

**Short Answer**

1. What property of a mechanical wave is the same for a material no matter how the wave was created?
2. As a wave travels from one material into a different material, what property of the wave will not change?
3. Why are longitudinal waves also called pressure waves?
4. Sketch a diagram of a transverse wave and label a crest, trough, rest position, amplitude and wavelength.
5. Define a standing wave and provide an example of such a wave in 1, 2 and 3 dimensions.
6. Define nodes and antinodes.
7. How do the strength between medium particles and the mass of those particles affect the speed of waves through that medium?
8. What is friction as it pertains to waves and what effect does it have on waves?
9. What do waves transfer?
10. For a particular medium, if the wave frequency increases, how do the period and wavelength change?

**Review Problems**

1. A wave is created with a frequency of 300 Hz. It has a speed of 1200 m/s.
  - a. Calculate the period of the wave.
  - b. Calculate the wavelength of the wave.
2. The period of a longitudinal water wave is 2.5 seconds.
  - a. Calculate the frequency of the wave.
  - b. Calculate the length of time for 150 waves to pass by you.
3. A wave takes 6.7 seconds to travel down a 12 m long string. The waves have a period of 1.5 seconds. Calculate the wavelength of the waves in the spring.
4. Radio waves travel at  $3.00 \times 10^8$  m/s. Calculate the wavelength of radio waves emitted by a radio station operating at 103.1 MHz.
5. A car tire completes 475 rotations in 12.5 seconds. Calculate the frequency and period of the spinning tire.
6. Two fishing boats are in the water. At a time when one boat is on a crest the other is in a trough and there are three crests between them. The boats are 125 m apart and the wave period was measured to be 1.75 seconds. Calculate the speed of the waves.