act within and among the three components on a wide range of time scales to bring about continuous change in Earth's crust, oceans, and atmosphere.

*Vocabulary Note: It is understood that scientific vocabulary is an essential part of the study of science. Though not tested as in the past, students should be exposed to this vocabulary in a number of ways. Do not refrain from using this vocabulary in your daily classroom sessions, simply because it may not be tested directly. The assessment may not include the term nucleus, but will certainly ask questions regarding its function. Students need to be aware of the vocabulary to be familiar with for each unit.*

*Suggested Activities: Prepare and distribute vocabulary list for each unit  
Ask students to keep vocabulary in their journals or notebooks with general descriptions or definitions  
Add pictorial representations  
Distribute concept maps for students to complete by filling in the missing terms  
Have students eventually create their own concept maps linking terms  
Vocabulary bingo  
Play classroom "Jeopardy"  
"Ticket to Leave" - before leaving the classroom must give you (verbally or written) definition for requested term*

**Guiding Questions:**

How do the lithosphere, hydrosphere and atmosphere interact?  
How have the lithosphere, hydrosphere and atmosphere changed over time?  
How are rocks affected by changes in the lithosphere, hydrosphere and atmosphere?

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**Standard 4: Key Idea 2: Performance Indicator 2.1: Explain how the atmosphere (air), hydrosphere (water), and lithosphere (land) interact, evolve, and change.**

<i>Essential Knowledge/Skills (Major Understandings)</i>	<i>Priority Code</i>	<i>Essential Questions</i>	<i>Classroom Ideas</i>	<i>Assessment Ideas</i>	<i>Time/Notes</i>
2.1d The majority of the lithosphere is covered by a relatively thin layer of water called the hydrosphere. 2.1f Fossils are usually found in sedimentary rocks. Fossils can be used to study past climates and environments. 2.1j Water circulates through the atmosphere, lithosphere, and hydrosphere in what is known as the water cycle.	I  N  I	<ul style="list-style-type: none"> <li>• How do living things interact with their environment?</li> <li>• How do living things change over time?</li> <li>• How are living things adapted to survive?</li> </ul>	<ul style="list-style-type: none"> <li>• Ecology video</li> <li>• Thumb's wet. Toss earth ball and record how many times right thumb lands in water. Calculate average. (should be ~60-75%)</li> <li>• Fossil activity</li> <li>• Water cycle demonstration (boiling water and ice)</li> <li>• Water cycle diagrams</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Student responses</li> <li>• Journal entries</li> <li>• Student demonstrations</li> <li>• Lab reports/summaries</li> <li>• Teacher-developed and student-developed rubrics for performance tasks and projects</li> </ul> <p><i>Ex. Assess using a classification rubric.</i>  <i>Ex. Assess landscape models for accuracy and understanding of concepts using a rubric.</i></p>	

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**Key Idea 4:** Energy exists in many forms, and when these forms change energy is conserved.

**Background:**

An underlying principle of all energy use is the Law of Conservation of Energy. Simply stated, energy cannot be created or destroyed.

Energy can be transformed, one form to another. These transformations produce heat energy. Heat is a calculated value that includes the temperature of the material, the mass of the material, and the type of the material. It should be noted that temperature is not a measurement of heat.

**Guiding Questions:**

How are the different forms of energy interrelated?

How do you use energy in your life?

How is energy involved in making ice cream?

What happens to energy when it changes from one form to another?

How do the different parts of the electromagnetic spectrum affect our lives?

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<b>Standard 4: Key Idea 4 Performance Indicator 4.1: Describe the sources and identify the transformations of energy observed in everyday life.</b>					
<i>Essential Knowledge/Skills (Major Understandings)</i>	<i>Priority Code</i>	<i>Essential Questions</i>	<i>Classroom Ideas</i>	<i>Assessment Ideas</i>	<i>Time/Notes</i>
4.1c Most activities in everyday life involve one form of energy being transformed into another. For example, the chemical energy, in gasoline is transformed into mechanical energy in an automobile engine. Energy, in the form of heat, is almost always one of the products of energy transformations.	I	<ul style="list-style-type: none"> <li>How are living things adapted to survive?</li> </ul>	<ul style="list-style-type: none"> <li>Photosynthesis Lab</li> <li>Respiration Lab</li> </ul>	<ul style="list-style-type: none"> <li>Teacher observations</li> <li>Student responses</li> <li>Journal entries</li> <li>Student demonstrations</li> <li>Lab reports/summaries</li> <li>Teacher-developed and student-developed rubrics for performance tasks and projects</li> </ul> <p><i>Ex. Examine journals for observed energy changes.</i></p> <p><i>Ex. Assess student comments in discussions for understanding.</i></p>	

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<b>Resource Materials</b>			
<b>Title</b>	<b>Source</b>	<b>Title</b>	<b>Source</b>
ADAM software	1600 River Edge Park 3800 Atlanta, GA 30328	<u>Science Experiments in Chemistry &amp; Physics</u> By T.K. Williams	Mark Twain Media, 1995
Science 2000 software	BOCES Center for Instructional Support (CIS) 361-5660	<u>Science Super Sleuths</u> By Wood & Walker	Instructional Fair ISBN 1-56822-843-0
<u>Life Science Enrichment Activities</u>	Merrill	<u>Science &amp; Technology: How Things Work</u> By D. Crotts	Frank Schaffer ISBN 0-86734-799-6
<u>Teaching Resources Cells &amp; Heredity</u>	Prentice Hall Explorer	<u>Hands On Science</u>	Instructional Fair ISBN 1-56822-131-2
<u>Doing Science</u> by Neal Glasgow	Corwin Press, Inc. ISBN 0-8-39-6477-3	<u>GEMS (Great Explorations in Math &amp; Science)</u>	Lawrence Hall of Science, University of California Berkeley, Ca. 94720
<u>Assessing Student Outcomes</u> By Marzano, Pickering, and McTighe	ASCD 1-800-933-2723 (ISBN 0-87120-225-5)	<u>Exploring Physical Science</u> Text and Resource Book	Prentice Hall ISBN 0-13-422833-2
<u>Assessing Hands-On Science</u>	Corwin Press ISBN 0-8039-6443-9	<u>How to Assess Thoughtful Outcomes</u> By Kay Burke	IRI/Skylight ISBN 0-932935-58-3
<u>Investigate &amp; Connect Physical Science</u>	Instructional Fair ISBN 1-56822-479-6	Interdisciplinary Thematic Unit- "Energy"	Teacher Created Materials, Inc. ISBN 1-55734-569-4
<u>50 Terrific Science Experiments Grade 5-8</u>	Instructional Fair ISBN 1-56822-658-6	<u>Physical Science</u> By Marshall & Jacobs	American Guidance Service, Inc. ISBN 0-7854-1018-X
<u>Earth Science for Every Kid</u> By Janice Van Cleave	Wiley & Sons ISBN 0-471-53010-7	<u>Physical Science-Discovering Science Series</u> By Connie Blood	Frank Schaffer ISBN 0-86734-561-6
<u>Our World</u>	Usborne Publications (ISBN 0-590-92186-X) (usually available through Scholastic, Inc.)	<u>Mr. Wizard's 400 Experiments in Science</u> By Don Herbert	Book Lab Prism Productions, 1968 ISBN 87594-012-9
<u>Creative Sciencing</u> By Devito & Krockover	Scott Foresman ISBN 0-673-52008-0	<u>333 Science Tricks &amp; Experiments</u>	TAB Books, 1984 ISBN 0-8306-1825-2
<u>Exploring Earth Science Lab Manual</u>	Prentice Hall ISBN 0-113-80-7652-9	<u>More Science Tricks &amp; Experiments</u>	TAB Books, 1984 ISBN 0-8306-1835-X
<u>Integrated Science Activity Book</u>	Prentice Hall ISBN 0-13-402199-1	<u>100 Blackboard Science Activities</u>	Fearon Teaching Aids ISBN 0-86653-920-4
<u>Global Science Lab Manual</u>	Kendall/Hunt ISBN 0-8403-7485-2	<u>Concepts &amp; Challenges in Physical Science</u>	Globe Fearon ISBN 0-835-92253-7

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<u>Investigations in Science Chemistry</u>	Creative Teaching Press	<u>Science Plus-Tech &amp; Society</u>	HBJ ISBN 0-03-074958-1
<u>Big Blast of Science</u> By Bill Nye	Addison-Wesley ISBN 0-201-60864-2	<u>Science Up to Standards</u>	Instructional Fair ISBN 1-56822-748-5