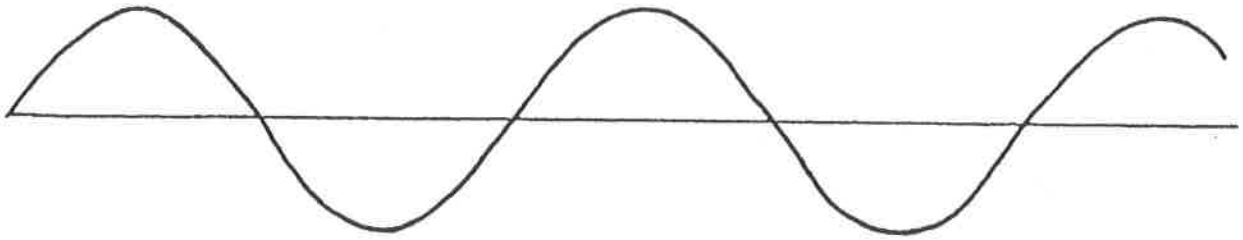
Name _____ Period _____ Date _____

CONCEPTUAL PHYSICAL SCIENCE **EXPLORATIONS**

Waves and Sound

Vibrations and Waves

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 = _____

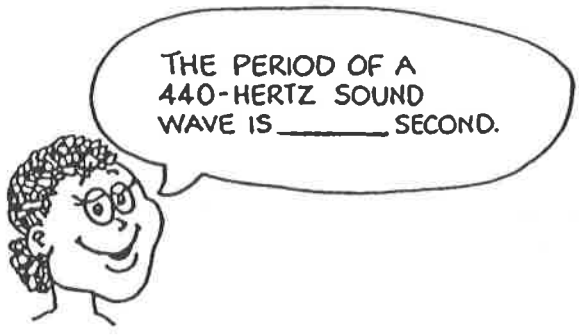
2. A kid on a playground swing makes a complete to-and-fro swing each 2 seconds. The frequency of swing is

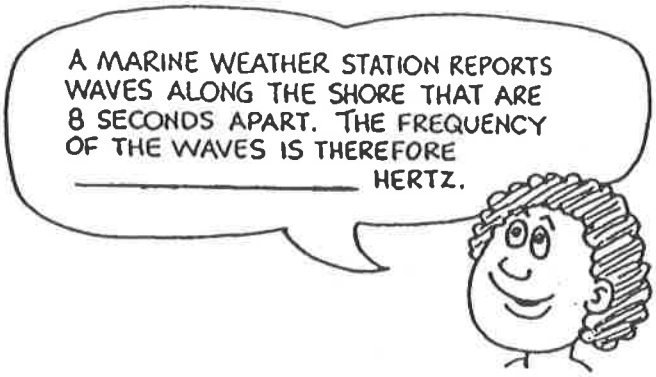
   (0.5 hertz) (1 hertz) (2 hertz)

   and the period is

   (0.5 second) (1 second) (2 seconds)

3. *Complete the statements.*





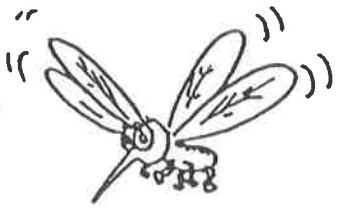
4. The annoying sound from a mosquito is produced when it beats its wings at the average rate of 600 wingbeats per second.

   a. What is the frequency of the sound waves?

   _____

   b. What is the wavelength? (Assume the speed of sound is 340 m/s.)

   _____



Vibrations and Waves continued:

5. A rapid-fire pellet gun fires 10 rounds per second. The speed of the pellets is 300 m/s.

   a. What is the distance in the air between the flying pellets?_____

   b. What happens to the distance between the pellets 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?

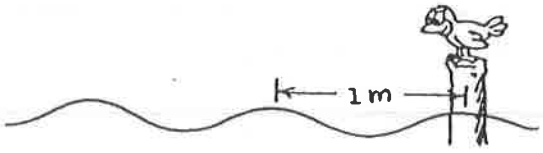
   _____

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

   _____

   What is its period?

   _____

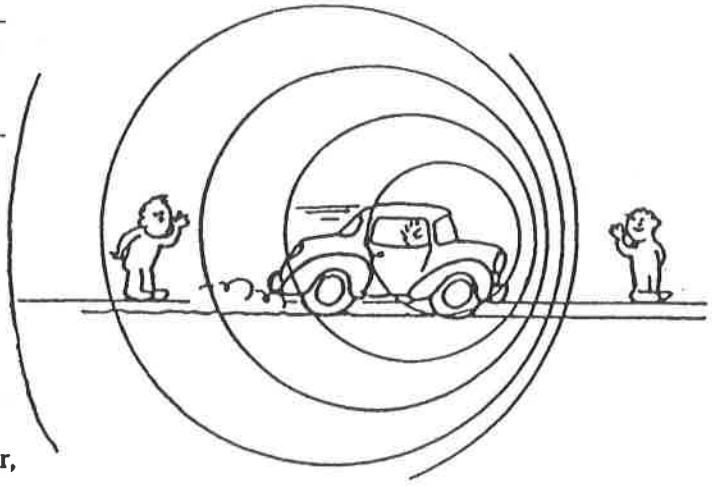


8. If the distance between crests in the above question were 1.5 meters apart, and 2 crests pass the pole each second, what would be the speed of the wave?

   _____

   What would be its period?

   _____



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

   (low pitched) (normal)

   (high pitched)

   and when moving away from the listener, its horn seems

   (low pitched) (normal)

   (high pitched)

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

    (wave speed) (wave frequency)