TRANSMISSION OF SOUND. TYPES OF WAVES

Sound energy travels in the form of sound waves. There are mainly two types of waves: transverse wave and longitudinal wave. Let us see how waves travel.

We can use a slinky spring to observe both types of waves. Emily is holding one side of the slinky, whileDoctor Sirk is holding the other end. With a quick upward flick of the wrist, Doctor Sirk has sent energytravelling through the slinky. Notice how the slinky moves. This is a transverse wave. In a transverse wave, the particles vibrate at a right angle to the direction of the wave. The wave travelled from Doctor Sirk to Emily and back.

Now let's see what a longitudinal wave looks like. Emily is holding one end of the slinky, while Doctor Sirk is pulling its other end towards himself and then pushing it towards Emily. Watch closely and you willnotice that some of the coils crowd close together and then slowly move farther apart. This is because the vibrations are parallel to the direction of the wave. If the wave moves from right to left, then the particles also vibrate from right to left. This is a longitudinal wave. Sound waves are longitudinal waves.

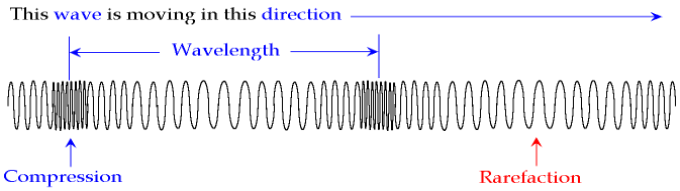
These waves travel at different speed in different mediums. The medium could be a solid, liquid or gas. Now let's see how this works. In a solid the particles are very close together, sound energy moves as oneparticle hits the other particle. With the particles being so close together, sound travels quickest through asolid.
If we look at particles in a liquid, they appear to be slightly further apart when compared to solid. Thus, sound energy takes a little longer to travel through a liquid.

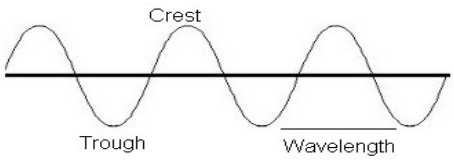
Look at the particles of gas, they are spread out and hence sound waves travel more slowly through them.
Now we know how sound travels in different media.

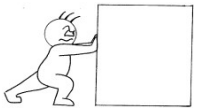
The vibration of particles produces waves. Wavelength is the distance between two consecutive compressions or rare factions. The number of waves passing through a point in a second is calledFREQUENCY and it is measured in Hertz.

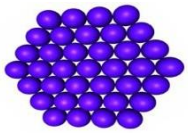
1.- Name the following images using the words in the chart.

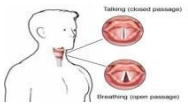
vibration	**liquid**	**slinky spring**	**gas**	**transverse waves**	**mediums**
vocal cords	**pull**	**solid**	**longitudinal waves**		**push**

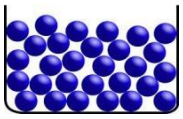


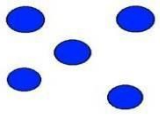












2.- Use these words or phrases to complete the sentences.

wavelength	sound		frequency	sound waves
	quick	transverse wave		a little longer
parallel	more slowly	longitudinal waves		speed

1. Every_____is produced by a vibration.
2. Sound energy travels in the form of_____.
3. In a_____, the particles vibrate at a right angle to the direction of the wave.
4. When the vibrations are_____to the direction of the wave, we call it longitudinal wave.
5. Sound waves are_____.
6. Sound waves travel at different_____in different mediums.
7. In a solid the particles are very close together so sound travels_____.
8. Particles in a liquid are more separated than in a solid so sound energy takes _____ to travel through a liquid.
9. The particles of gas are spread out so sound waves travel_____.
10. _____is the distance between two consecutive compressions.
11. The number of waves passing through a point in a second is called_____.

https://m.youtube.com/watch?v=GkNJvZINSEY
Video transcript.
Transmission of sound. (5' 21'')

Every sound is produced by a vibration. VIBRATION is the back and forth movement of an object. As you speak, vibrations are produced in the vocal cords in the throat, you can hear only when the sound energy reaches your ears. But how does sound energy travel? Wonder how that works? Come on! Let's go across to Doctor Sirk.

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These waves travel at different speed in different MEDIUMs. The medium could be a solid, liquid or gas. Now let's see how this works. In a solid the particles are very close together, sound energy moves as one particle hits the other particle. With the particles being so close together, sound travels quickest through a solid.
If we look at particles in a liquid, they appear to be slightly further apart when compared to solid. Thus, sound energy takes a little longer to travel through a liquid.

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Sound waves travel in all directions. Sound gets reflected, that is, it bounces back on hitting a solid surface. Bouncing back of sound is called echo. Bouncing back of sound is purposefully used in detecting depths of seabeds. That's amazing, isn't it?

SUMMARY

Every sound is produced by a vibration. Vibrations are produced by our vocal cords when we speak.

There are two types of waves: transverse waves and longitudinal waves. In a transverse wave the particles vibrate at a right angle to the direction of the wave. In a longitudinal wave, vibrations are parallel to the direction of the wave. Sound waves are longitudinal waves.

Sound travels quickest through solid.

Wavelength is the distance between two consecutive compressions or rare factions. The number of waves passing through a point in a second is called frequency and it is measured in Hertz.

Bouncing back of sounds is called echo.