

14 Waves, sound, and the wave equation – Part 1 —Answers

Answers

Work through these after you have tried the questions yourself.

2.1 transverse: the material moves at right angles to the wave (e.g. a rope wave or light); longitudinal: the material moves along the wave (e.g. sound).

2.2 $v = f\lambda = 50 \times 0.40 = 20 \text{ m/s}$.

2.3 $\lambda = \frac{v}{f} = \frac{3.0 \times 10^8}{1.0 \times 10^8} = 3.0 \text{ m}$.

2.4 as it approaches the pitch is higher; as it moves away the pitch is lower (the Doppler effect).

2.5 the frequency stays 200 Hz (set by the source); the wavelength increases, because the speed is greater and $\lambda = v/f$.