

# Washington Township School District

## STEM/Makerspace Curriculum

<b>Grade:</b>	4	<b>Mystery Science Unit/Project Title:</b>	Waves of Sound
<b>NJ Learning Standard(s):</b>	4-PS4-1, 4-PS4-3		
<b>Objective:</b>	<p>SWBAT:</p> <ul style="list-style-type: none"> <li>• Identify the different pitches and frequencies created by a vibrating ruler and a straw kazoo</li> <li>• Create high- and low-pitch sound waves</li> <li>• Hypothesize what happens to sound waves when they reach a solid, flat object</li> </ul>		
<b>STEM/ Unit Activities</b>	Pitch and Frequency		
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>• Exit Ticket</li> <li>• Journal for observations</li> <li>• Pitch It (see lesson attachment)</li> <li>• Kazoo Hullabaloo (see lesson attachment)</li> </ul>		
<b>Supplies Needed:</b>	<ul style="list-style-type: none"> <li>• Ruler</li> <li>• Plastic drinking straw</li> <li>• Scissors</li> </ul> <p>For additional activity attached:</p> <ul style="list-style-type: none"> <li>• Drum</li> <li>• A few paper clips</li> <li>• Tuning fork</li> <li>• Basin of water</li> <li>• Rubber band strung between two pegs or nails</li> <li>• Metal fork and spoon</li> <li>• Steel yardstick or ruler</li> <li>• Musical instruments or a musical tape, record, or CD</li> <li>• A slinky</li> <li>• A set of glasses and a spoon for each group of students</li> <li>• Six copies of the Sound Waves Seen activity sheet for each student.</li> </ul>		

**Resources to  
Support Unit:**

[https://www.teachengineering.org/activities/view/cub\\_energy2\\_lesson05\\_activity3](https://www.teachengineering.org/activities/view/cub_energy2_lesson05_activity3)

[https://www.teachengineering.org/content/cub\\_/activities/cub\\_energy2/cub\\_energy2\\_lesson05\\_activity3\\_instruments.pdf](https://www.teachengineering.org/content/cub_/activities/cub_energy2/cub_energy2_lesson05_activity3_instruments.pdf)

[https://www.teachengineering.org/content/cub\\_/activities/cub\\_energy2/cub\\_energy2\\_lesson05\\_activity3\\_worksheet.pdf](https://www.teachengineering.org/content/cub_/activities/cub_energy2/cub_energy2_lesson05_activity3_worksheet.pdf)

<http://school.discoveryeducation.com/lessonplans/worksheets/soundwaves/worksheet1.html>

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### STEM/Makerspace Curriculum

<b>Grade:</b>	4	<b>Mystery Science Unit/Project Title:</b>	Waves of Sound Mystery 2: What Would Happen If You Screamed in Outer Space?
<b>NJ Learning Standard(s):</b>	4-PS4-1, 4-PS4-a		
<b>Objective:</b>	SWBAT: <ul style="list-style-type: none"> <li>• Explain that some materials absorb sound, while others reflect it</li> <li>• Design noise-absorbing headphones</li> </ul>		
<b>STEM/ Unit Activities</b>	Controlling Sound Activity: Designing Headphones		
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>• Planning Sheet</li> <li>• Exit Ticket</li> </ul>		
<b>Supplies Needed:</b>	<p><b>For activity demonstration:</b></p> <ul style="list-style-type: none"> <li>• one pair of working headphones (the kind that covers the entire ear)</li> <li>• bells, small buzzer, CD player, or other noise-making items</li> </ul> <p><b>Each group needs:</b></p> <ul style="list-style-type: none"> <li>• various materials such as cloth, sponges, foam, cotton balls, cotton batting, small carpet samples, and any other materials that will absorb sound</li> <li>• something to hold the earpieces together, such as old headphones without the earpieces or a piece of material that will bend without breaking (vinyl strips from a mini-blind or inexpensive plastic headbands)</li> <li>• Dixie cups (work well as earpieces and can be stuffed with sound-absorbing materials)</li> <li>• rubber bands</li> <li>• duct tape</li> <li>• masking tape</li> <li>• scissors</li> </ul>		
<b>Resources to Support Unit:</b>	Headphone Planning Sheet  <a href="https://www.teachengineering.org/activities/view/cub_soundandlight_lesson5_activity1">https://www.teachengineering.org/activities/view/cub_soundandlight_lesson5_activity1</a>		