

## Matter & Energy Unit Design - Grade 4

The Matter and Energy Module consists of four sequential investigations. Students experience a variety of forms of matter and energy. They investigate the properties of light, observe the conversion of energy from one form to another, and explore properties of the three common states of matter (solid, liquid, and gas). Students use metric tools to measure the properties of matter—mass, volume, and temperature—and observe that starting substances can change into new substances as a result of a chemical reaction.

**RI Statements of Enduring Knowledge** - (Established Goals):

PS1- All living and nonliving things are composed of matter having characteristics properties that distinguish one substance from another (independent of size or amount of substance).

PS2 – Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.

Related Rhode Island GSE's (Understandings)	RI Assessment Targets Assessment Evidence-High Priority**
<p><b>PS1 (3-4)-1</b> <b>Students demonstrate an understanding of characteristic properties of matter by...</b></p> <p><b>1a</b> identifying, comparing, and sorting objects by similar or different physical properties (e.g., size, shape, color, texture, smell, weight, temperature, flexibility).</p> <p><b>1b</b> citing evidence (e.g., prior knowledge, data) to support conclusions about why objects are grouped together.</p> <p><b>Students demonstrate an understanding of physical changes by...</b></p> <p><b>1c</b> observing and describing physical changes (e.g., freezing, thawing, torn piece of paper).</p> <p><b>PS1 (3-4)-2</b> <b>Students demonstrate an understanding of states of matter by...</b></p> <p><b>2a</b> describing properties of solids, liquids, and</p>	<p><b>PS1 (K-4) – INQ-1**</b> <i>Collect and organize data about physical properties in order to classify objects or draw conclusions about objects and their characteristic properties (e.g., temperature, color, size, shape, weight, texture, flexibility).</i></p> <p><b>Matter and Energy</b> Investigation 3, Part 1, pp. 129-138 Science Resources, pp. 2-13</p> <p><b>Matter and Energy</b> Investigation 4, Part 2, pp. 181-192</p> <p><b>PS1 (K-4) – POC-2</b> <i>Make a prediction about what might happen to the state of common materials when heated or</i></p>

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<p>gases.</p> <p><b>2b</b> identifying and comparing solids, liquids, and gases.</p> <p><b>2c</b> making logical predictions about the changes in the state of matter when adding heat (e.g., ice melting, water boiling or freezing, condensation/evaporation).</p> <p><b>PS1 (3-4)-3</b> <b>Students demonstrate an understanding of conservation of matter by...</b></p> <p><b>3a</b> measuring the weight of objects to prove that all matter has weight.</p> <p><b>3b</b> using measures of weight to prove that the whole equals the sum of its parts.</p> <p><b>3c</b> showing that the weight of an object remains the same despite a change in its shape.</p> <p><b>PS2 (3-4)-5</b> <b>Students demonstrate an understanding of energy by...</b></p> <p><b>5a</b> investigating observable effects of light using a variety of light sources (e.g., light travels in a straight line until it interacts with an object, blocked light rays produce shadows).</p> <p><b>5b</b> predicting, describing and investigating how light rays are reflected, refracted, or absorbed.</p> <p><b>PS2 (3-4)-6</b> <b>Students demonstrate an understanding of energy by...</b></p> <p><b>6b</b> showing that heat moves from one object to another causing temperature change (e.g., when land heats</p>	<p><i>cooled or categorize materials as solid, liquid, or gas.</i></p> <p><b>Matter and Energy</b> Investigation 3, Part 1, pp. 129-138 Science Resources, pp. 2-13</p> <p><b>Matter and Energy</b> Investigation 4, Part 2, pp. 181-192 Science Resources, pp. 54-56</p> <p><b>PS1 (K-4) – SAE–3</b> <i>Use measures of weight (data) to demonstrate that the whole equals the sum of its parts.</i></p> <p><b>Matter and Energy</b> Investigation 3, Part 2, pp. 139-150</p> <p><b>Matter and Energy</b> Science Resources, p. 70</p> <p><b>PS2 (K-4) – SAE–5</b> <i>Use observations of light in relation to other objects/substances to describe the properties of light (can be reflected, refracted, or absorbed).</i></p> <p><b>Matter and Energy</b> Investigation 2, Parts 1-2, pp. 93-114 Science Resources, pp. 24-36</p> <p><b>PS2 (K-4) – SAE + INQ–6</b> <i>Experiment, observe, or predict how heat might move from one object to another.</i></p> <p><b>Matter and Energy</b></p>

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up it warms the air).	Investigation 4, Part 1, pp. 174-180