



**Fifth Grade Frameworks Pacing Guide  
Investigating Electricity and Magnetism**

**Crosscutting Concepts:** Stability and Change; Cause and Effect; Energy and Matter

**Topics:** Electricity and Magnetism

7-week Instructional Segment

Anchoring Phenomenon	GSE	Instructional Segments	Disciplinary Core Ideas	Science and Engineering Practices	Instructional Notes
<a href="#">Pie Pans on a Van de Graaff Generator</a>	<b>S5P2</b> a, b, c <b>S5P3</b> a, b	<b>It's Shocking!</b>	From <a href="#">A Framework for K-12 Science Education</a> :  <i>By the end of 5th grade</i> <b>PS2.B: TYPES OF INTERACTIONS</b> <ul style="list-style-type: none"> <li>● Electric and magnetic forces between a pair of objects do not require that the objects be in contact, for example, magnets push or pull at a distance.</li> <li>● The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, or their orientation relative to each other.</li> </ul> <b>PS3.B: CONSERVATION OF ENERGY AND ENERGY TRANSFER</b> <ul style="list-style-type: none"> <li>● Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat or light.</li> <li>● The currents produced may have been produced to begin with by transforming the energy of motion into electrical energy. (e.g., moving water driving a spinning turbine which generates</li> </ul>	<ul style="list-style-type: none"> <li>● Planning and carrying out investigations</li> <li>● Constructing explanations and designing solutions</li> <li>● Engaging in argument from evidence</li> <li>● Obtaining, evaluating, and communicating information</li> </ul>	New to GSE: Magnetic Field The topic of Magnetism has moved to 5th grade. It is no longer in the 3rd grade standards.  By the end of this unit, students are using the following language in their speaking and writing during EXPLAIN or ELABORATE. <ul style="list-style-type: none"> <li>● static</li> <li>● current</li> <li>● circuit</li> <li>● permanent magnet</li> <li>● electromagnet</li> <li>● temporary magnet</li> <li>● charge</li> <li>● attract</li> </ul>



			<p>electric currents.)</p> <p><b>PS3.C: RELATIONSHIP BETWEEN ENERGY AND FORCES</b></p> <ul style="list-style-type: none"><li>● Magnets can exert forces on other magnets or on magnetizable materials, causing energy transfer between them (e.g., leading to changes in motion) even when objects are not touching.</li></ul>		<ul style="list-style-type: none"><li>● repel</li><li>● mechanical energy</li><li>● energy of motion</li><li>● electrical energy</li><li>● conductor</li><li>● insulator</li></ul>
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This Instructional Segment connects to Physical and Chemical Changes.