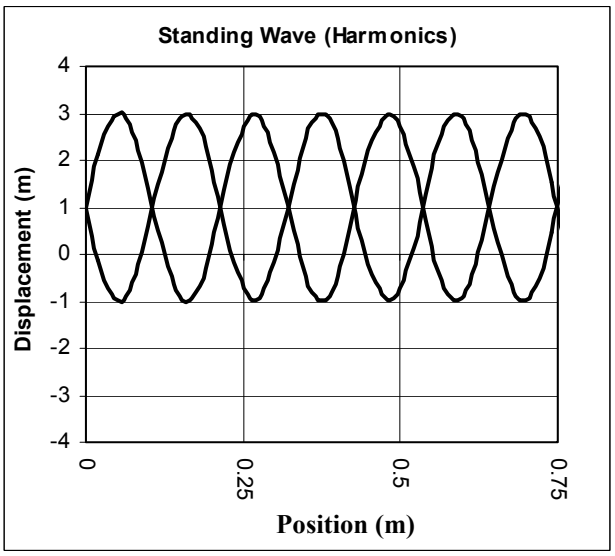
PreAP: Due: Fri., Mar 3 (Assigned: Wed., Mar 1)

Harmonic Review 2 – Regulars Only

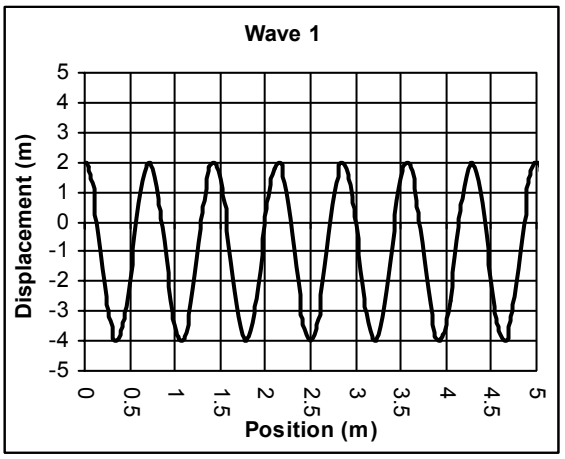
1. Use the standing wave at the right to answer the following.
   A. How many antinodes does it have?
   B. Which harmonic is shown?
   C. Draw the waveform on the graph.
   D. How many wavelength is the graph?
   E. Using E and the size of the graph from end-to-end, find the wavelength of the wave.



   F. If this was a sound wave, find its frequency.

   G. Can we hear the frequency you just found?
   H. Is it a high or low note?
   I. Amplitude = _____ J. Period = _____
   K. Where is its equilibrium position?
   L. Where will it come to rest?
   M. In order to start the wave moving you must d_____ it.
   N. Using F, find the fundamental frequency for this space.

2. Use the graph at the side to answer the following.
   A. Find its amplitude.
   B. Where will it come to rest.
   C. Find its wavelength. (Find # of λ and # of meters shown, then solve.)



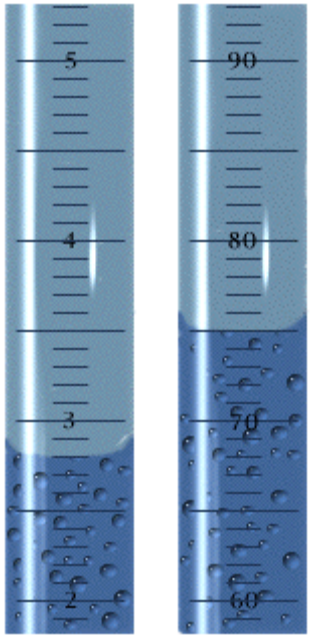
   D. If a sound wave, find its frequency.

   E. How long would it take to complete 10 cycles?

3. Transverse or Longitudinal waves?

   A. ___ Sound waves
   B. ___ The slinky when pushed.
   C. ___ The slinky when pulled side-to-side.
   D. ___ Earthquakes
   E.____ The oscillation is perpendicular to the wave front.
   F. ____ The oscillation is parallel to the wave front.
   G. ____The oscillations move up and down, the wave moves to the right.
   H. ____The oscillations move up and down: the wave moves down.

4. On a space mission to an asteroid, astronauts find a mineral of some interest. NASA scientist, of course, want to know what it is.
   A. The volume of the rock can be found be submerging it in water. This is known as the: _____ method. The columns at the right show before and after the rock is submerged. Find the volume of the rock (in mL)



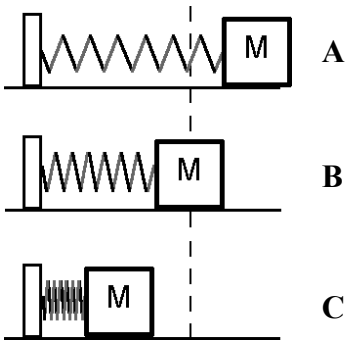
   B. The mass of the rock can be found using a spring with a known spring constant: k = 65 N/m. When attached to the rock gives the spring a period of 1.75 seconds. Find its mass.

   C. Find the density of the rock.

5. You take a pendulum with a known length and period to a different planet and the period is longer. What do you know about the planet's gravity?

6. Twice as loud as 50 dB = _____

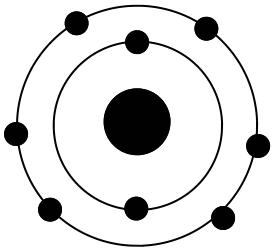
Oscillating Spring



7. If the spring at the right moves 12 cm from A to C,
   A. What is its amplitude?
   B. How far will it move in 1 cycle?
   B. How far will it move in 6 cycles?

8. A 350 g object stretches a spring 28 cm. Find its spring constant.

9. If the atom at the right is a neutral atom answer the following.
   A._____ Is it an ion?
   B._____ How many protons does it have?
   C._____ How many valence electrons does it have?
   D._____ What element is it?
   E._____ Will it tend to gain or lose electrons?
   F._____ Will it become positive or negative?
   G._____ What is its oxidation number?
   H._____ Metal or non-metal?
   I. What kind of compounds will it make?



10. An element has 2 complete shells of electrons and 3 electrons in the third shell. What element is it?

11. A spring has a spring constant of 25 N/m and a mass of 350 grams on it. Find its period.

12. A pendulum has a period of 0.8 seconds, find its length.

13. Watching a person working on their house you hear the hammering 0.6 seconds after each hammer strike. Find how far away the house is.

14. At Carlsbad caverns is a "bottomless pit". Incredulous, you clap loudly above the opening of the pit. Not surprisingly you ear an echo 4.2 seconds after the clap. How deep does a pit have to be to be regarded as "bottomless"?

15. A person pulls on a spring with 35 N. After they let go, the spring travels 12 cm side-to-side
   A. What is its amplitude?
   B. Find the spring constant.

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