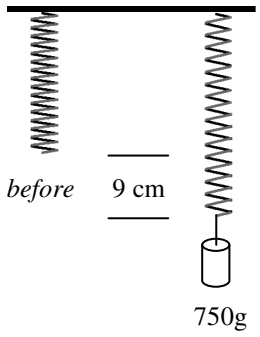
A-Day: Due Mon. 25, Feb 21 (Assigned: 2/21)
B-Day: Due Tues. 26, Feb 22 (Assigned: 2/22)

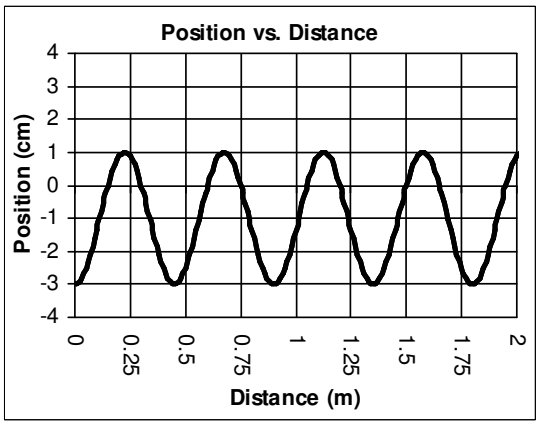
2008 Harmonic Motion 8



1. A. How far did the spring stretch?
   B. What type of force is pulling the spring?
   C. Calculate the force stretching the spring.

   D. Find the spring constant of the spring.

   E. If the spring constant were bigger, would the spring stretch a greater or lesser distance?



2. A. How many wavelengths are shown on the graph?

   B. How long is the graph?

   C. Find the wavelength of the wave.

   D. If it were a sound wave, find its frequency.

3. A transverse wave is moving to the left. Which way is could it NOT be vibrating?

4. A cello string is 90 cm long. What is the wavelength of the natural frequency for this string?

5. Which of the following will change the speed of a wave?
   A. ___ Change the harmonic?
   B.____ Change the length of the space?
   C.____ Grab a harmonic at one of the nodes?
   D. ___ Tighten the string?
   E.____ Change the string's mass or thickness?
   F.____ Disturbing the string farther (more amplitude)?
   G. ___ Change the temperature of the medium?

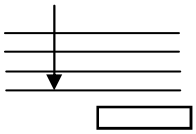
6. Fill in the table at the right.

	Variable	Units
Period		
Spring Constant		
Frequency		
Mass		
Length		
Speed		
Time		

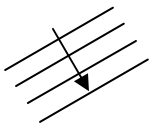
7. Whilst on a trip to Colorado you and your friends stop at Black Canyon of the Gunnison National Park. Your friends ask you just how deep the canyon is. Having been a hot-shot student in Mr. Murray's Physics class, you pull out your trusty stopwatch ("GEEK!"), clap loudly, and record 3.24 seconds for the echo to return. Find how deep the canyon is. *(By the way, this depth is correct. Check it out on the Internet.)*

8. Draw what will happen to these waves at the boundaries. And name which interaction is shown for each.

A. _____

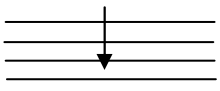


B. _____

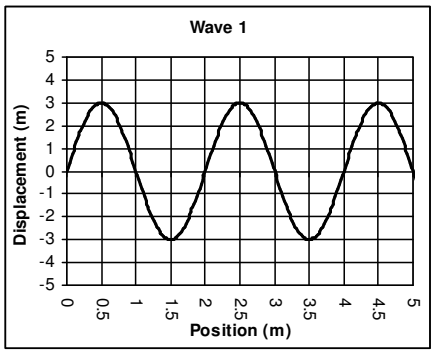


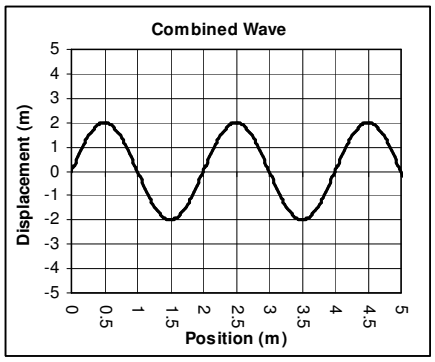
Hard boundary

C. _____



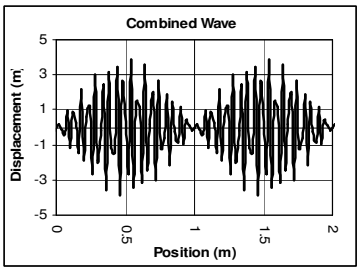
Soft boundary (like cloth)





9. For the two graphs above, the graph for Wave 2 is missing.
   A. What is Wave 2's amplitude to make the shown combined wave?
   B. Is this constructive or destructive interference?
   C. In order to completely cancel out Wave 1, what would Wave 2's amplitude have to be?

10. A. How many beats are shown per second on the graph?
    B. If $f_1 = 950$ Hz and f_2 is higher, what is f_2?



11. You are asked to measure the mass of a "hole" from the 3-hole punch. Describe how you would do this and why. *(Be specific.)*

12. You are going to perform a taste test for two different brands of water: OtterWater and Aguatic. Describe how you would set up this test to be as non-biased as possible.

Study Hard! Read the notes. Redo the homework (don't just look at them). Come in and ask questions!