

Waves

the ability to cause change or do work

1. WAVES: any disturbance that transmits energy through matter or space

- Energy can be carried away from its source by a wave. However, the material through which the wave travels does not move with the energy
- Waves carry Energy not matter
- The Energy of a wave does work on anything in its path
 - Examples: Sound Waves "Move" air
 - Ocean Waves "Move" boats

2. Medium: a substance through which a wave can travel

- Waves often transmit their energy through a medium
- A medium can be a Solid, Liquid, or a Gas
- Sound waves require a Medium; if no medium is present there can be no Sound

3. Mechanical waves: waves that require a medium

- Sound Waves
- Ocean Waves

4. Electromagnetic waves: waves that do not require a medium

- Energy Increases ↓
- Radio
 - Microwaves
 - Infrared
 - Visible
 - Ultra-Violet
 - X-Ray
 - Gamma

<u>R</u> ed	<u>M</u> onkeys	<u>I</u> n	<u>V</u> egas	<u>U</u> se	<u>X</u> ray	<u>G</u> uns
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5. Transverse waves: waves in which the particles travel with an up and down motion

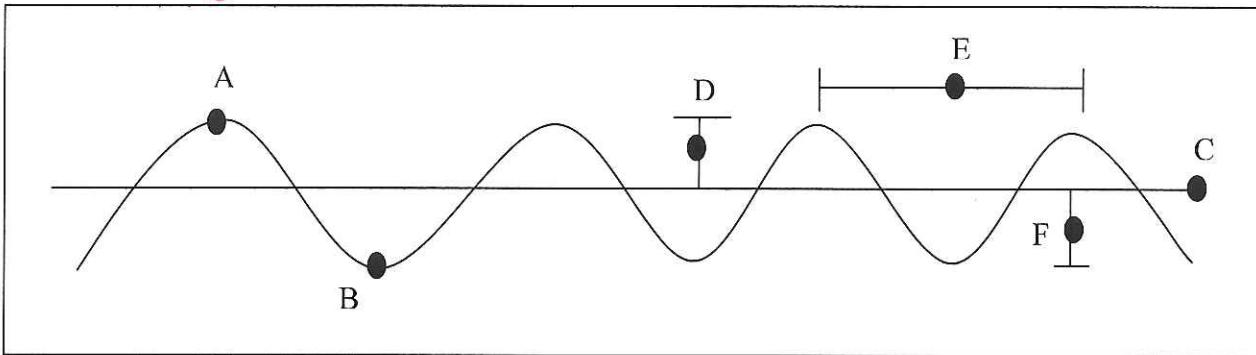
6. Longitudinal waves: the particles of a medium vibrate back and forth like a slinky

- The sections where the particles are compacted is called Compression
- The sections where the particles are spread out is called rarefaction

reminds me what the wave looks like
Properties of

Properties of a Wave

- ## 1. transverse Waves



- A) Crest

B) Trough

C) Mid-Line

D) Amplitude

E) ~~Wavelength~~ Wavelength

F) Amplitude

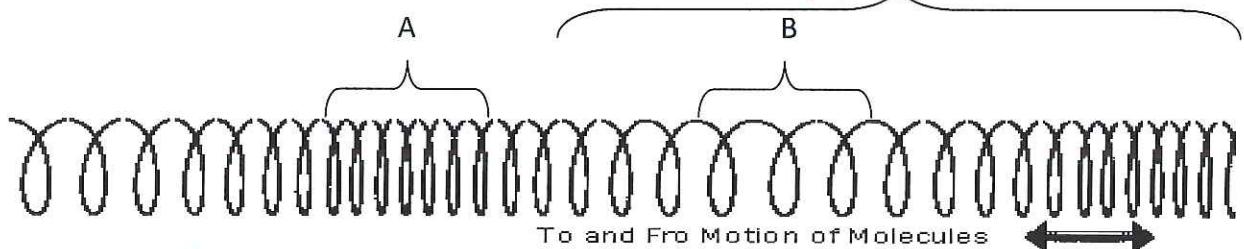
- How many waves passed by? $3 \frac{1}{2}$ ($\frac{1}{2}$ wave)
 - What is the wave's frequency?

3.5 Hz or 3.5 waves per second

2. Longitudinal Waves May look like:

 - ~~lll~~ ~~lll~~ ~~lll~~
 - ~~||||~~ ~~|||~~ ~~|||||~~ ~~|||~~
 - ~~.....~~ ~~.....~~ ~~.....~~

A B C



- A) Compression
 - B) Rarefaction
 - C) Wavelength