

## Waves

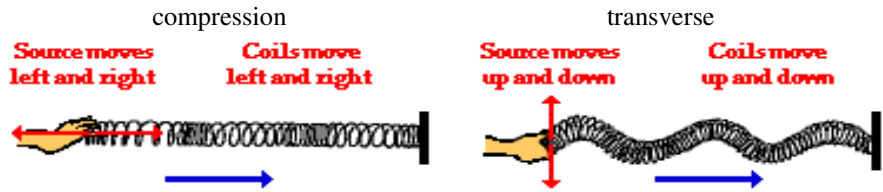
Questions:

Notes:

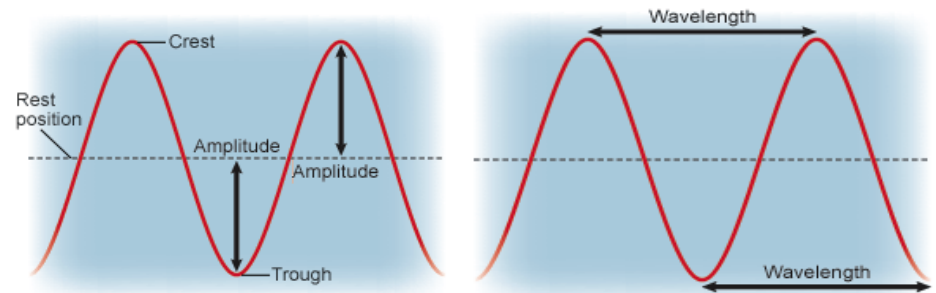
**Waves:** Energy moves in \_\_\_\_\_ patterns called \_\_\_\_\_.

1. **Transverse Waves:** energy that moves in \_\_\_\_\_ and \_\_\_\_\_, rolling pattern.

2. **Compression Waves:** Energy that moves in a \_\_\_\_\_ and forth, pushing pattern.



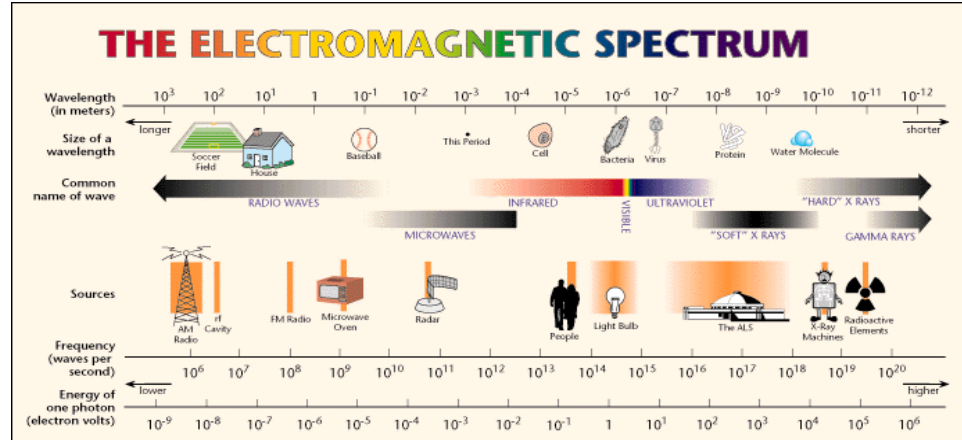
- **Medium:** a \_\_\_\_\_ that a wave can travel through (empty space, air, \_\_\_\_\_ etc.
- **Mechanical Wave:** A wave that requires a \_\_\_\_\_. The \_\_\_\_\_ in the wave is transferred from one \_\_\_\_\_ in the medium to the other. \_\_\_\_\_ or compression.
  - \_\_\_\_\_ waves must travel through a medium.
- **Electromagnetic Waves:** Do \_\_\_\_\_ need a medium to travel through; always \_\_\_\_\_
  - \_\_\_\_\_ waves do not need a medium to travel through.



- **Amplitude:** The \_\_\_\_\_ of energy in a wave. The \_\_\_\_\_ of the wave above or below the rest position.
- **Wavelength:** The distance between two \_\_\_\_\_ (top points) in a wave. Differing \_\_\_\_\_ can give waves unique behaviors.
  - \_\_\_\_\_ waves – waves with wavelength the size of a \_\_\_\_\_.
  - \_\_\_\_\_ - waves with a wavelength the size of an \_\_\_\_\_.

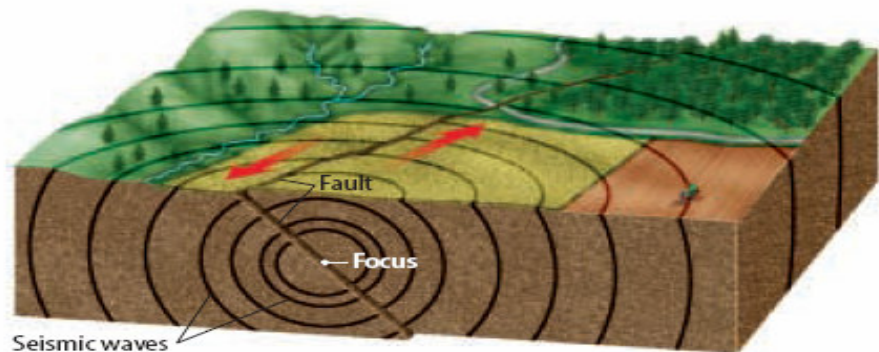
Summary:

- **Frequency:** The \_\_\_\_\_ of a wave, measured in waves per second (or \_\_\_\_\_)
- 106.1 FM has a \_\_\_\_\_ frequency (their waves move faster) than 94.5 FM but they are both \_\_\_\_\_ waves, so their \_\_\_\_\_ are the same.



Shorter Wavelength = \_\_\_\_\_ Frequency

Anatomy of a \_\_\_\_\_ Wave



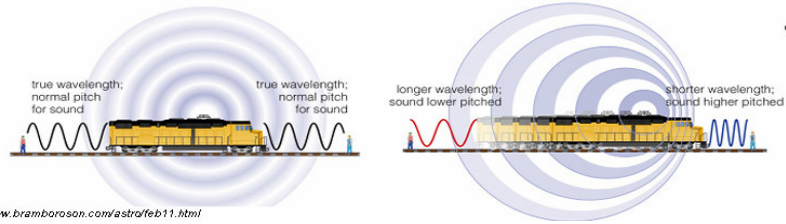
Seismic waves  
When Earth's crust breaks, the energy that is released is transmitted outward, causing an earthquake.

- **Seismic Waves:** Energy waves produced by \_\_\_\_\_
  - **P (Primary) waves:** \_\_\_\_\_/mechanical waves
  - **S (Secondary) waves:** \_\_\_\_\_/mechanical waves
  - **Surface waves:** Transverse/ \_\_\_\_\_

Questions:

What is the \_\_\_\_\_?

The **Doppler Effect** is the apparent change in \_\_\_\_\_ detected when the source of sound is \_\_\_\_\_ relative to the listener.

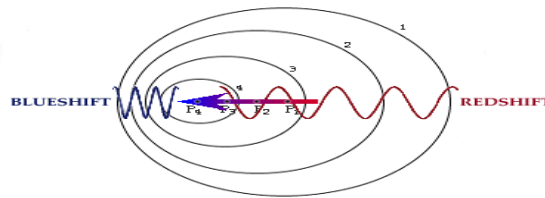


[www.bramborson.com/astro/feb11.html](http://www.bramborson.com/astro/feb11.html)

### Doppler Shift

- **Red and Blue Shifts**

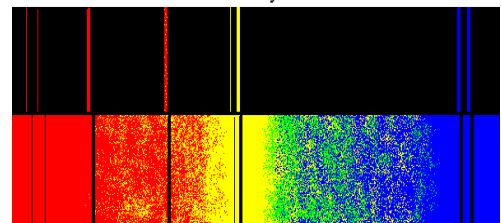
- Light from moving objects will appear to have \_\_\_\_\_ wavelengths depending on the \_\_\_\_\_ motion of the source and the \_\_\_\_\_.



### Doppler Shift

Here is what the spectrum of a star that is \_\_\_\_\_ us might look like (BLUE SHIFT)

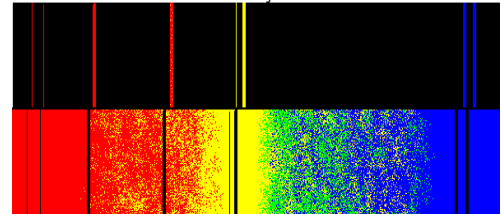
Reference lines from laboratory source



Absorption lines from star

Here is what the spectrum of star that is \_\_\_\_\_ from us might look like (RED SHIFT)

Reference lines from laboratory source



Absorption lines from star

