

Anchoring phenomenon: What causes erosion on sandy beaches and how can we stop it?

Phenomenon Video:

<https://www.youtube.com/watch?v=DwSrTICsG2I>



POGIL[®] Activities that support the anchoring phenomenon:

PSActivity 13 – Exploring Predictable, Repeating Patterns in Data

Identifying waves in data as predictable and repeating measurable events using ocean waves and changes in a child's height while performing repeated exercises.



PSActivity 14 – Why Are Some Waves More Damaging Than Others?

Wave energy is explored as amplitude in models of damage to boats.



PSActivity 15 – More Properties of Waves

The relationships between amplitude, frequency and wavelength are examined and measured using graphs, simple numbers and diagrams.



PSActivity 16 – Waves Everywhere! Water, Sound, and Light

Three types of waves and how they reflect are examined using diagrams



PSActivity 17 – What Happens When Waves Hit Different Kinds of Materials?

Different wave types (ocean, light and sound) interact with different materials in varying degrees of absorption and transmission.

POGIL® Activity	NGSS Performance Expectation	Learning Outcomes
PSActivity 13	<p>MS-PS4-1 Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.</p>	<p>Exploring Predictable, Repeating Patterns of Data</p> <ol style="list-style-type: none"> 1. I can create a height vs. time graph of a wave if I have access to a data table. 2. I can measure the height and amplitude of a wave from a height vs. time graph.
PSactivity 14	<p>MS-PS4-1 Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.</p>	<p>Why Are Some Waves More Damaging Than Others?</p> <ol style="list-style-type: none"> 1. I can analyze and interpret data to describe how the amount of energy in a wave changes as the amplitude of the wave changes. 2. I can predict damage to boats tied to a dock based on the amplitude of water waves.
PSActivity 15	<p>MS-PS4-1 Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.</p>	<p>More Properties of Waves</p> <ol style="list-style-type: none"> 1. I can estimate the wavelength of a wave from a height vs. distance graph. 2. I can calculate the frequency of a wave from a height vs. time graph. 3. I can describe the relationship between wavelength and frequency.

<p>PSActivity 16</p>	<p>MS-PS4-2 Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.</p>	<p>Waves Everywhere! Water, Sound, and Light</p> <ol style="list-style-type: none"> 1. I can create a model that accurately shows water, sound, or light waves that are not hitting a surface. 2. I can create a model that accurately shows what happens when water, sound, or light waves hit a smooth, flat surface from any angle.
<p>PSActivity 17</p>	<p>MS-PS4-2 Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.</p>	<p>What Happens When Waves Hit Different Kinds of Materials? I can create an accurate model of a wave being absorbed as it passes through a material.</p> <ol style="list-style-type: none"> 2. I can create an accurate model of a wave being transmitted as it passes through a material. <p>(Optional extension questions)</p> <ol style="list-style-type: none"> 3. I can describe how the amount of energy changes as a wave passes through a wave-absorbing material.