Name: _____
Date: _____

Activity Sheet 2: What's a Wave?

When we think of the word "wave" we usually picture someone moving their hand back and forth to say hello or maybe we think of a tall curling wall of water moving in from the ocean to crash on the beach.

In physics, a wave is a traveling disturbance that moves through space and matter transferring energy from one place to another. When studying waves it's important to remember that they transfer energy, not matter.

Where did the energy come from in the wave machine you used?

_____

The wave you see below is a ***Mechanical wave.*** These are waves that require a material to travel through. Mechanical waves travel when molecules in the material collide with each other passing on energy.

Ocean Wave:

What is the material that the energy is moving through?

_____

Information taken from:

"Ducksters: Education Site for Kids and Teachers." 2006. 22 Apr. 2014 <http://www.ducksters.com/>

Name: _____
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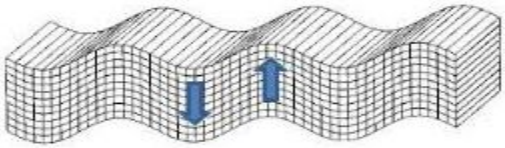
Below are some examples of waves. For each one, identify the material that the sound is moving through.

Seismic Waves (Earthquakes):

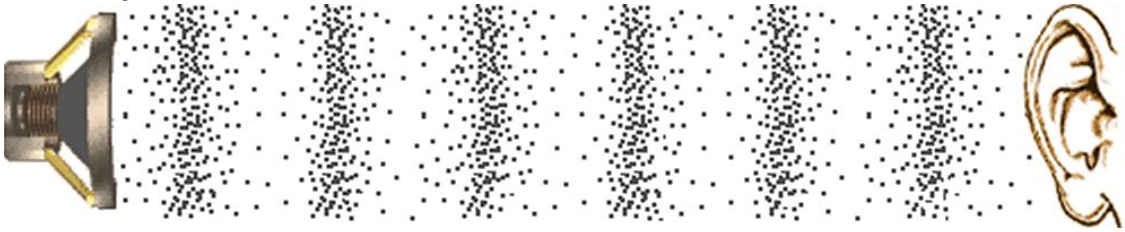


Material? _____

Waves made by a Slinky:

Material? _____

Music Speakers:



Material? _____

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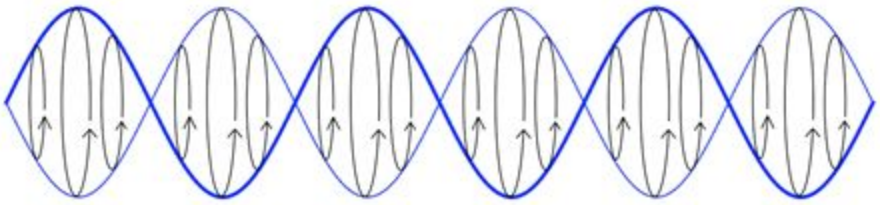
Waves have moving *crests* (or *peaks*) and *troughs*. A crest is the highest point the medium rises to and a trough is the lowest point the medium sinks to.

Below is a picture of an ocean wave. Label on the picture where the ***crest*** and ***trough*** is on the ocean wave.

When you turned on the wave machine, you saw a pattern like this:



There was only one string, but it looked like there were two. Why do you think this happened?

_____

_____

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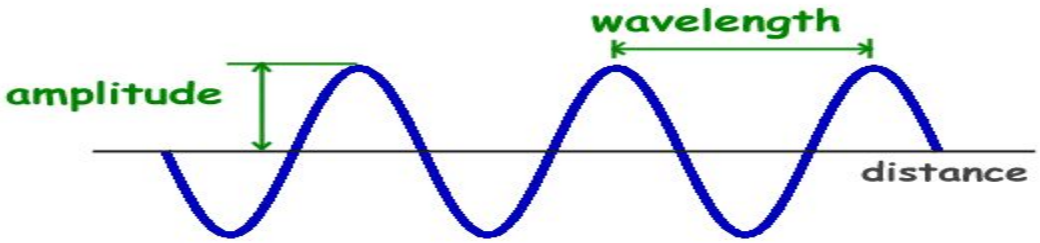
The ***amplitude*** of a wave is a measure of the maximum height of the wave from its rest position. The amplitude is shown on the graph below.



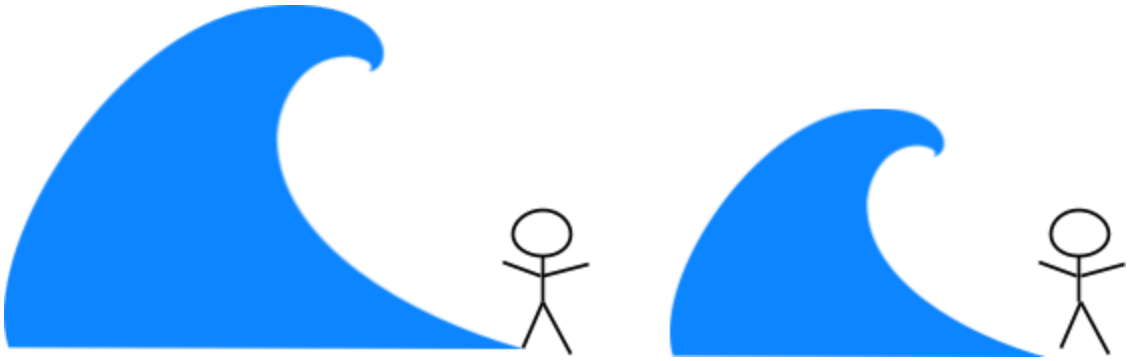
Look at the results from activity 1. Can you figure out the amplitude of your wave? Write it down.

Amplitude = _____

The amplitude is a measure of the strength or intensity of the wave. For example, when looking at a sound wave, the amplitude will measure the loudness of the sound. As energy increases, the amplitude increases.

Look at the two pictures of waves below:

1 **2**



Which wave has a larger amplitude? _____

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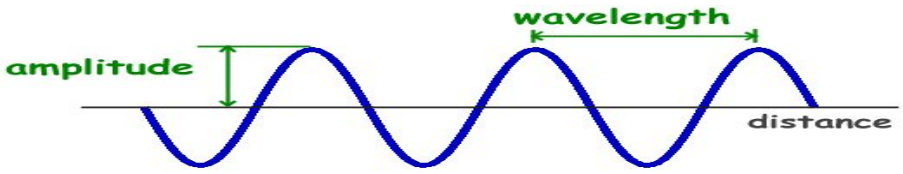
Which wave will have a better chance of knocking down the person? Explain why using the terms amplitude and energy in your answer.

_____

_____

The ***wavelength*** of a wave is the distance between neighboring crests or troughs of a wave.



Look at your experiment on changing the wavelength from Activity 1.

What did you change and how did it affect the wavelength?

_____

_____

Give a reason for why this happened.

_____

_____

_____

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In your communication game, you made a few different sounds to communicate the different colors and amount of chips. Below are some sound waves. For each wave, write down the sound (flick, tap . . .) that best fits that wave pattern.

In what way does changing the ***amplitude*** affect the sound?

_____
_

_____
_

In what way does changing the ***wavelength*** affect the sound?

_____
_

_____
_

Information taken from:

"Ducksters: Education Site for Kids and Teachers." 2006. 22 Apr. 2014 <http://www.ducksters.com/>