Characteristics of Waves PPT FULL NOTES NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Section 19.1

What is a wave?

* A **wave** is a repeating disturbance or movement that transfers energy throughout a medium (including space or time).

Mechanical Waves

* A type of wave that require matter to travel through.
* The material through which a wave travels is called a *medium.*
* A **mechanical wave** is created when a source of energy causes a vibration to travel through a medium.
* Is a disturbance in matter that transfers energy from place to place.

The Medium

* The energy of a mechanical wave can travel only through matter.
* This matter is called the **medium**.
* This medium can be solid, liquid, or gas.
* Only the energy travels.
* The particles move or vibrate but return to their original positions.
* The particles pass the energy on to the next particles and the next.

Types of Mechanical Waves

* There are three types of mechanical waves.
* They differ in how they travel through a medium.

1. **Transverse Waves**

* **Transverse wave** – wave in which the medium vibrates at right angles to the direction that the wave travels.
* Crests and Troughs
* Transverse waves are characterized by the high and low points of the wave.
* The high points are called **crests**.
* The low points are called **troughs**.

Wavelength & Amplitude

* Wavelength is the distance from one point on a wave to the exact same point on the next wave
* Amplitude is the distance from the centerline of the wave (not always marked!) to either a crest or a trough.

1. **Longitudinal Waves**

* **Longitudinal Waves** (also known as Compressional)-Waves that move the medium parallel to the direction in which the waves travel are called *longitudinal waves.*

Compressions and Rarefactions

* A longitudinal wave can be characterized by the compressions and rarefactions of the medium.
* **Compressions** are the places where the coils are crowded together.
* **Rarefactions** are the places where the coils are spread apart.
* Equilibrium
* A spring is at equilibrium when it is neither stretched nor compressed, but at its natural state

**3. Surface Waves**

* **Surface Waves** - a wave that travels along a surface separating two media.
* Creates an up and down motion that is perpendicular to the direction of wave motion.
  + Example: Ocean Waves



