

Homework Problem 6 – Due February 23

Chapter 19

Q4

An adult and a small child are sitting on identical swings, swinging to and fro. Which of them has the longer period / smaller frequency? Explain!

Q5

A weight suspended from a spring is seen to bob up and down (from its lowest to its highest point and back) over a total distance of 20 cm twice each second. What is its frequency? It's period? It's amplitude?

Q6

You observe ocean waves lapping onto shore every 5 s. You also observe that the waves further out have a distance of 5 m peak to peak. What is the wave velocity there?

Chapter 20

55

When a sound wave moves past a point in air, are there changes in the density of air at this point? Explain!

69

What are TWO physics mistakes that occur in science fiction movies that show a distant explosion in outer space and you see and hear the explosion at the same time?

Chapter 21

24

The highest frequency humans can hear is about 20,000 Hz. What is the wavelength of sound waves in room temperature air at this frequency? What is the wavelength of the lowest sounds we can hear, about 20 Hz?

30

A certain musical note has a frequency of 1000 Hz. What is the frequency of a note on octave above it? Two octaves above it? One octave below it?

38

If sound becomes louder, which wave characteristic is likely increasing: Frequency, wavelength, amplitude or speed? Explain.

44

A nylon guitar string vibrates in a standing wave pattern as shown in the figure (see Fig. in book, p. 402). What is the wavelength of the wave on the string? (Careful!)

