
Wave Properties

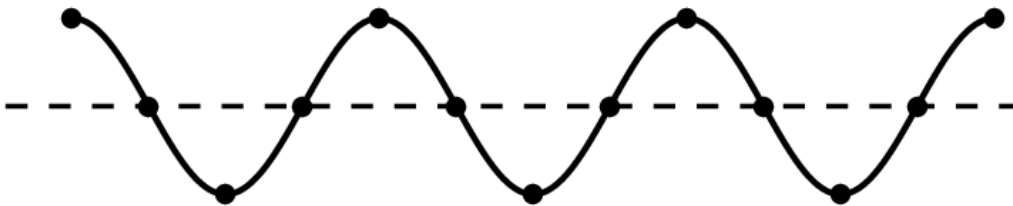
Directions: Complete each sentence by circling the correct answers and crossing out the incorrect answer.

1. The amplitude of a wave can be measured from the (*medium/crest*) or the (*trough/wavelength*) to the rest position of the wave's medium.
 2. Waves with greater amplitudes carry (*more/less*) energy than waves with smaller amplitudes.
 3. The wavelength of a transverse wave is often measured from (*crest to crest/crest to trough*).
 4. The number of waves that pass a point in one (*second/minute*) is the wave's (*amplitude/frequency*).
 5. Waves with longer wavelengths have a (*lower/higher*) frequency and waves with shorter wavelengths have a (*lower/higher*) frequency.
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Directions: Fill in the blanks with the correct term.

6. Waves carry _____ from one place to another.
 7. The highest point on a transverse wave is the _____ while the lowest part is the _____.
 8. The _____ is the height of the wave.
 9. The distance from one crest to the next is the _____.
 10. Referring to the equation that shows a relationship between frequency and wavelength, the symbol λ represents _____.
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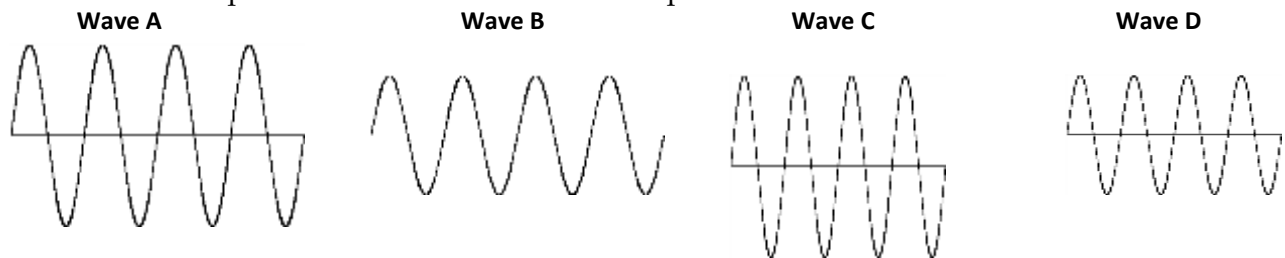
Directions: Label the following parts of the wave: wavelength, crest, trough and amplitude.



Directions: Use a ruler and the wave above to measure the following in centimeters.

11. The distance between the crests of the waves is _____.
 12. The height of the wave is _____.
 13. The wavelength is _____.
 14. The amplitude is _____.
 15. What is the wavelength? _____
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Directions: Compare the 4 waves and answer the questions.



15. Which wave has the largest amplitude? ____
16. Which wave has the shortest wavelength? __
17. Which wave has the higher frequency? ____
18. Which wave has the lowest energy? ____
19. What type of waves are these? _____

Directions: Complete the data table.

Wave	Wavelength	Frequency	Speed
1	3.0 m	2 Hz	
2	2.5 m	6 Hz	
3		0.5 Hz	5 m/s
4	0.2 m		3 m/s
5	1.2 m		12 m/s

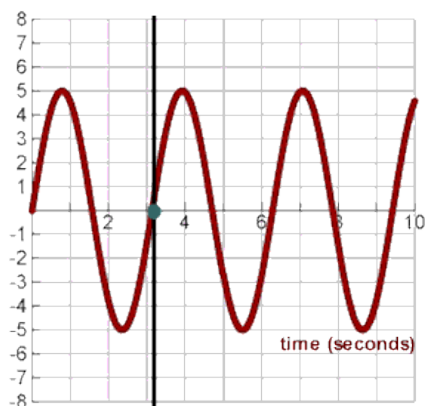
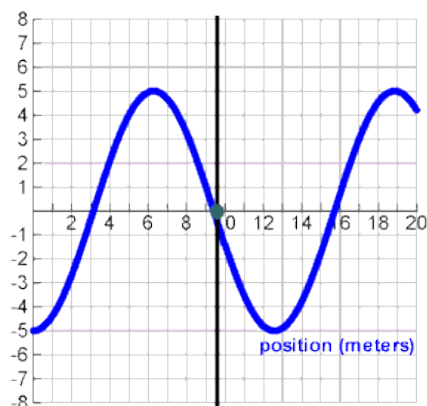
Directions: Analyze the data and complete the chart accordingly.

Stan and Anna are conducting a slinky experiment. They are studying the possible effect of several variables upon the speed of a wave in a slinky.

Medium	Wavelength	Frequency	Speed
Zinc, 1-in diameter coil	1.75 m	2.0 Hz	
Zinc, 1-in diameter coil	0.90 m	3.9 Hz	
Copper, 1-in diameter coil	1.19 m	2.1 Hz	
Copper, 1-in diameter coil	0.60 m	4.2 Hz	
Zinc, 3-in diameter coil	0.95 m	2.2 Hz	
Zinc, 3-in diameter coil	1.82 m	1.2 Hz	

20. As the wavelength of a wave in a uniform medium increases, it's speed will _____.
21. As the wavelength of a wave in a uniform medium increases, it's frequency will _____.

Directions: Analyze the two graphs of the same wave to help you answer the following questions.



22. The wavelength of the wave is _____.
23. The amplitude of the wave is _____.
24. The period of the wave is _____.
25. The frequency of the wave is _____.
26. The velocity of the wave is _____.

Directions: Solve the problems. Show your work and include labels.

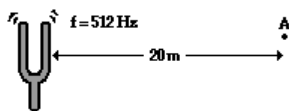
27. A buoy bobs up and down in the ocean. The waves have a wavelength of 2.5 m, and they pass the buoy at a speed of 4.0 m/s. What is the frequency of the waves?
28. Waves in a lake are 6 m apart and pass a person on a raft every 2 s. What is the speed of the waves?
29. One of the largest organ pipes is in the auditorium organ in the convention hall in Atlantic City, New Jersey. The pipe is 38.6 ft long and produces a sound with a wavelength of about 10.6 m. If the speed of sound in air is 346 m/s, what is the frequency of this sound?
30. A wave with a frequency of 60.0 Hz travels through vulcanized rubber with a wavelength of 0.90 m. What is the speed of this wave?
31. A dolphin can typically hear sounds with frequencies up to 150 kHz. What is the speed of sound in water if a wave with this frequency has a wavelength of 1.0 cm?
32. A teacher attaches a slinky to the wall and begins introducing pulses with different amplitudes. Which of the two pulses (A or B) below will travel from the hand to the wall in the least amount of time? Justify your answer.



33. Red light has a longer wavelength than violet light. Which has the greater frequency?

40. A wave with a frequency of 14 Hz has a wavelength of 3 meters. At what speed will this wave travel?

34. The time required for the sound waves ($v = 340 \text{ m/s}$) to travel from the tuning fork to point A is ____.



41. The speed of a wave is 65 m/sec. If the wavelength of the wave is 0.8 meters, what is the frequency of the wave?

35. A wave travelling on a string has a wavelength of 0.10 m and a frequency of 7 Hz. Calculate the speed of the wave.

42. A wave has a frequency of 46 Hz and a wavelength of 1.7 meters. What is the speed of this wave?

36. A wave has a wavelength of 0.5 meters and a frequency of 120 Hz. What is the wave's speed?

43. A wave traveling at 230 m/sec has a wavelength of 2.1 meters. What is the frequency of this wave?

37. A wave has frequency of 50 Hz and a wavelength of 10 m. What is the speed of the wave?

44. Radio waves travel at a speed of 300,000,000 m/s. WFNX broadcasts radio waves at a frequency of 101,700,000 Hertz. What is the wavelength of WFNX's radio waves?

38. A wave has frequency of 50 Hz and a wavelength of 10 m. What is the speed of the wave?

39. A wave has wavelength of 10 m and a speed of 340 m/s. What is the frequency of the wave?

45. Noah stands 170 meters away from a steep canyon wall. He shouts and hears the echo of his voice one second later. What is the speed of the wave?

