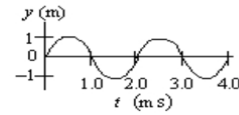
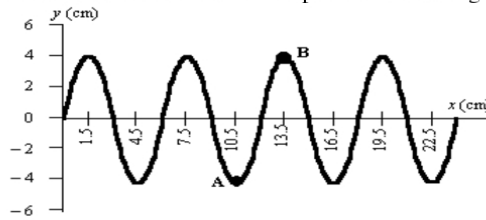


## Wave Worksheet 1

1. The speed of sound in a certain metal block is  $3.00 \times 10^3$  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?



2. The displacement of a vibrating string versus position along the string is shown in the figure. The periodic waves have a speed of 10 cm/s. **A** and **B** are two points on the string.



What physical quantities of the wave can be determined from the above plot? Calculate the quantities.

Write the mathematical expression which represents the wave.

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

$$y = \sin \left[ 2\pi \left( \frac{x}{2} + \frac{t}{10} \right) \right]$$

3. A transverse periodic wave is described by the expression  $y = \sin \left[ 2\pi \left( \frac{x}{2} + \frac{t}{10} \right) \right]$ . Calculate the 5 quantities associated with this wave if the wave is a sound wave.

4. A wave has an amplitude of 0.35 m, a frequency of  $1.05 \times 10^6$  Hz, and travels in the positive x direction at the speed of light,  $3.00 \times 10^8$  m/s. Which one of the following equations correctly represents this wave?

- A)  $y = 0.35 \sin (6.60 \times 10^6 t - 0.022x)$
- B)  $y = 0.35 \sin (6.60 \times 10^6 t + 0.022x)$
- C)  $y = 0.35 \sin (286t - 1.05 \times 10^6 x)$
- D)  $y = 0.35 \sin (286t + 1.05 \times 10^6 x)$
- E)  $y = 0.35 \sin (1.05 \times 10^6 t + 3.00 \times 10^8 x)$