

Answers to selected questions

Chapter 15

- Q6** Transverse. Here the material in the blanket moves up and down, at right angles to the propagation of the wave.
- Q12** Doubling the mass per unit length of a rope will decrease the velocity of transverse waves by a factor of 0.707 since wave velocity varies inversely as the square root of the linear mass density.
- Q18** The energy is carried away by a reflected wave since there will be no transmitted wave. Yes, there is a reflected wave.
- Q24** Air is a compressible fluid (made of compressible particles). That is exactly what comprises a longitudinal wave. Transverse waves are formed by particles vibrating perpendicular to the direction of the wave. Compressing the particles is very easy to accomplish.
- Q30** The speed stays the same. The frequency (and thus the pitch you hear) and the wavelength both change.
- Q36** They are whole multiples of the same frequency, and as such contain many of the same harmonics.