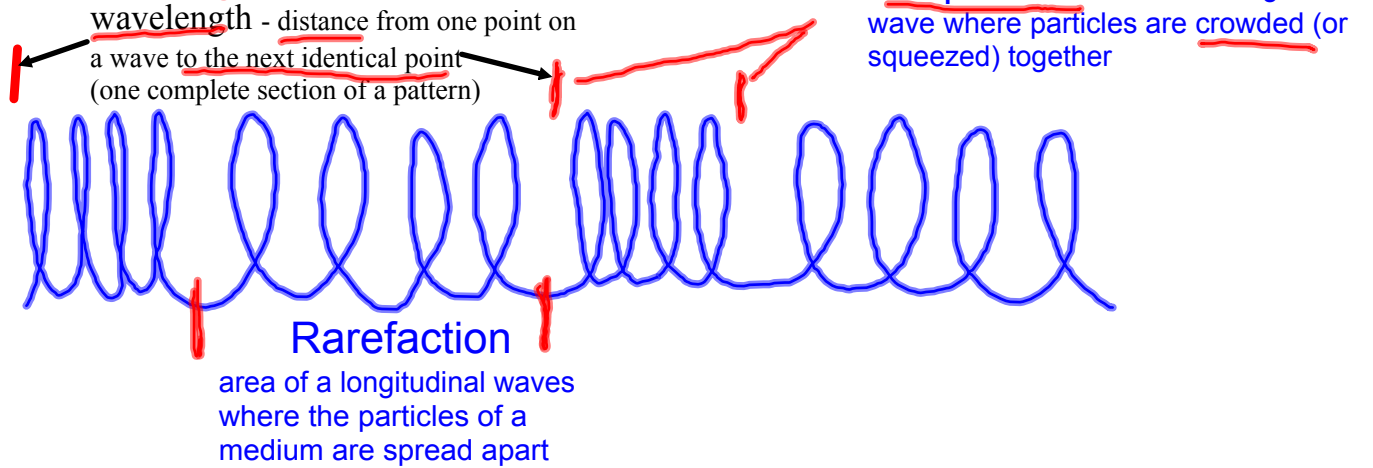
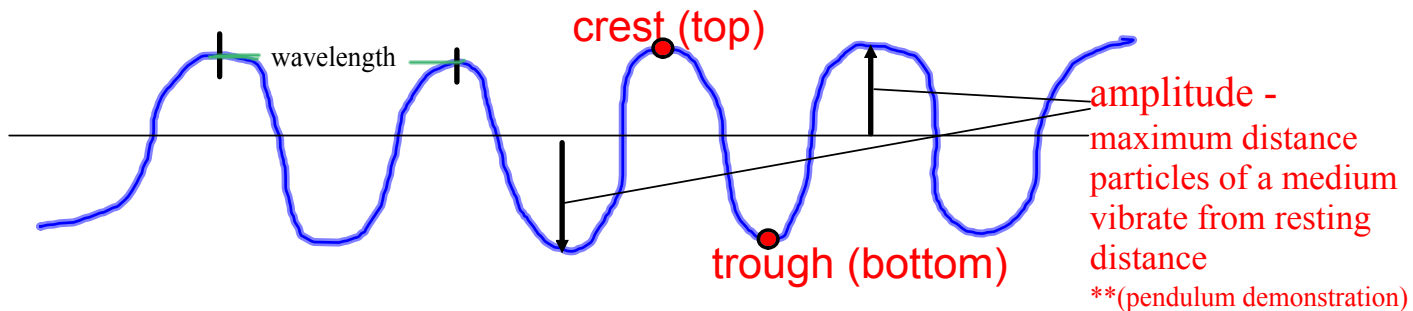


Wave a periodic disturbance that transmits energy [mechanical waves require a medium]. **medium-** some form of matter

1. Longitudinal waves-sometimes called "compression" waves
(travel **along a line**)



2. Transverse waves- "typical waves" have a recognizable trough and crest

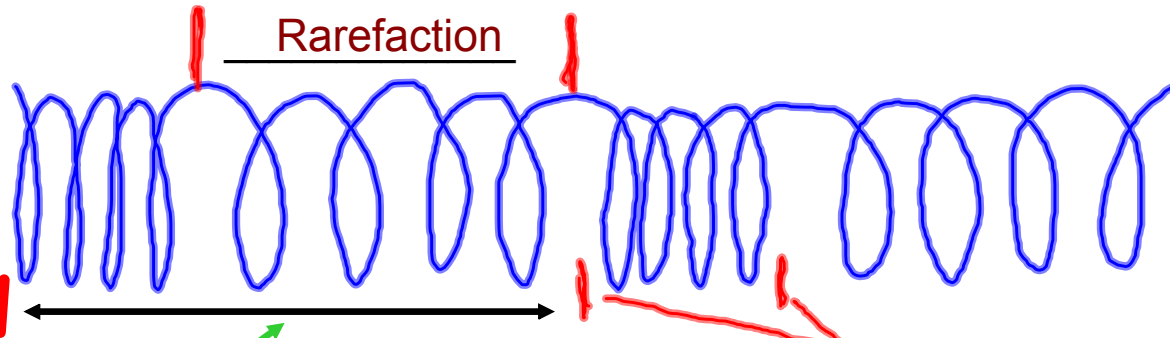


Lets **WAVE!**

A waves energy is directly related to its amplitude:
larger amplitude = more energy

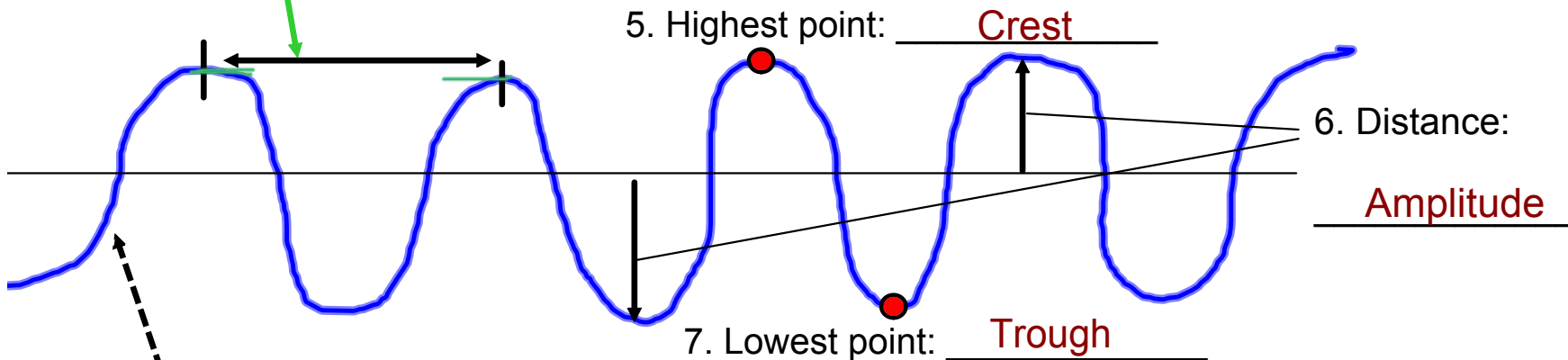
1. Wave type: Longitudinal
(compression)

2. Spread apart:



3. Distance until wave starts over: Wavelength

4. Crowded together: Compression



5. Highest point: Crest

6. Distance: Amplitude

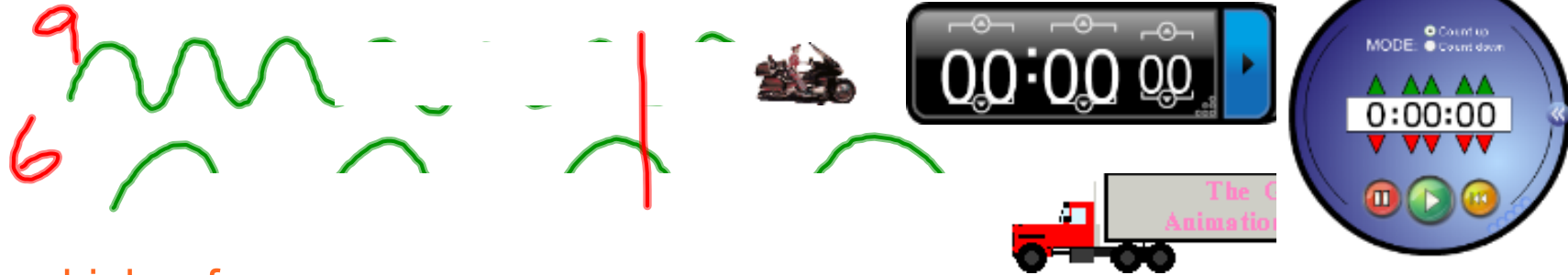
7. Lowest point: Trough

8. Type of wave: Transverse

9. Echo a reflected sound wave

10. Medium what waves travel through

Frequency - number of waves that pass a point in a measured amount of time



higher frequency = more energy

Sound waves are mechanical waves. Sounds with higher pitch have a higher **frequency**. Louder sounds have a greater **amplitude**.

Wave speed - The speed at which a wave travels through a medium

The formula for wave speed is: $v = \lambda f$ $\lambda = \frac{v}{f}$
wave speed = wavelength X frequency (f)

example: What is the speed (v) of a wave that has a wavelength (λ) of 2 m and a frequency (f) of 6 Hz?

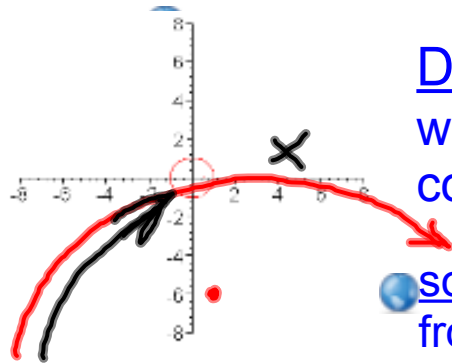
$$2\text{m} \left(\frac{6}{1\text{s}} \right) = 12\text{m/s}$$

$$v = 2\text{m} (6/\text{s})$$

Mechanical waves - (sound waves, ocean waves, Slinky wave, etc.) need a physical medium like air, water, or metal

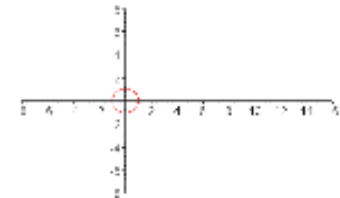


Sound waves are mechanical waves. Sounds with higher pitch have a higher **frequency**. Louder sounds have a greater **amplitude**.



Doppler effect- an observed change in the frequency of a wave when the source or observer is moving due to the compression of or spreading out of sound waves

sonic boom - explosive sound when a shock wave from an object traveling faster than the speed of sound reaches a person's ears.



Sound and Music

Electromagnetic waves - (light waves, radio waves) **do not** need a medium

Ears and hearing

Interference - The combination of 2 or more waves that results in a single wave.

Constructive interference combines the energy to form a wave with increased amplitude. **Destructive interference** cancels out some of the energy from overlapping waves resulting in lower amplitude.