Assignment: 2

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour:\_\_\_\_\_

**Vocabulary**

Wavelength:

Amplitude:

Frequency:

**Longitudinal Waves (Compression Waves)**

Wavelength =

**Transverse Waves**

Wavelength =

How many waves? \_\_\_\_  
What is the wavelength?\_\_\_  
What is the frequency? \_\_\_ (assume the picture below represents waves captured in 1 second)

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What is the wavelength?\_\_\_  
What is the frequency? \_\_\_ (assume the picture below represents waves captured in 1 second)

Calculation and Units:

**You must show work and units to get credit! Please put a box around your answer!**

1. The lowest pitch that the average human can hear has a frequency of 20.0 Hz. What is the wavelength of a 20.0 Hz wave with a speed of 331 m/s?

2. A drum is struck, producing a wave with a wavelength of 1.1 m and a speed of 2.42 × 104 m/s. What is the frequency of the wave?

3. One of the largest organ pipes is in the auditorium organ in the convention hall in Atlantic City, New Jersey. The pipe is 38.6 ft. long and produces a sound with a wavelength of 10.6 m. If the speed of sound in air is 346 m/s, what is the frequency of this sound?

4. If the speed of a standing wave is 335 m/s and its frequency is 67 Hz, what is its wavelength?

5. A wave with a frequency of 60.0 Hz travels through steel with a wavelength of 85.5 m. What is the speed of this wave?

6. A dolphin can typically hear sounds with frequencies up to 150,000 Hz. What is the speed of sound in water if a wave with this frequency has a wavelength of 0.01 m?

7. A dog whistle is designed to produce a sound with a frequency beyond that which can be heard by humans. If a particular whistle produces a sound with a frequency of 25,000 Hz, what is the sound’s wavelength? Assume the speed of sound in air is 331 m/s.

8. A ship anchored at sea is rocked by waves that have crests 14 m apart. What is the speed of these waves if their frequency is 0.5 Hz?