

WAVE HW

- 1) Describe how these properties are similar and different in :
Spring Pendulum and String Waves:

Amplitude

Period

Frequency

Wavelength

What is the main factor that affects the period in each?

- 2) A pendulum swings back and forth.

Graph its:

Displacement vs. time

- 3) I make a sound at a frequency of 500 Hz and notice that the ECHO returns to me 10 sec later from a wall 1500 m away. What is the wavelength of the sound?

- 4) Draw a transverse rope wave with a frequency of 3 Hz, and one with a frequency of 6 Hz. What is different about each?

Sec Review 12-3

- 1) As waves pass by a duck floating on a lake, the duck bobs up and down but remains in essentially one place. Explain why the duck is not carried along by the water medium

2) Sketch each of the following waves on a string that is attached on one end:

a) a pulse wave that is longitudinal

b) a periodic wave that is longitudinal

c) a pulse transverse wave

d) a periodic transverse wave

3) Draw a graph for each one of the waves described in b) and d) and label the y axis of each graph with the appropriate variable. Label the following one each graph: crest, trough, wavelength, amplitude.

4) IF the amplitude of a sound wave is increased by a factor of four, how does the energy carried by the sound wave in a given time interval change?

5) The smallest insects that a bat can detect are approximately the size of one wavelength of sound the bat makes. If the bat emits a chirp of frequency of 60 Hz, what is the smallest insect it can detect? (speed of sound is 340 m/s)

PRACTICE 12D

1) A piano emits the frequencies that range from a low of about 28 Hz to a high of about 4200 Hz. Find the range of wavelengths in air attained by this instrument when the speed of sound in air is 340 m/s.

2) An FM radio station broadcasts electromagnetic waves at a frequency of 125 MHz. These radio waves have a wavelength of 2.4 m. Find the speed of the radio waves.

5) A tuning fork produces a sound with a frequency of 256 Hz and a wavelength in air 1.35 m.

a) What value does this give for the speed of sound in air?

b) What would be the wavelength of the wave produced by this tuning fork in water in which sound travels at 1500 m/s?