

## REVIEW FOR WAVES QUIZ

Name: \_\_\_\_\_ Quiz Date: \_\_\_\_\_

This quiz will cover information from the first part of our unit on waves. It will consist of some multiple choice, fill-in-the-blank, drawing, and short answer questions. You should review your DQs, labs, waves article, simulation, reading notes, and concepts from activities we've done. Be able to hit the following targets:

- *I can diagram and describe the anatomy and characteristics of mechanical, electromagnetic, transverse, and longitudinal waves.*
- *I can describe and diagram how to change the wavelength, amplitude, and frequency of a wave.*
- *I can explain and calculate how the energy of a wave is related to the amplitude and wave speed.*

1. Waves that do not require a medium to transfer energy are called \_\_\_\_\_ waves.

- A. mechanical
- B. electromagnetic
- C. transverse
- D. longitudinal

2. Waves whose particles vibrate in the same direction the wave travels are called \_\_\_\_\_ waves.

- A. mechanical
- B. electromagnetic
- C. transverse
- D. longitudinal

3. The number of waves produced in a given amount of time is better known as:

- A. amplitude
- B. reflection
- C. frequency
- D. wavelength

4. The energy of a wave is directly calculated using its \_\_\_\_\_.

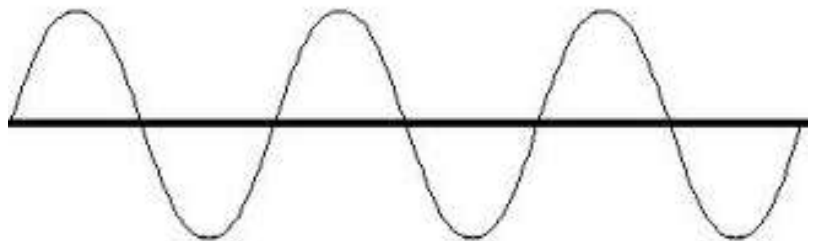
- A. amplitude
- B. wavelength
- C. frequency
- D. Hertz

5. An example of a medium is a:

- A. solid
- B. liquid
- C. gas
- D. all of the above

6. Clearly label the diagram of the transverse wave with the following terms: **crest**, **trough**, **wavelength**, and **amplitude**.

7. If the wave shown here is being created by moving a slinky back and forth along the ground, describe what you would have to do to increase its frequency?



8. Clearly label the diagram of the longitudinal wave with the following terms: **rarefaction**, **compression**, and **wavelength**.



What is an example of this kind of wave? \_\_\_\_\_

9. Which of these two waves has the **highest wave speed**? Show the formula used (or describe how you calculated this) and show your work.

Formula:

**Wave 1** = 800 Hz and 3 meter wavelength

**Wave 2** = 6000 Hz and 0.5 meter wavelength

10. Why does a faster wave (higher wave speed) have more energy? Explain your answer in terms of **kinetic energy**.

11. What is the formula for calculating the energy of a wave based on its amplitude? Use this formula to calculate the energy of a wave with a 4 meter amplitude. Show your work.

Formula:

12. Why does a wave with a bigger amplitude have more energy? Explain your answer clearly.

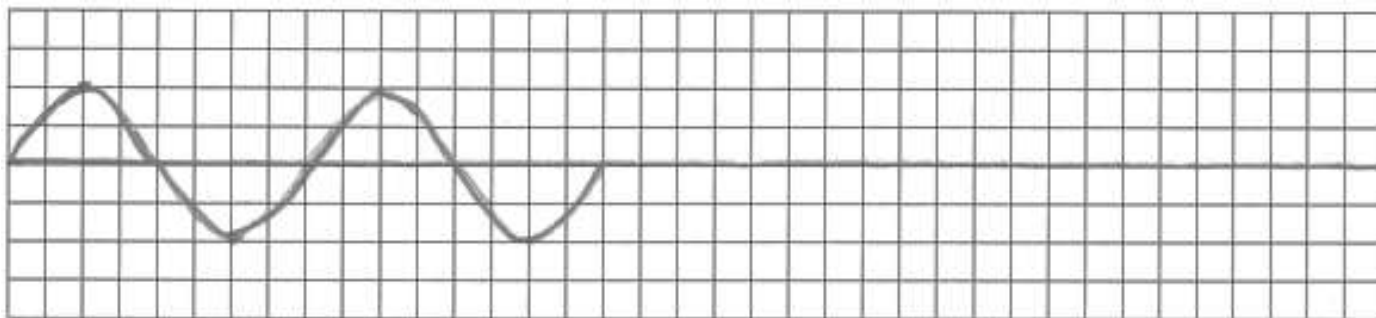
13. What creates ocean waves?

14. What's the difference between a swell and a breaking wave? Draw what each would look like.

15. Describe how the “particles” move in each of the following wave types:

- Light wave
- Sound wave
- Ocean wave

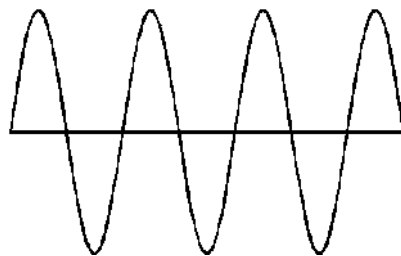
16. If you **increase** the **wavelength** of a wave, what do you automatically do to its **frequency**? Use the grid below to show what happens. Describe what happens to the frequency.



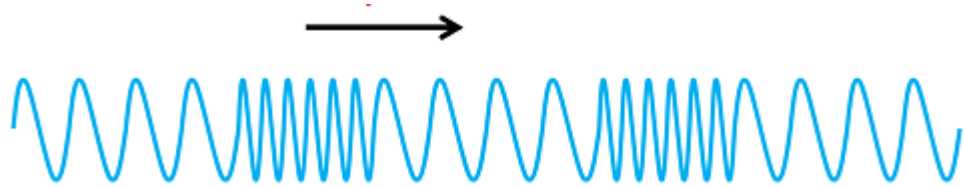
17. a. Draw on this diagram a wave with the **same frequency** but a **lower amplitude**.

b. What kind of wave is this?

c. What is an example of this kind of wave?



18. a. Draw a picture below the one shown here of a wave with a **higher frequency**.



b. What kind of wave is this?

c. What is an example of this kind of wave?

**Be sure you can define, give examples of, and draw (if appropriate) the following vocabulary words:**

|                  |                       |                  |                    |
|------------------|-----------------------|------------------|--------------------|
| Mechanical waves | Electromagnetic waves | Transverse waves | Longitudinal waves |
| Swells           | Breaking waves        | Surface waves    | Amplitude          |
| Frequency        | Wavelength            | Wave speed       | Crest              |
| Trough           | Rarefaction           | Compression      | Hertz              |