

1. As a wave passes through a medium, the particles vibrate. The particles always vibrate back and forth, returning to the starting position after the wave passes, but they can vibrate back and forth along the direction of travel, or at right angles to the direction of travel.

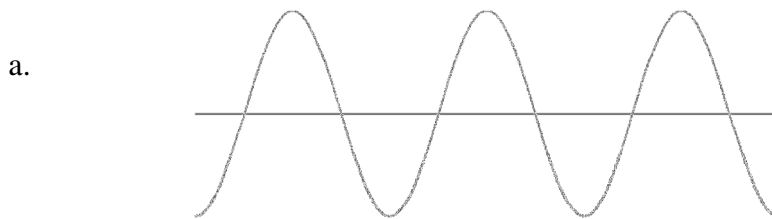
a. Which way do the particles move in transverse waves?

*up & down (⊥ to the wave direction)*

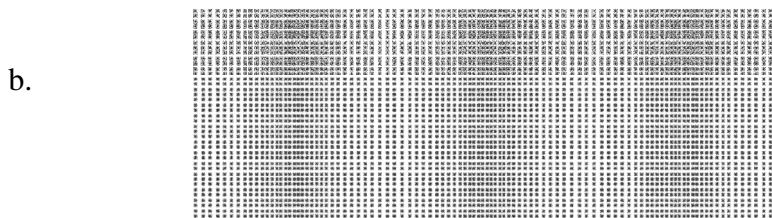
b. Which way do the particles move in longitudinal (compression) waves?

*left & right (Parallel to the wave motion.)*

2. Identify these wave forms as representing compression waves or transverse waves by writing the appropriate identifier below the diagram.



*transverse*

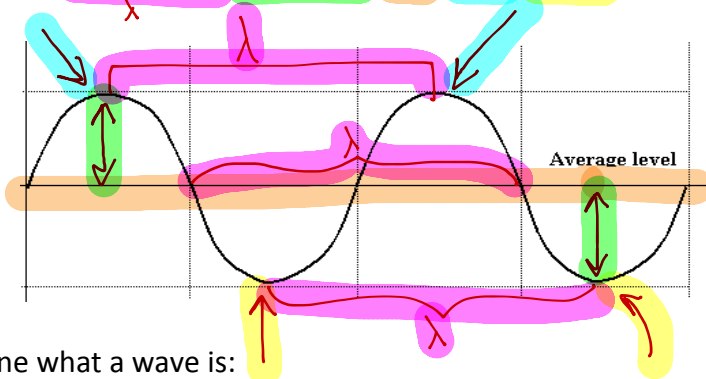


*Longitudinal  
(aka: compression)*

3. Label a compression and a rarefaction in the following wave.



4. Label the wavelength, amplitude, rest, crest, trough on the wave below.



5. Define what a wave is:

6. Identify the **medium** for these waves: (*The medium is what they travel through.*)

a. Waves on a pond. *water*

b. Waves on a rope. *rope*

c. Sound waves from people talking. *air*

d. Earthquake waves. *Earth's crust, mantle, or core.*

e. Sound waves on train track. *train track*

7. A characteristic of waves is that after the wave has passed through a medium, the medium is:

(disturbed or undisturbed).

8. A cork is floating in the water 20 meters from the shore of a lake. No wind is blowing, but waves from a passing boat are moving directly toward the shore. After the waves pass, where will the cork be relative to the shore? Will it be less than 20 meters, more than 20 meters, about 20 meters, or is it impossible to tell. Explain your answer.

*It will be exactly 20 m from the shore b/c it moves up & down as the wave moves past the cork.*

9. What is period (T) related to waves?

*T (period) is the time for 1 wave cycle (AKA wavelength) to pass a given point.*

10. What is the frequency (f) related to waves?

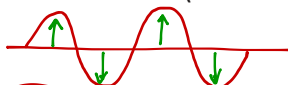
*frequency is how many wave cycles pass a point in 1 second (Hertz)*

11. When a wave travels through a medium, what happens to the medium after the wave has moved on?

*It remains undisturbed after the wave moves through.*

**Circle the correct answer in parenthesis in each sentence.**

12. The amplitude of a wave can be measured from the (medium, crest) or the (trough, wavelength) to the rest position of the wave's medium.



13. Waves with greater amplitudes carry (more, less) energy than waves with smaller amplitudes.

*crest to trough is  $\frac{1}{2} \lambda$*

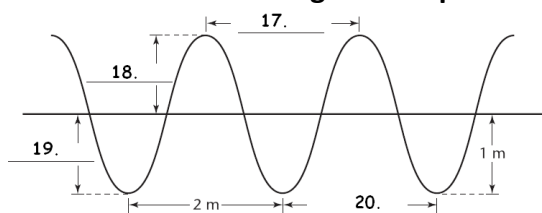
14. The wavelength of a transverse wave is often measured from (crest to crest, crest to trough).

*(or trough to trough)*

15. The number of waves that pass a point in one (second, minute) is the wave's (amplitude, frequency).

16. Waves with longer wavelengths have a (lower, higher) frequency and waves with shorter wave-lengths have a (lower, higher) frequency.

**Label 17-20 as wavelength or amplitude.**



17. wavelength ( $\lambda$ )

18. amplitude

19. amplitude

20. wavelength