

**Washington Township School District**

**STEM/Makerspace Curriculum**

<b>Grade:</b>	3	<b>Mystery Science Unit/Project Title:</b>	Forces and Motion/Invisible Forces
<b>NJ Learning Standard(s):</b>	Physical Science <ul style="list-style-type: none"> <li>• Mystery 1: 3-PS2-1</li> <li>• Mystery 2: 3-PS2-1, 3-PS2-2</li> <li>• Mystery 3: 3-PS2-1, 3-PS2-2</li> <li>• Mystery 4: 3-PS2-3, 3-PS2-4</li> <li>• Mystery 5: TBD</li> </ul>		
<b>Objective:</b>	<ul style="list-style-type: none"> <li>• SWBAT identify some common forces</li> <li>• SWBAT describe how varying the strength of a force affects the motion of an object</li> <li>• SWBAT describe how objects of varying mass are each affected by a similar force</li> <li>• SWBAT describe, compare, and contrast balanced and unbalanced forces</li> <li>• SWBAT describe how an object of process functions</li> <li>• SWBAT determine the role of technology in the work of scientists</li> <li>• SWBAT identify the forces that act on an object you are trying to move, and explain how to measure the force needed to overcome each</li> <li>• SWBAT explain the laws of motion</li> <li>• SWBAT describe inertia</li> <li>• SWBAT relate motion in space to the lack of gravity in orbit around the earth</li> </ul>		
<b>STEM/ Unit Activities</b>	Mystery 1: <ul style="list-style-type: none"> <li>• Hopper Popper (mystery)</li> </ul> Mystery 2: <ul style="list-style-type: none"> <li>• Paper Bridge Engineering (mystery)</li> <li>• Build a bridge (other than paper) - <a href="#">"Spin" a Bridge</a></li> </ul>		

	<p>Mystery 3:</p> <ul style="list-style-type: none"> <li>• The Great Slide Challenge (mystery), extension <a href="#">Ramp Race</a></li> <li>• <a href="#">Build a Waterslide</a></li> </ul> <p>Mystery 4:</p> <ul style="list-style-type: none"> <li>• Magnet discovery (mystery)</li> <li>• <a href="#">Magnet Powered Car</a></li> </ul> <p>Suggested STEM:</p> <ul style="list-style-type: none"> <li>• <a href="#">Robot Car</a></li> <li>• <a href="#">Bristle Bots</a></li> <li>• <a href="#">Bridge the Gap</a></li> <li>• <a href="#">Make an Electromagnet</a></li> </ul>
<p><b>Suggested Assessments:</b></p>	<ul style="list-style-type: none"> <li>• Exit Ticket</li> <li>• Journal</li> <li>• Project Rubric</li> <li>• Unit Test</li> </ul>
<p><b>Supplies Needed:</b></p>	<p>Mystery 1: Hopper Popper</p> <ul style="list-style-type: none"> <li>• 3" x 6" light chipboard</li> <li>• Ruler</li> <li>• Pen</li> <li>• Scissors</li> <li>• 2-3 16" rubber bands</li> <li>• Handout (mystery)</li> </ul> <p>Mystery 2: Paper Bridge Engineering</p> <ul style="list-style-type: none"> <li>• Handout (mystery)</li> <li>• Ruler</li> <li>• Typing paper</li> <li>• Scissors</li> <li>• 2 stacks of books</li> <li>• Pennies (~400)</li> </ul>

	<p>Spin a Bridge:</p> <ul style="list-style-type: none"> <li>•</li> </ul> <p>Mystery 3: The Great Slide Challenge</p> <ul style="list-style-type: none"> <li>• 12"-16" stiff cardboard</li> <li>• Tape</li> <li>• Pennies</li> <li>• Ruler</li> <li>• Stack of books/blocks</li> <li>• Testing materials – 1" squares of sandpaper, 1" squares of craft foam or Styrofoam, few big plastic buttons or plastic bottle caps, few large coins or metal bottle caps, 1" squares cardboard</li> <li>• Handout (mystery)</li> </ul> <p>Ramp Race Extension:</p> <ul style="list-style-type: none"> <li>• Sandpaper</li> <li>• Aluminum Foil</li> </ul> <p>Mystery 4: Magnet Discovery</p> <ul style="list-style-type: none"> <li>• 2 ring magnets</li> <li>• pencil</li> <li>• paperclips</li> <li>• piece of thread or string or light ribbon</li> <li>• 3 x 5 cards</li> <li>• Handout (mystery)</li> <li>• Test items – magnetic and non-magnetic</li> </ul> <p>*Materials based on chosen suggested STEM activities</p>
<p><b>Resources to Support Unit:</b></p>	<ul style="list-style-type: none"> <li>• Mentor Texts – <u>And Everyone Shouted "Pull": A First Look at Forces and Motion That Magnetic Dog</u> by Bruce Whatley</li> <li>• BrainPop Jr. – Pushes and Pulls, Gravity, Magnets</li> <li>• ReadWorks Articles- <a href="#">Navigation in the Age of Exploration</a>, <a href="#">Rocket Ships</a></li> <li>• Magic School Bus – Plays Ball (youtube)</li> </ul>