**Characteristics Of Waves**  (p. 514 – 523)

**I. Wave Properties**

**1. Define the terms amplitude and wavelength.**

Amplitude : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Wavelength : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2. Draw a picture of a transverse wave and label the crest, trough, and rest position.**

**3. Draw a picture of a longitudinal wave and label the rarefactions and compressions.**

**4. Circle the type of wave characteristic that produces the most energy.**

Amplitude : Smaller Larger

Wavelength : Shorter Longer

**5. Define the terms period and frequency.**

Period : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Frequency : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6. What are the SI units for period and frequency?**

Period = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Frequency = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**7. What is one Hertz equal to with regards to vibrations.**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**8.** **Write out the equation to determine frequency.**

Frequency = *f* =

**9. As frequency increases, the wavelength increases.**

Circle One : True False

**II. Wave Speed**

**1.** **Write out the equation to determine wave speed *(with regards to wavelength & frequency).***

Wave Speed = *v* =

*v* =

**2. What determines the speed of a sound wave?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3. Rate the speed of sound in the following mediums.** *[1 = fastest; 3 = slowest]*

\_\_\_\_\_ - Gases \_\_\_\_\_ - Liquids \_\_\_\_\_ - Solids

**4. Rate how tightly bound the molecules are in each type of matter.** *[1 = tightly; 3 = loosely]*

\_\_\_\_\_ - Gases \_\_\_\_\_ - Liquids \_\_\_\_\_ - Solids

**5. The speed of light has no upper limit.**

Circle One : True False

**6. What is the speed of light?**

*c* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ miles / second

**III. The Doppler Effect**

**1. Define the term pitch.**

Pitch –

**2. A higher pitch corresponds with a higher frequency.**

Circle One : True False

**3.** **Define the term Doppler effect.**

Doppler Effect –

**4. For a stationary observer, as a moving sound approaches, the observer will first hear a**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ frequency of sound and then a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ frequency as**

**the source moves away.**

**5. The Doppler effect is a change in sound frequencies caused by movement of :**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6. Besides sound wave applications, how is the Doppler effect used?**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_