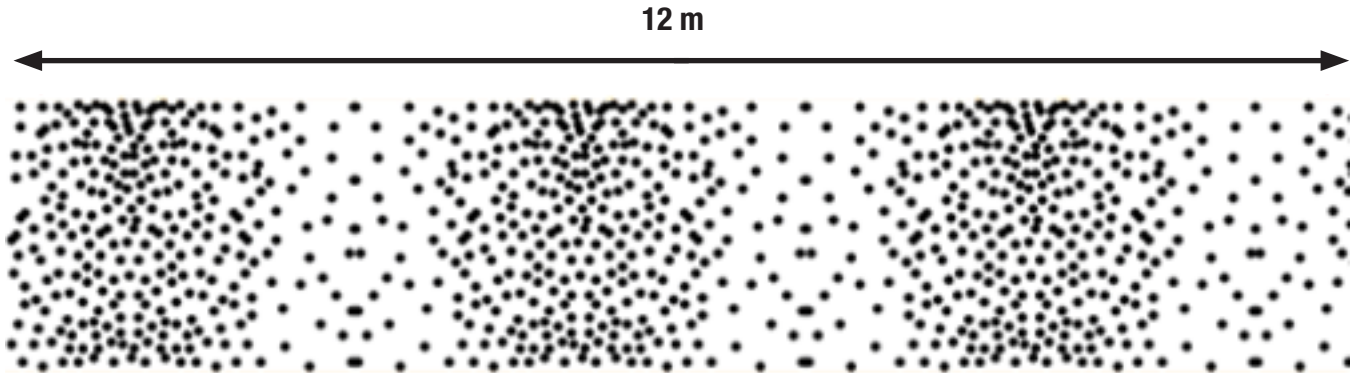


Work each of the following problems. SHOW ALL WORK.

1. Determine the wavelength of the longitudinal wave below:



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2. A sound wave is determined to have a frequency of 1,000 Hz and a wavelength of 35 cm. What is the speed of this wave?
3. If the sound wave in the previous question is measured in air, what is the temperature of the air?
4. What is the speed of sound in air that is 25 °C?

**Work each of the following problems. SHOW ALL WORK.**

5. The hottest recorded temperature in the history of the United States is  $134^{\circ}\text{F}$ , which is  $57^{\circ}\text{C}$ . What would the speed of sound at this temperature?
  
  
  
  
  
  
  
  
  
  
6. The human range of hearing is between 20 and 20,000 Hz. What is the corresponding range in wavelengths for sound in air at  $25^{\circ}\text{C}$ ?
  
  
  
  
  
  
  
  
  
  
7. The speed of sound in water is 1,500 m/s. What is the wavelength of a sound wave with a frequency of 15,000 Hz in water?
  
  
  
  
  
  
  
  
  
  
8. How much louder is a 70 dB sound compared to a 50 dB sound?

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