**All About Waves—Notes Outline**

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a disturbance that carries \_\_\_\_\_\_\_\_\_\_\_\_\_\_ from one place to another.

\_\_\_\_\_\_\_\_\_\_\_ is NOT carried with the wave! A wave can move through matter (a \_\_\_\_\_\_\_\_\_\_\_). If it must have a medium, it is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ wave. If it can travel without a medium (such as in space), it is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ wave.

**Wave Types**

1. **\_\_\_\_\_\_\_\_\_\_** waves: Waves in which the medium moves at **\_\_\_\_\_\_\_\_\_\_** angles to the wave direction.

Parts of a transverse wave:

**\_\_\_\_\_\_\_\_\_\_**: the highest point of the wave

trough: the **\_\_\_\_\_\_\_\_\_\_** point of the wave

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (longitudinal) wave: Waves in which the medium moves **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in the same direction as the wave.

Parts of a compressional wave:

**\_\_\_\_\_\_\_\_\_\_\_\_**: where the particles are close together

**Comparing transverse and longitudinal waves.**

**\_\_\_\_\_\_\_\_\_\_\_\_**: where the particles are spread apart

**Wave properties** depend on what **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** makes the wave.

1. **\_\_\_\_\_\_\_\_\_\_**: The distance between one point on a wave and the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** on the next wave.
2. **\_\_\_\_\_\_\_\_\_\_**: How many waves go past a point in **\_\_\_\_\_\_\_\_\_\_**; measured in **\_\_\_\_\_\_\_\_\_\_** (Hz). The higher the frequency, the more **\_\_\_\_\_\_\_\_\_\_** in the wave.
3. **\_\_\_\_\_\_\_\_\_\_**: How far the medium (crests and troughs, or compressions and rarefactions) moves from **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (the place the medium is when not moving). The **\_\_\_\_\_\_\_\_\_\_** energy a wave carries, the **\_\_\_\_\_\_\_\_\_\_** its amplitude. Amplitude is related to energy by \_\_\_\_\_\_\_\_\_\_\_\_.
4. **\_\_\_\_\_\_\_\_\_\_**: Depends on the medium the wave is traveling in. This varies in **\_\_\_\_\_\_\_\_\_\_**, **\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_**.

 Equation for calculating wave speed:

 wave speed = **\_\_\_\_\_\_\_\_\_\_** (in m) x **\_\_\_\_\_\_\_\_\_\_** (in Hz)

*Problem:* So- if a wave has a wave speed of 1000 m/s and a frequency of 500 Hz, what is its wave length? Answer:wavelength= **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Changing Wave Direction**

## \_\_\_\_\_\_\_\_\_\_: When waves \_\_\_\_\_\_\_\_\_\_ off a surface. If the surface is \_\_\_\_\_\_\_\_\_\_, the angle at which the wave hits the surface will be the \_\_\_\_\_\_\_\_\_\_ as the angle that the wave \_\_\_\_\_\_\_\_\_\_ the surface. In other words, the angle \_\_\_\_\_ equals the angle \_\_\_\_\_. This is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

## \_\_\_\_\_\_\_\_\_\_: Waves can \_\_\_\_\_\_\_\_\_\_; this happens when a wave enters a \_\_\_\_\_\_\_\_\_\_ and its\_\_\_\_\_\_\_\_\_\_; the amount of bending depends on the medium it is entering

## \_\_\_\_\_\_\_\_\_\_: The bending of waves \_\_\_\_\_\_\_\_\_\_ an object. The amount of bending depends on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**A demonstration of refraction.**

##  \_\_\_\_\_\_\_\_\_\_ obstacle, \_\_\_\_\_\_\_\_\_\_ wavelength = low diffraction

##  \_\_\_\_\_\_\_\_\_\_ obstacle, \_\_\_\_\_\_\_\_\_\_ wavelength = large diffraction