

Waves : Worksheet - 60

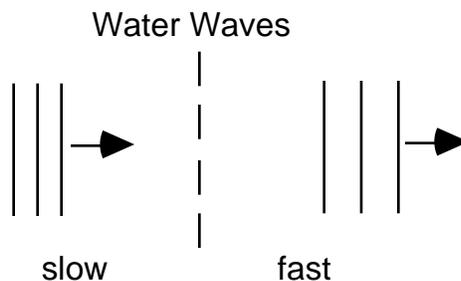
1) Water waves in a tank travel at a speed of 4.5 cm/s. If 5.0 waves pass a point every 2.0 seconds, answer the following questions.

- a) The wave frequency is _____ .
- b) The period is _____ .
- c) The wavelength is _____ .

2) Water waves approach an observer on a beach. The wavelength is 9.5 m, the speed is 2.5 m/s, and the amplitude is 60. cm.

- a) The frequency is _____ .
- b) The number of waves that hit the beach in 2.0 minutes is approximately _____ .
- c) If a cork is in the water, find the total vertical distance it travels in 2.0 minutes. _____ .

3) Water waves move from shallow (slow) to deep (fast) as shown below.



The initial wavelength is 1.2 cm, and the initial velocity 3.7 cm/s. If the final wavelength is 1.8 cm, find the final velocity. _____ .

4) Red light has a wavelength of 5.4×10^{-7} m. Find the frequency.

5) Sound waves have a frequency of 750 Hz. If the air temperature is 22°C, answer the following.

- a) The speed of the sound wave is _____ .

- b) The wavelength is _____ .
- 6) Calculate the distance to the place lightning strikes, if the thunder is heard 8.00 s after the lightning bolt is seen. (assume an air temperature of 20.°C)
- 7) A hiker shouts at a cliff and hears an echo 4.5 s later. Find the distance to the cliff. (assume an air temperature of 23°C)
- 8) The frequency of a tuning fork is 450 Hz.
- a) The period is _____ .
- b) If the speed of the sound waves emitted is 341 m/s, find the air temperature. _____ .
- 9) A radio wave has a frequency of 95 MHz. (M = Mega = 10^6). Find the wavelength.
- 10) Microwaves have a wavelength of 3.0 cm. Find the frequency.

Answers: 1)a) 2.5 Hz, b) 0.40 s, c) 1.8 cm, 2)a) 0.26 Hz, b) 32 waves, c) 76 m, 3) 5.6 cm/s, 4) 5.6×10^{14} Hz, visit www.mrowen.com 5)a) 345 m/s, b) 0.46 m, 6) 2750 m, 7) 780 m, 8)a) 0.0022 s, b) 15°C, 9) 3.2 m, 10) 1.0×10^{10} Hz.