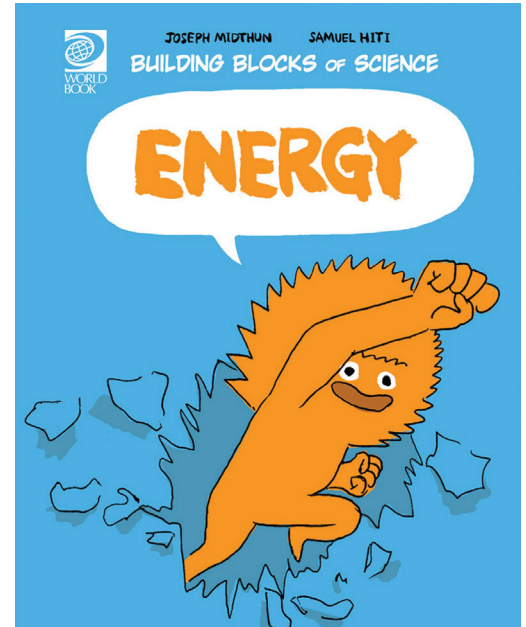


# BUILDING BLOCKS OF SCIENCE

## PHYSICAL SCIENCE

### LESSON PLAN & GUIDED DISCUSSION

Each of the 10 *Building Blocks of Science* volumes features a whimsical character which guides the reader through a physical science topic. This series is perfect for students across a spectrum of reading comprehension and science mastery levels.



\* Clean-up required for this activity \*

General Information	
<b>Title:</b>	Make it or Break it
<b>Materials:</b>	<ul style="list-style-type: none"> <li>• Plastic sheets to cover floor (what you would use when painting an interior you can get this from the hardware store)</li> <li>• A large piece of cardboard</li> <li>• 6 eggs</li> <li>• 6 tomatoes</li> <li>• Water balloons</li> <li>• Paper towels and cleaning supplies</li> <li>• Yard stick</li> <li>• Pens or pencils</li> <li>• Paper</li> </ul>
<b>Objective:</b>	Students will demonstrate their comprehension of the topic through a group discussion. Students will explore how potential energy changes to <i>kinetic energy</i> , the energy of motion, through a hands-on experiment. Kinetic energy can break things. In this experiment, they will investigate how much potential energy it takes to destroy various objects.

Lesson	
<p><b>Group discussion questions:</b></p>	<p>Make sure your students have grasped the major concepts of this lesson through an informal group discussion. This is an opportunity for you to highlight the most important points in the book and to clarify any uncertainties your students may have. Use the questions below as a guideline but feel free to generate your own!</p> <ul style="list-style-type: none"> <li>• What kinds of things can energy do? Who/what uses energy?</li> <li>• What are some different forms of energy?</li> <li>• What is the difference between nonrenewable and renewable energy sources?</li> <li>• What are some of the drawbacks of using nonrenewable energy sources?</li> <li>• Can anyone think of any drawbacks to using renewable energy sources?</li> </ul>
<p><b>Procedure</b></p>	<p>Spread the plastic sheet on the ground to protect the area where you'll be working. It is recommended that you work next to a wall so you can tape 10" increments from the floor upward. Students may need to stand on a chair for higher "steps." <b>Warning: This activity is messy!</b></p> <p>Lay the cardboard on the sheet on the floor.</p> <p>Start with an egg. Drop it from 10" above the ground. If the egg doesn't break, try it from 20" above ground. (Roll it straight off the step and onto the cardboard, not onto the next lowest step.) If it still doesn't break, try from 30" and so on.</p> <p>Write down the number of inches it takes to supply enough potential energy to break an egg. The more height you raise the egg, the more you "stretch" against gravity, increasing the egg's potential energy.</p> <p>Repeat these steps with tomatoes and water balloons. If any of these objects get damaged without breaking, repeat the test with a fresh, undamaged replacement.</p> <p>Which objects take the most energy to break? Which objects take the least?</p> <p>Note: If you do not have access to an open staircase, you can perform this experiment simply by holding the objects above the ground in 25-centimeter (1-foot) "steps," measuring with a yardstick or measuring tape. You may need to stand on a chair for higher "steps."</p>

<p><b>Vocabulary for the Word Wall:</b></p>	<p>As a class, decide on a few vocabulary words that were particularly relevant to this activity. For example,</p> <ul style="list-style-type: none"> <li>• <b>potential energy</b></li> <li>• <b>kinetic energy</b></li> <li>• <b>smog</b></li> <li>• <b>turbines</b></li> <li>• <b>solar panels</b></li> </ul> <p>Pass out a few index cards and ask students to write the vocabulary word on the front of the card and its definition on the back. Students can refer to the glossary on p. 30 as a reference. There are probably not enough words for everyone in the class to make a card so just be mindful that each kid gets a turn at some point during this unit.</p> <p>Post the cards on a “WORD WALL” bulletin board in your classroom.</p>
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**Common Core Standards highlighted in this lesson**

<p><b>Standards:</b></p>	<p><b>ELACC4RI3</b> Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.</p> <p><b>ELACC4RI4</b> Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.</p> <p><b>ELACC4RI7</b> Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.</p> <p><b>ELACC4SL1</b> Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own.</p> <p><b>ELACC4RF3</b> Know and apply grade-level phonics and word analysis skills in decoding words. a. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.</p>
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