SOUND

Sound is energy that travels in a wave that is caused by vibrations. **Vibrations** are movements made rapidly back and forth. Vibrations travel through the air and into your ear. You hear sounds when vibrating air causes your eardrum to vibrate. Strong vibrations make loud sounds while gentle vibrations make quieter sounds. Vibrations caused by **sound waves** cause us to hear sounds.

Sound waves are the invisible movement of **sound energy** that travels away from the source of the sound. The farther **sound waves** travel, the quieter the sound becomes.

Objects that make sound create high and low sounds. Pitch is the measure of how high or low a sound is. The **pitch** of a sound depends on how fast the **vibrations** are. High sounds are created by fast moving **vibrations**, low sounds are created by slower moving **vibrations**.

The **pitch** of a sound also depends on the **frequency** of the **vibrations**. F**requency** refers to the number of vibrations in a certain timeframe.

Lesson Checkpoint: What does the pitch of a sound depend on?

If you played an instrument with strings, you could see that the shorter the length of the string, the higher the sound it creates. The longer the length of the string, the lower the sound it creates.

Sound travels through matter. Sound waves travel through the air by spreading out in all directions. Sound waves are able to move through solids, liquids, and gases, which are the three states of matter. Sound waves travel the **fastest through solids** because the particles in solids are very close together.

Speed of Sound	
Medium	**Speed (m/s)**
air (0°C)	331
air (20°C)	343
air (100°C)	366
water (20°C)	1,482
steel (20°C)	5,200

Sound wave …or liquids because air is … are very far apart, so it ta… from particle to particle in …

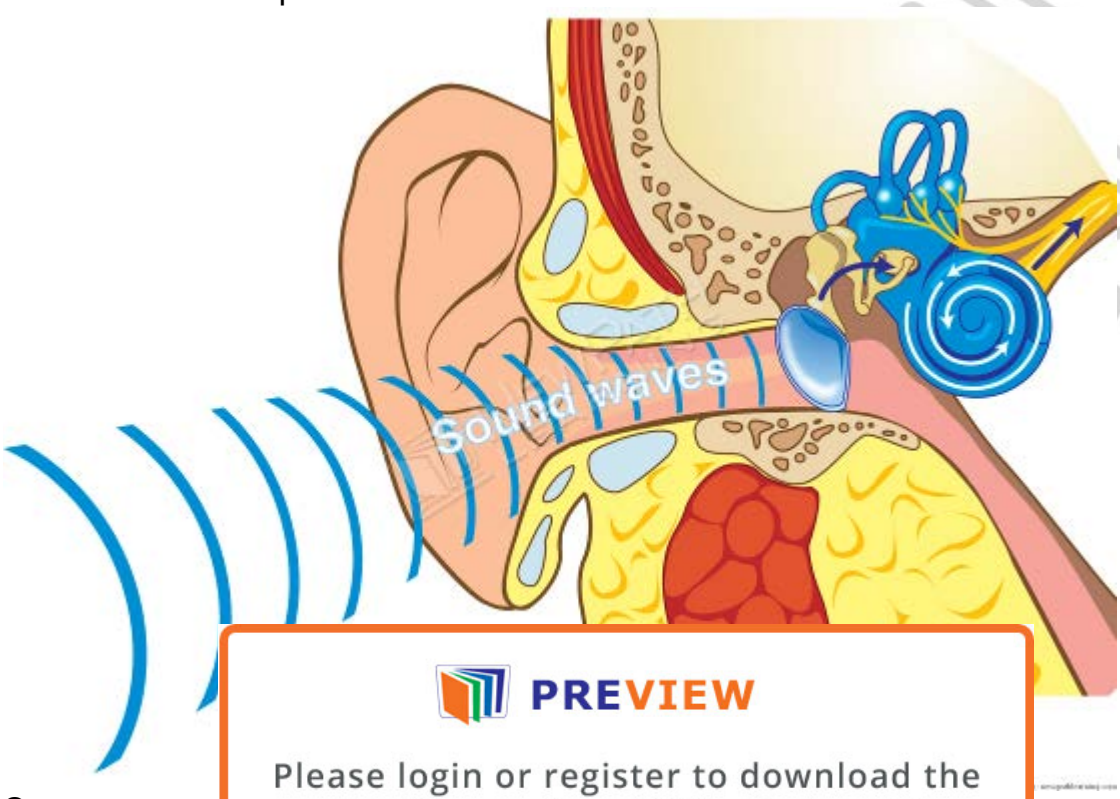
Sound travels faster through warm air than it does through cooler air showing that temperature affects the speed of sound.

Lesson Checkpoint: Why does sound travel fastest through solids?

Turn up the volume. **Volume**, when referring to sound, is how loud or quiet a sound is. Sound can be measured in units called **decibels**.

How We Hear

We use different parts of our ears to hear sounds.



Our **outer ea**

After passing eardrum, which begins

There are little bones beyond our **eardrum** that are located in our middle ear which also vibrate when our **eardrum** vibrates.

Our **inner ear** is just beyond the little bones in our ear. There is a part of the **inner ear** that is filled with liquid. When the vibrations reach the inner ear, tiny hairs inside this liquid vibrate.

The vibrations of the tiny hairs inside the liquid of our **inner ear** then send signals to our brain which then recognizes the sound we are hearing.

Lesson Checkpoint: Where does sound travel after it reaches your outer ear?

You make sounds when you talk because your vocal chords **vibrate** when air passes through them.