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WAVES – Practice Problems

1. A periodic transverse wave that has a frequency of 10.0 Hz travels along a string. The distance between a crest and either adjacent trough is 2.50 m. What is its wavelength?

2. A wave generator produces 16.0 pulses in 4.00 s.
a. What is its period?

b. What is its frequency?

3. Five pulses are generated every 0.100 s in a tank of water. What is the speed of propagation of the wave if the wavelength of the surface wave is 1.20 cm?

4. A periodic longitudinal wave that has a frequency of 20.0 Hz travels along a coil spring. If the distance between successive compressions is 0.400 m, what is the speed of the wave?

5. The local hit music radio station can be found at 103.6 on the FM dial. This means that they broadcast at a frequency of 103.6×10^6 (103.6 Megahertz). What is the wavelength of these radio waves?

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6. The wavelength of radio waves sent out by an AM station is 325 meters. At what frequency is the radio station broadcasting? Compare the wavelengths of the two radio signals in problem 2 and in this problem. Can you see why AM stations fade out when you drive under an overpass while FM stations do not?

7. A student sets up a standing wave of wavelength 6 meters in a coiled spring by moving his hand up and down twice each second. What is the velocity of the wave?

8.4 Measurements show that the wavelength of a sound wave in a certain material is 18.0 cm. The frequency of the wave is 1900 Hz. What is the speed of the sound wave?