

Unit 2: Waves

Unit #:	APSDO-00034870	Duration:	10.0 Day(s)	Date(s):	
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Team:
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Grades:
 4

Subjects:
 Science

Unit Focus

In this unit, students will explore waves. They will explain the different forms that waves can take and the differences between each. Lessons will also focus on how waves can be described using different measurements. Summative assessments include a performance task with a written component that assesses mastery of content and skills. Supporting instructional materials for this unit may include mentor text(s), print and online resources, related laboratory equipment and materials, and teacher generated inquiry tasks.

Stage 1: Desired Results - Key Understandings

Established Goals	Transfer	
<p>Next Generation Science Standards (DCI) <i>Science: 4</i></p> <ul style="list-style-type: none"> An object can be seen when light reflected from its surface enters the eyes. <i>PS4.4.B1</i> Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information-convert it from digitized form to voice-and vice versa. <i>PS4.4.C1</i> Waves of the same type can differ in amplitude (height of the wave) and 	<p>T1 (T1) Integrate knowledge from a variety of disciplines and apply it to new situations to make sense of information, formulate insightful questions, and/or solve problems.</p> <p>T2 (T5) Communicate scientific information clearly, thoroughly, and accurately.</p>	
	Meaning	
	Understandings	Essential Questions
	<p>U1 (U489) Waves can be observed as patterns of motion and measured from which predictions can be made.</p> <p>U2 (U477) Objects can be seen if light is available to illuminate them or if they give off their own light.</p> <p>U3 (U488) People use light and sound to</p>	<p>Q1 (Q489) How do I design a given wave? How do I make a prediction about what will cause a change in wave characteristics?</p> <p>Q2 (Q484) How is sound created? How does it travel? Why do some people/animals hear sounds and not others?</p> <p>Q3 (Q485) How does light allow me to see?</p>

<p>wavelength (spacing between wave peaks). <i>PS4.4.A2</i></p> <ul style="list-style-type: none"> Waves, which are regular patterns of motion, can be made in water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the wave except when the water meets a beach. <i>PS4.4.A1</i> 	<p>communicate.</p> <p>U4 (U490) Digitized information (data) can be transmitted over long distances with fidelity.</p> <p>U5 (U911) Scientists examine evidence to look for relationships (e.g., patterns, trends) to formulate insightful questions and solve problems.</p> <p>U6 (U953) Information from others helps ensure the credibility of scientific findings.</p>	<p>Q4 (Q487) How do I communicate without words or pictures?</p> <p>Q5 (Q488) How does information travel over long distances?</p> <p>Q6 (Q924) What questions do I wonder about? How can I use science to figure out the answer?</p> <p>Q7 (Q951) How do I share my results?</p>
Acquisition of Knowledge and Skill		
Knowledge		Skills
<p>K1</p> <p>A wave transfers energy, not matter, from one place to another</p>	<p>S1</p> <p>Identify what things travel as waves (e.g., water, sound, light)</p> <p>S2</p> <p>Describe a wave (i.e., amplitude, wavelength)</p> <p>S3</p> <p>Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen</p> <p>S4</p> <p>Describe how information can be transferred from one place to another in digital format (e.g., light in a fiber optic cable)</p>	