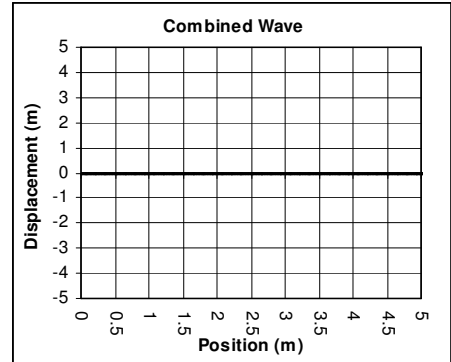
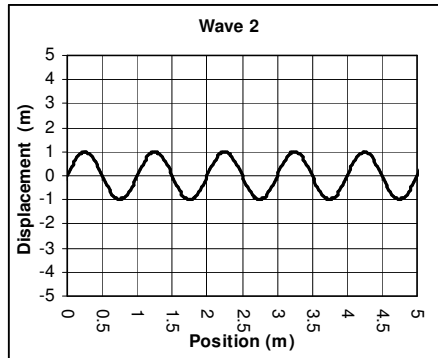
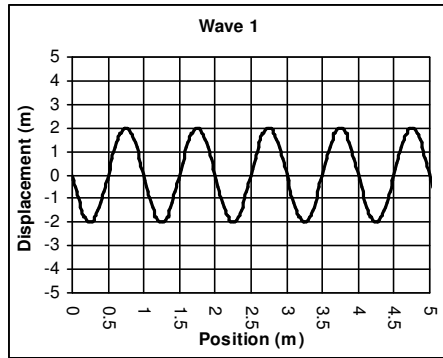
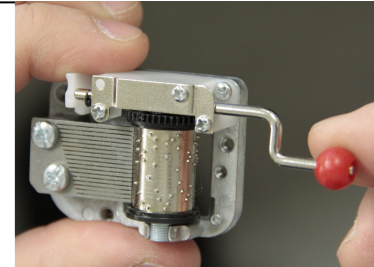


12. Use the graph at the bottom left to answer parts A thru C below.
 A. Wavelength = B. Amplitude =
 C. If the wave is vibrating at 380 Hz, what is its speed?
 D. Adding the two waves together at each point, draw the combined wave on the third graph below. This is known as “superposition”.



Now turn to the “Standing Waves” notes:

13. Why do guitars have a body?
 14. A small music box organ plays when the handle is turned, but it is not very loud when held in your hand.
 A. How can you make it louder?
 B. What is this called?



This is true ANY time that one object (one force) causes another object to vibrate a lot (like a loud sound). A forced vibration can cause an object to vibrate at any frequency, but it will not be a large vibration: it doesn't “fit”.

15. Give the other two names for the first harmonic.

80 dB 200 Hz

70 dB 400 Hz

50 dB 840 Hz

16. Use the three instrument pictures at the left to answer the following.
 A. Which one has the greatest amplitude?
 B. Which one has the highest frequency?
 C. Which two have the same timbre?
 D. Which one is playing the longest wavelength?
 E. Which one is producing the fastest speed of sound?
 F. Which one has the smallest period?
 G. Which two will sound “in tune”?
 H. Why?

17. A sound source has an intensity of $2.1 \times 10^{-7} \text{ W/m}^2$ from 10 m away.
 A. How powerful is the sound source?
 B. What would be the intensity twice as far away?



18. Slim Jim is driving his truck and honks its horn when he sees Slim Kim on the side of the road.
 A. What does Kim hear as the truck passes?
 B. What does Bim the dog hear in the back of the truck?
 C. What is this called?

Q1A) put $g/2$ in denominator. Multi by reciprocal and the 2 goes next to the l , which means $T_{\text{organ}} = \text{square root of } 2 \text{ times } T_{\text{Earth}}$ or $= 1.414 T_{\text{Earth}}$.