Chapter 19: Vibrations and Waves

9) What happens to the wavelength of a wave when the frequency decreases?

16) What kind of motion should you impart to a stretched coiled spring (or Slinky) to provide a transverse wave? To provide a longitudinal wave?

17) What kind of wave is each of the following: (a) An ocean wave rolling toward Waikiki beach? (b) The sound of one whale calling another whale under water? (c) A pulse sent down a stretched rope by snapping one end of it?

28) How many nodes, not including the end points, are there in a standing wave that is two wavelengths long? Three wavelengths long?

31) Why is lightning seen before thunder is heard?

35) A railroad locomotive is at rest with its whistle shrieking, then starts moving toward you. (a) Does the frequency that you hear increase, decrease, or stay the same? (b) How about the wavelength reaching your ear? (c) How about the speed of sound in the air between you and the locomotive?

40) Astronomers find that light emitted by a particular element at one edge of the Sun has a slightly higher frequency than light from that element at the opposite edge. What do these measurements tell us about the Sun's motion?

43) What can you say about the speed of a boat that makes a bow wave?