

Physics – Waves and Wavelike Motion Question Set 1

All answers must be on a separate sheet for credit.

1. Define a wave.
2. What is meant by periodic motion?
3. What is a wave medium?
4. What do waves transport?
5. What is a mechanical wave and give three examples of a mechanical wave?
6. What is the difference between a transverse and compressional wave?
7. Draw a transverse wave and show the wavelength, amplitude, crest and trough of the wave.
8. What is the period of a wave and what is the fundamental SI unit?
9. What is the frequency of a wave and what is the fundamental SI unit?
10. What is the mathematical relationship between a wave period and a wave frequency?
11. An observer on a beach notices that a wave reaches the beach every seven seconds. What is the period and frequency of the observed ocean waves?
12. Two physics students hold opposite ends of a rope. One student “flips” the rope and a wave is created that has a frequency of .5 Hz. What is the period of the wave?
13. A slinky has transverse waves that have a period of .75 s. What is the frequency of the waves on the slinky?
14. What does the amplitude of a wave measure?
15. What is the wave speed equation?
16. A wave with a wavelength of 1.2 m has a frequency of 3.0 Hz. What is the speed of the wave?
17. A stone is thrown in a pool of water and the waves move through the water at .50 m/s. If the wavelengths of the waves are 10 cm, what is the frequency of the waves?
18. A vibrating string has a frequency of 25 Hz. The speed of the waves on the string is 25 m/s. What is the wavelength of the waves on the string?
19. How long would it take a wave with a wavelength of 1.0 m and a frequency of 4.0 Hz to travel 50 m?
20. What is the period of a wave that is moving at 8.0 m/s and has a wavelength of 2.0 cm?