

# Wave Webquest Key

Item #: \_\_\_\_\_

Waves: Transfer of Energy

Name: Key

Procedure:

- 1) Log-in to your Chromebook and go to the internet.
- 2) Follow the instructions for each section/webpage and answer the questions accordingly.

What are waves?

add wave - disturbance that carries energy  
medium material

- 1) Type in the search bar at the top: PBS Learning Media Waves
- 2) Click on the first REAL link that is listed: "What is a Wave? - PBS Learning Media"
- 3) Click "Launch" on the picture.
- 4) Read the first three paragraphs.
- 5) Click the people wave.
- 6) Read the next example then click on the string animation.

1st Tab  
(Mozilla Firefox)

Answer the following questions:





- 1) Using complete sentences, explain at least TWO similarities of these two waves.  
Both waves travel up and down. (Answers may vary)  
Both do not transfer material/matter.  
Both transfer energy.
- 2) Describe a difference between these two examples of waves.  
The waves travel through different mediums.
- 3) Knowing what you know so far (with class demonstrations/discussions), what type of wave is being demonstrated in these examples?

Transverse waves

Click the "next" button. Read the two paragraphs on the left side. Explore the different wave controls and the density of the mediums.

Answers will vary

- 4) Record your observations below as you adjust the different variables.

			
up/down particles stay in "place"	push/pull motion back/forth particles stay in "place"	travels at a diagonal	combination of both ↓↑ + ⇌ (transverse/longitudinal)

## Two Types of Mechanical Waves

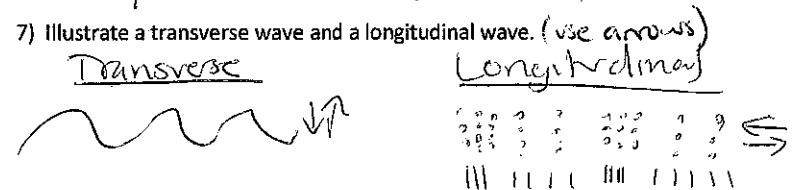
2nd Tab

- 1) Return to the Search bar, type: ACS PSU Wave motion.
- 2) Click the link that says: "Longitudinal and Transverse Wave Motion" (should be first link again)
- 3) Read the top paragraph on the page.

Answer the following questions:

- 5) Describe a mechanical wave (use your OWN words).  
travels through solid, liquids, & gases

- 6) How do longitudinal waves differ from transverse waves?  
longitudinal back/forth      Transverse up/down



- 8) Notice the particles in each wave. Do the particles within the wave "switch spots" with other particles or did the particles stay in the same location? What do you think this represents? Particles stay in the same location, this represents that particles (or matter) is not transferred.

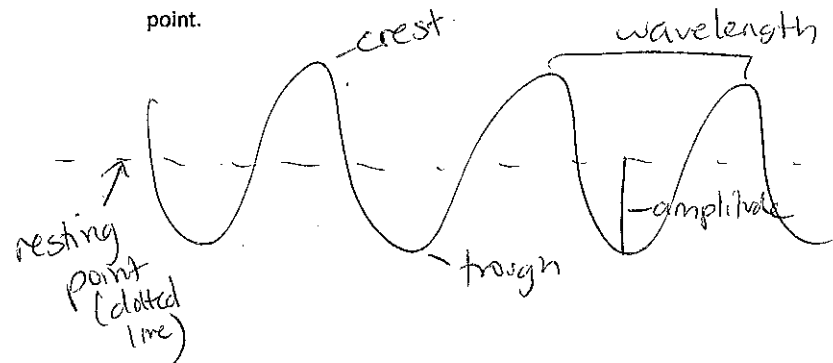
## Parts of a wave

- 1) Return to the search bar, type Parts of a Wave Middle School
- 2) Click the first link "Middle School Science Help: Krystal Cortez: PARTS of WAVES"
- 3) Read the Introduction Paragraph

3rd Tab

Answer the following questions:

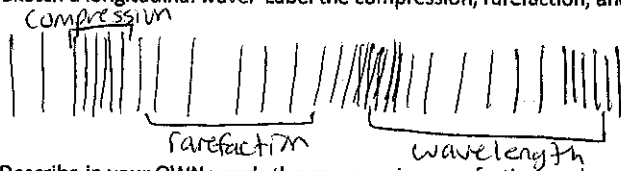
- 9) Sketch a transverse wave. Label the crest, trough, wavelength, amplitude, resting point.



10) Describe in your OWN words (does not have to be complete sentences) the different parts of a transverse wave:

<u>Crest</u> top of wave	<u>Trough</u> bottom of wave	<u>Wavelength</u> distance b/w same spots (crest to crest)	<u>Amplitude</u> distance from resting point to crest	<u>Resting Point</u> where wave begins
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11) Sketch a longitudinal wave. Label the compression, rarefaction, and wavelength.



12) Describe in your OWN words the compression, rarefaction, and wavelength in a longitudinal wave.

<u>Compression</u> Compressed part of wave	<u>Rarefaction</u> spread out part	<u>Wavelength</u> measured from compression to compression
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**Frequency and Amplitude in a Transverse Wave**

- 1) Return to the search bar: type Classzone Frequency.
- 2) Click on the first link: "Frequency and Amplitude- Classzone"
- 3) Experiment with the wave's frequency and amplitude.

4th Tab

Answer the following questions:

13) Observing the wave's different frequencies, what relationship does a wave's frequency and its wavelength have? Describe (can use pictures to help explain your answer).

The higher the frequency the shorter the wavelength.  
The lower the frequency the longer the wavelength.

14) How can you define the term "frequency" by using this demonstration?

The # of wavelengths that pass ~~per second~~ during a certain time (speed, time)

Amplitude?

**Frequency and Amplitude in a Longitudinal Wave**

5th/Last Tab

- 1) Return to the search bar, type: BBC changing sound.
- 2) Click the 2<sup>nd</sup> link: "BBC-KS2 Bitesize Science-Changing Sounds: Play"
- 3) Follow the directions on the website.

Answer the following questions:

15) What did you learn about the guitar? (Explain using COMPLETE sentences). (may vary)

Shorter = higher sound  
Longer = lower sound  
Pluck gently = softer sound  
Pluck strongly = louder sound

16) What did you learn about the drum? (Explain using COMPLETE sentences). (may vary)

Looser = lower / more vibrations  
Tighter = higher / less vibrations  
Strongly = louder  
gently = softer

17) What did you learn about the bottle and water? (Explain using COMPLETE sentences).

no water = lower sound  
more water = higher sound  
gently = softer  
Strongly = louder

Finished early?! Grab 10 index cards for your group. Using all ten words below (each student will complete 2-3 cards), draw a picture of the word on one-side of the card (SHOULD BE AN ILLUSTRATION ONLY—NO WORDS!!!! You can use arrows if needed) and on the other-side write the word AND the description.

Mechanical Wave, Transverse Wave, Longitudinal Wave, Crest, Trough, Amplitude, Wavelength, Compression, Rarefaction, Frequency

Ex. they did not do

Picture	word/description