Week 25 - Waves

Read Page 298 (Wave Characteristics)

TQ1. How is a pulse different from a wave?

TQ2. What actually moves down a slinky when in the form of a wave?

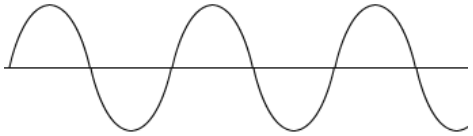
TQ3. What two things happen when a wave hits a hard boundary?

TQ4. What is the largest difference between a mechanical wave and an electromagnetic wave? Also give, one example of each.

TQ5. What is the largest difference between a longitudinal and a transverse wave? Give an example of each.

CQ6. Go to http://bit.ly/gC1TMU as it says in the book and look at the simulation videos. Sketch what a longitudinal wave and what a transverse wave looks like.

CQ7. On the diagram below, indicate where the crest, the trough, the amplitude, and the wavelength are located.

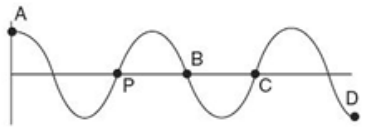


TQ8. What is the symbol for wavelength and what are the units for wavelength?

CQ9. Why is there no sound in space, but there is sound here on Earth?

CQ10. How are the individual particles moving through a medium in a transverse wave?

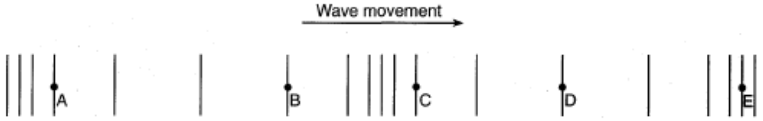
CQ11. Which two points on the wave below are "in phase"? Which two points would be 180° "out of phase"?



TQ12. What are the two ways to calculate the wavelength of longitudinal waves?

CQ13. On the diagram below, indicate the areas of compression, rarefaction, and show one wavelength.

CQ14. On the diagram below, which two points could you measure to find the wavelength? Also, what is the direction of motion of the particles of Point A as it moves to the right?



Read Page 304 (The Wave Equation)

TQ15. What does frequency mean?

TQ16. What are the two units for frequency?

TQ17. What does period mean?

TQ18. What are the units for period?

TQ19. What is the equation that relates period to frequency?

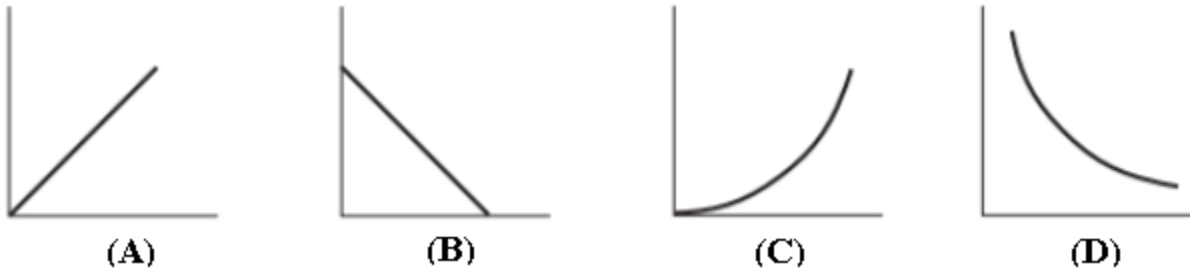
QQ20. What is the period of a 180 Hz electromagnetic wave traveling 3.0×10^8 m/s?

QQ21. Middle C on a piano has a period of 0.003906 sec. What is the frequency of a C note?

TQ22. Electromagnetic waves moves at the speed of light. How fast is the speed of light and what is the symbol we give for this important number?

TQ23. What is the equation for the velocity of a wave?

CQ24. Which graph below represents the relationship between frequency and wavelength?



QQ25. The speed of sound is 340 m/s and an A note was played which has a frequency of 440 Hz. What is the wavelength of the sound wave?

QQ26. The speed of light is 3.0×10^8 m/s and blue light has a wavelength of 4.0×10^{-7} m. What is the frequency of this electromagnetic wave?

CQ27. If the amplitude is doubled, what happens to the wavelength of the wave?

QQ28. The wave shown below has a frequency of 2.0 Hz. First determine the wavelength of the wave and then calculate the speed of the wave.