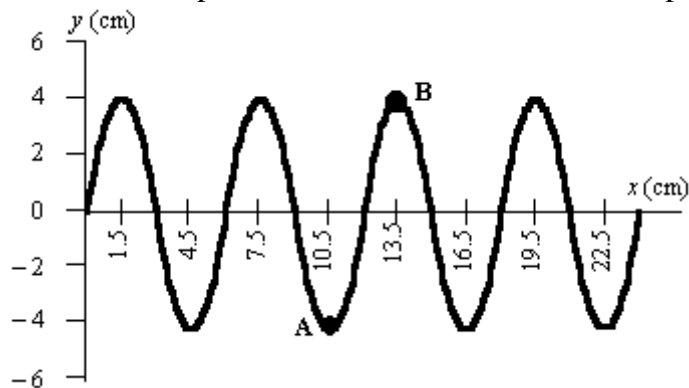


The displacement of a vibrating string versus position along the string is shown in the figure. The periodic waves have a speed of 10.0 cm/s. **A** and **B** are two points on the string.



1. What is the amplitude of the wave?

- A) 2 cm
- B) 4 cm
- C) 8 cm
- D) 12 cm
- E) 16 cm

2. What is the wavelength of the wave?

- A) 3.0 cm
- B) 6.0 cm
- C) 9.0 cm
- D) 12 cm
- E) 15 cm

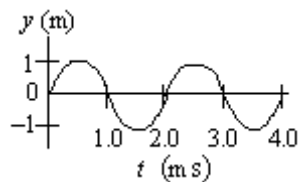
3. What is the frequency of the wave?

- A) 0.60 Hz
- B) 0.90 Hz
- C) 1.1 Hz
- D) 1.3 Hz
- E) 1.7 Hz

4. What is the difference in phase between the points A and B?

- A) $(\pi/4)$ radians
- B) $(\pi/2)$ radians
- C) π radians
- D) $(3\pi/4)$ radians
- E) 2π radians

5. The speed of sound in a certain metal block is 3.00×10^3 m/s. The graph shows the amplitude (in meters) of a wave traveling through the block versus time (in milliseconds). What is the wavelength of this wave?



- A) 0.5 m
 B) 1.5 m
 C) 3.0 m
 D) 4.0 m
 E) 6.0 m
6. What is the wavelength of a wave with a speed of 12 m/s and a period of 0.25 s?
 A) 0.25 m
 B) 1.5 m
 C) 3.0 m
 D) 24 m
 E) 48 m
7. A wave has a frequency of 58 Hz and a speed of 31 m/s. What is the wavelength of this wave?
 A) 1.9 m
 B) 3.5 m
 C) 0.29 m
 D) 0.53 m
 E) 31 m
8. The tension in a taut rope is increased by a factor of 9. How does the speed of wave pulses on the rope change, if at all?
 A) The speed remains the same.
 B) The speed is reduced by a factor of 3.
 C) The speed is reduced by a factor of 9.
 D) The speed is increased by a factor of 3.
 E) The speed is increased by a factor of 9.
9. A transverse periodic wave described by the expression
- $$y = \sin \left[2\pi \left(\frac{x}{2} + \frac{t}{10} \right) \right]$$
- (where y and x are in meters and t is in seconds) is established on a string. Which one of the following statements concerning this wave is false?
 A) The wave is traveling in the negative x direction.
 B) The amplitude is 1.0 m.
 C) The frequency of the wave is 0.10 Hz.
 D) The wavelength of this wave is 2.0 m.
 E) The wave travels with speed 5.0 m/s.