Wonders of Wacky Waves

Important items to keep in mind: $f = 1/T$ $v = f\lambda$

1.   A person standing in the ocean notices that after a wave crest passes by, ten more crests pass in a time of 110 s. What is the frequency of the wave?

Ans.

2.   To navigate, a porpoise emits a sound wave that has a wavelength of 2.5 cm. The speed at which sound travels in seawater is 1450 m/s. Find the period of the wave.

Ans.

3.   Consider a freight train. Suppose 16 boxcars pass by in a time of 12.0 s and each has a length of 15.0 m. What is the frequency at which each boxcar passes? What is the speed of the train?

Ans.

Ans.

4.   A light wave travels through air at a speed of 3.0×10^8 m/s. Red light has a wavelength of about 638 nm. What is the frequency of light?

Ans.

5.   A hand moves the end of a Slinky™ up and down through two complete cycles in one second. The wave moves along the Slinky™ at a speed of 0.60 m/s. Find the distance between two adjacent crests on the wave.

Ans.

6. A longitudinal wave with a frequency of 3.0 Hz takes 1.5 s to travel the length of a 2.0 m Slinky™. Determine the wavelength of the wave.

                                                                                Ans.

7. A wave has a frequency of 44 Hz and a speed of 28 m/s. Determine, if possible, its period, its wavelength, and its amplitude.

                                                                                Ans.

                                                                                Ans.

                                                                                Ans.

8. A person lying on an air mattress in the ocean rises and falls through one complete cycle every 4.0 seconds. The crests of the wave causing the motion are 18.0 m apart. Determine the frequency and speed of the wave.

                                                                                Ans.

                                                                                Ans.