

## 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> </ul>		

	<ul style="list-style-type: none"> <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> </ul>

- 2 stacks of books
- Pennies (~400)

Spin a Bridge:

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Mystery 3: The Great Slide Challenge

- 12"-16" stiff cardboard
- Tape
- Pennies
- Ruler
- Stack of books/blocks
- 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
- Handout (mystery)

Ramp Race Extension:

- Sandpaper
- Aluminum Foil

Mystery 4: Magnet Discovery

- 2 ring magnets
- pencil
- paperclips
- piece of thread or string or light ribbon
- 3 x 5 cards
- Handout (mystery)
- Test items – magnetic and non-magnetic

\*Materials based on chosen suggested STEM activities

**Resources to Support Unit:**

- Mentor Texts – [And Everyone Shouted "Pull": A First Look at Forces and Motion That Magnetic Dog](#) by Bruce Whatley
- BrainPop Jr. – Pushes and Pulls, Gravity, Magnets
- ReadWorks Articles- [Navigation in the Age of Exploration](#), [Rocket Ships](#)

- [Magic School Bus – Plays Ball \(youtube\)](#)

