

**Westmoreland County Public Schools**  
**Integrated Instructional Pacing Guide**  
**Physical Science**  
**2011-2012**

Text: Prentice Hall Science Explorer: Physical Science

<i>Week 1</i>	<i>Week 2</i>	<i>Week 3</i>
<p><b>Topics:</b></p> <ul style="list-style-type: none"> <li>☆ Introduction to Physical Science</li> <li>☆ Lab Safety</li> <li>☆ Science Process Skills (classifying, observing, measuring, making inferences)</li> <li>☆ Experimental Design (constants, control group, experimental error, conclusions)</li> </ul> <p><b>Text Sections:</b> Section on "Investigation Skills" [Introduction to Physical Science pages 1-15]</p> <p><b>Demos:</b></p> <p><b>Lab: Experimental Design Lab (Spaghetti Lab)</b></p> <p style="text-align: center;">SOL: PS.1 a,b,d,g</p> <ul style="list-style-type: none"> <li>♥ Responsibility (class rules, lab expectations)</li> <li>✎ Internet safety (AUP rules; techniques for evaluating information; potential dangers; precautions/problem resolution)</li> </ul>	<p><b>Topics:</b></p> <ul style="list-style-type: none"> <li>☆ Metric System (SI units)</li> <li>☆ Instruments used for data collection and analysis</li> <li>☆ Mass</li> <li>☆ Volume</li> <li>☆ Density</li> <li>☆ Motion</li> <li>☆ Speed</li> <li>☆ Velocity</li> <li>☆ Acceleration</li> </ul> <p><b>Text Sections:</b> "The Nature of Science" and "Motion" [Chapter 1, Section 2; Chapter 9, Sections 1 &amp; 3]</p> <p><b>Demos: Density Blocks</b></p> <p><b>Lab: 1. Penny Lab 2. "Do you feel the need for speed?"</b></p> <p style="text-align: center;">SOL: PS.1 a-d and PS.10 a</p> <ul style="list-style-type: none"> <li>♥ Cooperation (assign roles; encourage teamwork during labs)</li> </ul>	<p><b>Topics:</b></p> <ul style="list-style-type: none"> <li>☆ Mass vs. Weight</li> <li>☆ Gravity</li> <li>☆ Newton's Laws of Motion</li> <li>☆ Inertia</li> <li>☆ Simple machines</li> <li>☆ Compound machines</li> <li>☆ Work</li> <li>☆ Power</li> </ul> <p><b>Text Sections:</b> "Forces" and "Work and Machines" [Chapter 10, Sections 1-4; Chapter 12, Sections 1-3]</p> <p><b>Demos: Newton's rocker, restraining devices, inertia</b></p> <p><b>Lab: Investigating Simple Machines</b></p> <p><b>Activity: Bottle rocket launcher</b></p> <p><b>Videos: 1. Eureka! video clips on machines 2. The Way Things Move</b></p> <p style="text-align: center;">SOL: PS.1 h,j,k; PS.10 a-d</p> <ul style="list-style-type: none"> <li>♥ Responsibility &amp; Cooperation</li> </ul>
<p style="text-align: center;"><i>Week 4</i></p> <p><b>Topics:</b></p> <ul style="list-style-type: none"> <li>☆ Potential energy</li> <li>☆ Kinetic energy</li> <li>☆ Forms of energy</li> <li>☆ Energy transformations</li> <li>☆ Conservation of energy</li> <li>☆ Energy transfer (conduction, convection, and radiation)</li> <li>☆ Thermal expansion</li> <li>☆ Heat engines</li> </ul> <p><b>Text Sections:</b> "Energy and Power" and "Thermal Energy and Heat" [Chapter 13, Sections 1-4 and Chapter 14, Sections 1-3]</p> <p><b>Demos: Metal Conductivity; Ball and Ring Apparatus</b></p> <p><b>Labs: 1. Soaring Straws (in text)</b></p>	<p style="text-align: center;"><i>Week 5</i></p> <p><b>Topics:</b></p> <ul style="list-style-type: none"> <li>☆ Transverse waves</li> <li>☆ Longitudinal (compression) waves</li> <li>☆ Sound (characteristics and applications)</li> <li>☆ Doppler effect</li> </ul> <p><b>Text Sections:</b> "Characteristics of Waves" and "Sound" [Chapter 15, Sections 1-3 and Chapter 16; Sections 1,2, and 5]</p> <p><b>Demos: Band Students (pitch vs. volume)</b></p> <p><b>Lab: Tuning Fork</b></p> <p><b>Activity: Wave Poster Project ,</b></p>	<p style="text-align: center;"><i>Week 6</i></p> <p><b>Topics:</b></p> <ul style="list-style-type: none"> <li>☆ Electromagnetic spectrum</li> <li>☆ Visible light</li> </ul> <p><b>Text Sections:</b> "The Electromagnetic Spectrum" [Chapter 17, Sections 1-2]</p> <p><b>Demos:</b></p> <p><b>Lab:</b></p> <p><b>Computer: Create a PowerPoint slide show on electromagnetic wave applications.</b></p> <ul style="list-style-type: none"> <li>✎ Cybersafety Reminders</li> </ul>

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<p>2. Energy of Bouncing Balls  3. Happy vs. Unhappy Balls</p> <p><b>SOL: PS.1 h-k; PS.6 a-c; PS.7 a-d</b></p> <p>✓ <b>Responsibility &amp; Cooperation</b></p>	<p><b>Slinkys, Resonating Straws</b></p> <p><b>SOL: PS.8 a,b,d</b></p>	<p><b>SOL: PS.8 a-c; PS.9 c</b></p>
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<i>Week 7</i>	<i>Week 8</i>	<i>Week 9</i>
<p><b>Topics:</b></p> <ul style="list-style-type: none"> <li>☆ Light</li> <li>☆ Wave theory</li> <li>☆ Particle theory</li> <li>☆ Reflection</li> <li>☆ Refraction</li> <li>☆ Concave lenses</li> <li>☆ Convex lenses</li> </ul> <p><b>Text Sections:</b> “Light” [Chapter 18, Sections 1-2]</p> <p><b>Demos:</b> law of reflection using mirror and laser; exploration of concave and convex lenses</p> <p><b>Lab:</b></p> <p><b>Activity:</b> diffraction glasses</p> <p style="text-align: center;"><b>SOL:</b> PS.9 a,b</p> <p>↪ Perseverance (Benjamin Franklin)</p>	<p><b>Topics:</b></p> <ul style="list-style-type: none"> <li>☆ Static electricity</li> <li>☆ Series circuits</li> <li>☆ Parallel circuits</li> <li>☆ Direct current</li> <li>☆ Alternating current</li> <li>☆ Magnetic fields</li> <li>☆ Electromagnets</li> <li>☆ Motors &amp; generators</li> </ul> <p><b>Text Sections:</b> “Magnetism and Electromagnetism” [Chapter 19, Sections 1-4]</p> <p><b>Demos:</b> Using iron filings to show a magnetic field; van de Graaff generator</p> <p><b>Labs:</b> 1. Series vs. Parallel Circuit Inquiry 2. Making an Electromagnet</p> <p style="text-align: center;"><b>SOL:</b> PS.1 h,k,m; PS.11 a-c</p>	<p><b>Topics:</b></p> <p><b>Review of-</b></p> <ul style="list-style-type: none"> <li>☆ Scientific Method</li> <li>☆ Energy</li> <li>☆ Heat</li> <li>☆ Light</li> <li>☆ Sound</li> <li>☆ Electromagnetic Spectrum</li> <li>☆ Magnetism</li> <li>☆ Electricity</li> </ul> <p><b>Text Sections:</b> Chapters 1, 9, 10, 12-19</p> <p><b>Assessment:</b> 9 Weeks Test of Physics-related content</p> <p style="text-align: center;"><b>SOL:</b> PS.1; PS.6-11</p>
<p style="text-align: center;"><i>Week 10</i></p> <p><b>Topics:</b></p> <ul style="list-style-type: none"> <li>☆ Particle theory of matter</li> <li>☆ Elements</li> <li>☆ Compounds</li> <li>☆ Mixtures</li> <li>☆ States of matter</li> <li>☆ Phase changes</li> <li>☆ Physical properties &amp; changes</li> <li>☆ Chemical properties &amp; changes</li> <li>☆ Absolute zero</li> </ul> <p><b>Text Sections:</b> “Introduction to Matter” [Chapter 1, Sections 1 and 3; Chapter 2, Sections 1 and 4]</p> <p><b>Activities:</b> Edible Mixtures; Examples of Elements</p> <p style="text-align: center;"><b>SOL:</b> PS.1 n; PS.2 a,b; PS.7 a</p>	<p style="text-align: center;"><i>Week 11</i></p> <p><b>Topics:</b></p> <ul style="list-style-type: none"> <li>☆ History of atomic theory</li> <li>☆ Atomic structure</li> <li>☆ Periodic table organization</li> <li>☆ Metals</li> <li>☆ Nonmetals</li> <li>☆ Metalloids</li> </ul> <p><b>Text Sections:</b> “Atoms and the Periodic Table” [Chapter 3, Sections 1-4]</p> <p><b>Demos:</b> Reaction of sodium in H<sub>2</sub>O</p> <p><b>Activity:</b> Element Bingo</p> <p><b>Video:</b> <i>The Power of the Periodic Table</i></p> <p><b>Computer:</b> Research and create 1 PowerPoint slide representing information found on one specific element</p> <p style="text-align: center;"><b>SOL:</b> PS.3 a-b; PS.4 a-c</p> <p>↪ Cybersafety Reminders</p>	<p style="text-align: center;"><i>Week 12</i></p> <p><b>Topics:</b></p> <ul style="list-style-type: none"> <li>☆ Balancing Chemical Equations</li> <li>☆ Reactants</li> <li>☆ Products</li> <li>☆ Law of conservation of matter</li> <li>☆ Acids</li> <li>☆ Bases</li> </ul> <p><b>Text Sections:</b> “Chemical Reactions” and “Acids, Bases, and Solutions” [Chapters 5-6]</p> <p><b>Demos:</b> simple chemical reactions (Iodine clock reaction; Mentos and soda; vinegar and baking soda)</p> <p><b>Lab:</b> Testing pH of Several Common Liquids</p> <p style="text-align: center;"><b>SOL:</b> PS.4 a-c; PS.5 b,c</p>

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<i>Week 13</i>	<i>Week 14</i>	<i>Week 15</i>
<p><b>Topics:</b>            ☆ <b>Wrap-up and Review of Key Physical Science Concepts</b></p> <p><b>Text Sections:</b> Selected sections from Prentice Hall Science Explorer: Physical Science (Chapters 1-6, 9,10,12-20)</p> <p><b>Demos:</b></p> <p><b>Lab:</b></p> <p style="text-align: center;"><b>SOL: PS.2-PS.11</b></p> <p>☺ <b>Cybersafety Reminders</b></p>	<p><b>Review Topic:</b>            ☆ <b>Earth &amp; Space Systems</b></p> <p><b>Text Sections:</b> Selected sections from Prentice Hall Science Explorer: Grade 6 (Chapters 4-14; 18,19)</p> <p><b>Demos:</b></p> <p><b>Lab:</b></p> <p style="text-align: center;"><b>SOL: 6.2 b-d; 6.3 a-e; 6.5 c-g; 6.6 b-g; 6.8 a-I; 6.9 a-d; LS.14 b,c</b></p> <p>☺ <b>Cybersafety Reminders</b></p>	<p><b>Review Topic:</b>            ☆ <b>Force, Motion, Energy, and Matter</b></p> <p><b>Text Sections:</b> Prentice Hall Science Explorer: Grade 6 (Chapters 1-3, 15-17); Prentice Hall Science Explorer: Physical Science (selected sections)</p> <p><b>Demos:</b></p> <p><b>Lab:</b></p> <p style="text-align: center;"><b>Assessment: Benchmark Test</b></p> <p style="text-align: center;"><b>SOL: 6.2 a,e; 6.4 a-g; 6.5 a,b; 6.6 a; PS.2 a-f; PS.3 a,b; PS.4 a-c; PS.5 a-c; PS.6 a-c; PS.7 a-d; PS.8 a-d; PS.9 a-c; PS.10 a-d; PS.11 a-c</b></p> <p>☺ <b>Cybersafety Reminders</b></p>
<p style="text-align: center;"><i>Week 16</i></p> <p><b>Review Topic</b>            ☆ <b>Life Systems</b></p> <p><b>Text Sections:</b> Selected sections from Prentice Hall Science Explorer: Life Science (Chapters 1-23)</p> <p><b>Demos:</b></p> <p><b>Lab:</b></p> <p style="text-align: center;"><b>SOL: LS.2 a-d; LS.3 a,b; LS.4 a-c; LS.5 a-c; LS.6 a-c; LS.13 a-g; LS.14 a</b></p> <p>☺ <b>Cybersafety Reminders</b></p>	<p style="text-align: center;"><i>Week 17</i></p> <p><b>Review Topic</b>            ☆ <b>Ecosystems</b></p> <p><b>Text Sections:</b> Selected sections from Prentice Hall Science Explorer: Life Science (Chapters 22-24)</p> <p><b>Demos:</b></p> <p><b>Lab:</b></p> <p style="text-align: center;"><b>SOL: 6.7 a-g; LS.7 a-d; LS.8 a,b; LS.9 a-e; LS.10 a-c; LS.11 a-c; LS.12 a-e</b></p> <p>☺ <b>Cybersafety Reminders</b></p>	<p style="text-align: center;"><i>Week 18</i></p> <p><b>Review Topic</b>            ☆ <b>Scientific Investigation</b></p> <p><b>Text Sections:</b> Review <i>Introduction to Science</i> Sections</p> <p><b>Demos:</b></p> <p><b>Lab:</b></p> <p style="text-align: center;"><b>*****SOL TESTING*****</b></p> <p style="text-align: center;"><b>SOL: 6.1 a-k; LS.1 a-j; PS.1 a-n</b></p>

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