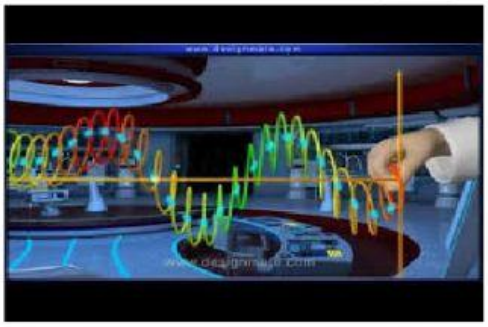
Name _____ Date _____



https://www.youtube.com/watch?v=GkNJvZlNSEY

Transmission of Sound

Every sound is produced by a **vibration**, which is the back and forth movement of an object. As you speak, vibrations are produced by the vocal cords in the throat; however you can hear them only when the sound energy reaches your ears. But how does the sound energy travel? Sound energy travels in the form of **sound waves**. There are mainly two types of sound waves. They are the **transverse** and the **longitudinal**.

1) The back and forth movement of an object is called _____.

2) You can hear sounds before sound waves reach your ears. T F

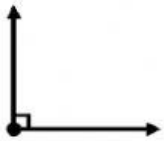
3) Sound energy travels in the form of _____.

4) What are the two types of sound waves? _____

In a **transverse wave**, the particles vibrate at a right angle to the direction of the wave. This means as the sound wave moves, the particles vibrate up and down in a **perpendicular** pattern.

In a **longitudinal wave**, the particles vibrate **parallel** to the direction of the wave.

Perpendicular Lines Form Right Angles **Parallel Lines Stay the Same Distance Apart**



5) In a _____ wave, objects vibrate parallel to the direction of the wave.

6) In a transverse wave, particles vibrate at a _____ to the direction of the wave.

7) In a transverse wave, the particles vibrate up and down in a _____ pattern.

8) _____ lines form right angles, which have measures of 90 degrees.

9) _____ lines always stay the same distance apart and never meet.

Sound waves travel at different speeds through different types of matter. In a **solid**, particles are very close together. Sound energy moves as one particle hits the other particles. With the particles being so close together, sound travels quickest through a solid. Particles in a **liquid** are a bit further apart than in a solid; thus, sound energy takes a little longer to travel through a liquid. Particles in a **gas** are more spread out and hence sound waves travel most slowly through them.

10) Sound waves always travel at the same speeds. T F

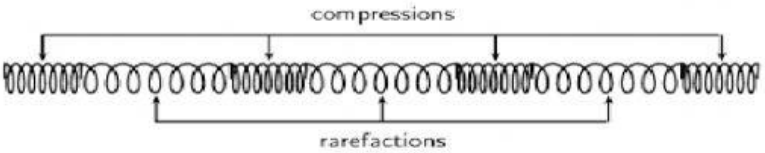
11) Particles are very close together in _____.

12) Sound travels quickest through a liquid. T F

13) Sound energy takes a little longer to travel through a _____ because the particles are a bit further apart than a solid.

14) Particles travel most slowly through _____ because the particles are more spread out.

The **wavelength** is the distance between two consecutive **compressions** or **rarefactions**. **Compressions** are the areas of longitudinal waves in which the particles are closest together. **Rarefactions** are the areas of longitudinal waves in which the particles are farthest apart.



15) The distance between two consecutive compressions or rarefactions is a _____.

16) _____ are the areas of longitudinal waves in which the particles are farthest apart.

17) _____ are the areas of longitudinal waves in which the particles are closest together.

The number of waves passing through points in a second is called **frequency**. Frequency is measured in **hertz**. Sound waves travel in all directions. Sound gets reflected, that is that it bounces back on hitting a solid surface. Bouncing back of sound is called **echo**.

18) The number of waves passing through points in a second is called the _____.

19) Frequency is measured in _____.

20) Sound waves travel in only one direction. T F

21) The bouncing back of sound off a solid surface is called an _____.

READ AND RETYPE THE VOCABULARY WORDS <u>WITHOUT</u> THE HYPHENS:

22) vi-bra-tion

23) trans-verse

24) lon-gi-tu-di-nal

25) per-pen-di-cu-lar

26) par-al-lel

27) com-pres-sion

28) rar-e-fac-tion

29) ech-o

30) fre-quen-cy

LABEL THE SOUND WAVES AS LONGITUDINAL OR TRANSVERSE:

31)

32)