***What’s the deal with WAVES?***

Waves can be classified by \_\_\_\_\_\_\_\_\_\_\_\_\_ they move through or by \_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy moves through them.

There are two classifications for waves based on what they move \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Waves
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Waves

Mechanical waves are waves that can \_\_\_\_\_\_\_\_\_\_\_\_ move through a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_).

**Examples of mechanical WAVES?**

\_\_\_\_\_\_\_\_\_ waves earthquake/\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves

\_\_\_\_\_\_\_\_\_waves waves that travel down a rope or spring

Electromagnetic wavesare waves that can travel through matter or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ space where matter is not present.

**Examples of electromagnetic WAVES?**

* \_\_\_\_\_\_\_\_\_\_\_\_ waves microwaves
* infrared waves \_\_\_\_\_\_\_\_\_\_\_visible light
* \_\_\_\_\_\_\_\_\_\_\_\_\_ rays X-rays

There are two classifications for waves based on how energy moves through them:

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_/\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Waves
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Waves

**What are compressional/ longitudinal WAVES?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves in which the particles of matter in the medium vibrate by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ together and moving apart *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* to the direction *in which the wave travels* are called compressional/longitudinal waves.

The place on the wave that is pushed together is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the place that is moving apart is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

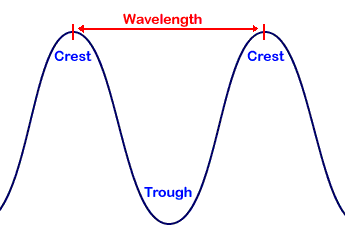
E**xamples of compressional/ longitudinal waves?**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves
* some waves in a spring
* some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves (earthquake waves- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves, to be exact)

**What are transverse WAVES?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves in which the particles of matter in the medium vibrate by moving \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ and perpendicular (at \_\_\_\_\_\_\_\_\_\_\_ angles) to the *direction the wave travels* are called transverse waves.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ point of a transverse wave is the \_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ point is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



**What is sound?**

* A form of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ made by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* When an object vibrates it causes the air particles around it to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.   
  These particles bump into particles close to them and this \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ until they run out of energy.

**What makes Sound?**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: back and forth motion
2. There can not be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ if there is not any vibration
3. Most vibrations are too \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for you to see.
4. Vibrations require \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—sound is a form of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**How does sound travel?**

* Sound travels through all forms of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_— **gases, liquids and solid**.  
  These are called the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* Sound **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** travel through a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**
* Sound passes through the medium as **longitudinal or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_waves.**

**How fast does sound travel?**

**Gas**: sound travels easily through gases. It travels about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ feet per second through air. (That’s how fast it travels when you talk!)

**Liquids**: Sound travels through water about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ feet per second. (Think of what ripples look like in the water and how they spread.)

**Solids:** Sound travels through a solid like wood at a rate of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ feet per second. Sound travels fastest through solids!

Sound cannot travel through a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (a space that is “empty” of matter).

**Sound Waves have 3 common features:**

a. Have a set \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. Vibrate at different speeds

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: the number of complete wavelengths, or times an object \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ per second.

c. Carry Energy

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the amount of energy a wave has

--high amplitude sound is made by objects with great vibrating motion

**Pitch**

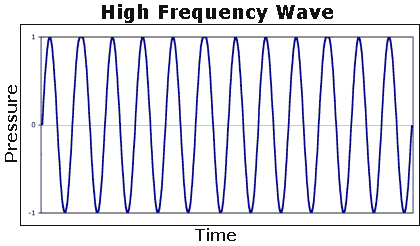
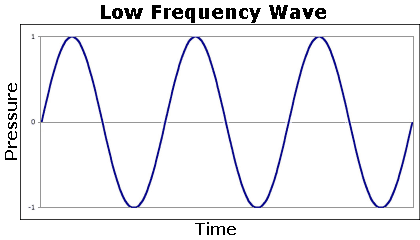
How \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a sound is

The higher the pitch the more “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” together the waves are

The higher the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the higher the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The lower the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the lower the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* When the vibrations are \_\_\_\_\_\_\_\_\_\_\_\_\_\_ you hear a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **pitch**.
* When they’re \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, you hear a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pitch.**

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**How else can we change sound?**

* We can make it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or softer by changing the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the height of the wave.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the amplitude, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the sound. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the amplitude the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the sound.

**Sound Reflection and Absorption**

Reflected sound is called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The vibrations are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ back to you.

Soft, air-filled objects \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sound.

When sound is absorbed, you do not hear it because it is not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ back to you.

**Doppler Effect**

* Change in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a wave due to relative motion between source and observer.
* A sound wave frequency change is noticed as a change in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* You hear the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pitch of the siren of an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ambulance and notice that the pitch \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ suddenly as the ambulance \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ you. This is an example of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_.

