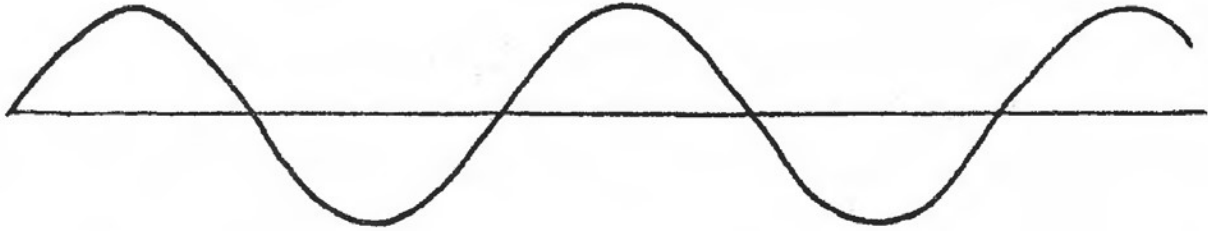


# CONCEPTUAL *Physics* PRACTICE PAGE

## Chapter 19 Vibrations and Waves Vibration and Wave Fundamentals

1. A sine curve that represents a transverse wave is drawn below. With a ruler, measure the wavelength and amplitude of the wave.



a. Wavelength = \_\_\_\_\_

b. Amplitude = \_\_\_\_\_



2. A kid on a playground swing makes a complete to-and-fro swing each 2 seconds. The frequency of swing is

[0.5 hertz] [1 hertz] [2 hertz]

and the period is

[0.5 seconds] [1 second] [2 seconds].

3. Complete the statements:



THE PERIOD OF A  
440-HERTZ SOUND  
WAVE IS \_\_\_\_\_ SECOND.

A MARINE WEATHER STATION REPORTS  
WAVES ALONG THE SHORE THAT ARE  
8 SECONDS APART. THE FREQUENCY  
OF THE WAVES IS THEREFORE  
\_\_\_\_\_ HERTZ.



4. The annoying sound from a mosquito is produced when it beats its wings at the average rate of 600 wing beats per second.

a. What is the frequency of the sound waves?

\_\_\_\_\_

b. What is the wavelength?

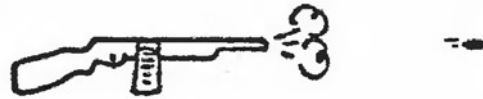
(Assume the speed of sound is 340 m/s.)

\_\_\_\_\_



**Chapter 19 Vibrations and Waves**  
**Vibration and Wave Fundamentals—continued**

5. A machine gun fires 10 rounds per second.  
 The speed of the bullets is 300 m/s.



- a. What is the distance in the air between the flying bullets? \_\_\_\_\_
- b. What happens to the distance between the bullets if the rate of fire is increased?

\_\_\_\_\_

6. Consider a wave generator that produces 10 pulses per second. The speed of the waves is 300 cm/s.

- a. What is the wavelength of the waves? \_\_\_\_\_
- b. What happens to the wavelength if the frequency of pulses is increased?

\_\_\_\_\_

7. The bird at the right watches the waves. If the portion of a wave between 2 crests passes the pole each second,

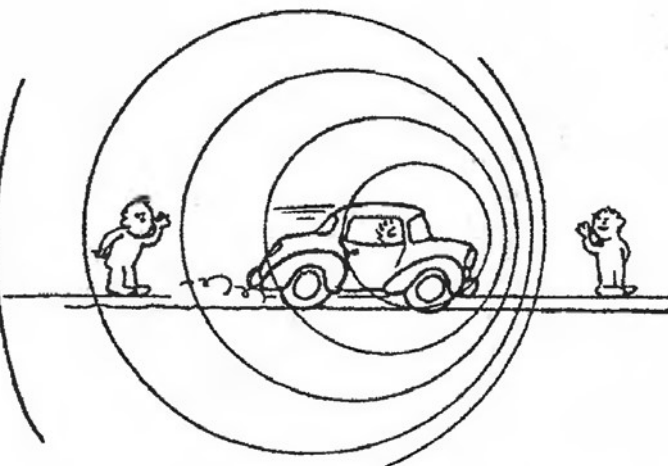
- a. what is the speed of the waves? \_\_\_\_\_
- b. what is the period of wave motion? \_\_\_\_\_
- c. If the distance between crests were 1.5 meters apart, and 2 crests pass the pole each second, what would be the speed of the wave?



\_\_\_\_\_

- d. What would the period of wave motion be for 7.c?

\_\_\_\_\_



8. When an automobile moves toward a listener, the sound of its horn seems relatively

[low pitched] [high pitched] [normal]

and when moving away from the listener, its horn seems

[low pitched] [high pitched] [normal].

9. The changed pitch of the Doppler effect is due to changes in wave

[speed] [frequency] [both].