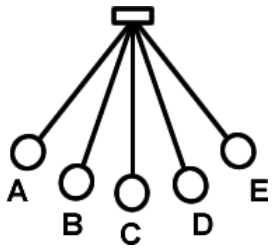
PreAP: Due: Wed., Feb 15 (Assigned: Mon., Feb 13)
Reg: Due: Thurs., Feb 16 (Assigned: Tues., Feb 14)

Harmonic Motion 5

Pendulum 1

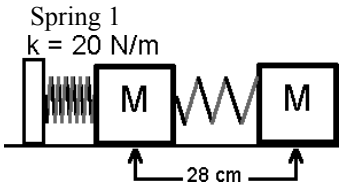


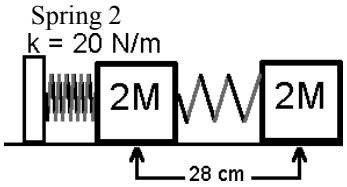
1. (Y or N) Which of the following affects the period of a pendulum?
   A. ____ Mass? B. ____ Length? C. ____ Amplitude?
2. (Y or N) Which of the following affects the period of a string?
   A. ____ Spring constant? B. ____ Mass? C. ____ Amplitude?
3. Use pendulum 1 to answer the following. (Right is positive.)

A. ___ Equilibrium position.	D. ___ Ep = max. (2 letters)	G. ____ x = -max.
B. ___ F is +max.	E. ___ Ek = max.	H. ___ a = +max
C. ___ F is minimum.	F. ___ Ek = min	I. ____ x = 0.

4. Spring A stretches 6 cm with 20 N, Spring B stretches 2 cm with the same 20 N.
   A. ____ Which has the bigger spring constant?
   B. ____ Which one will have the fastest period?
   C. ____ Since that are stretched, is x positive or negative?
   D. ____ Which one has the greater amplitude?
   E. ____ What size MASS was put on the springs?
   F. ____ Since the springs were stretched, is F positive or negative?
   G. ___ What total distance will Spring A travel in one complete cycle?
   H. Find Spring B's spring constant.

5. Use Springs 1 and 2 to answer the following:
   A. ____ Which has the faster period?
   B. ____ Which has the lower frequency?
   C. ____ Which has the faster maximum velocity?
   D. ____ Which one has the most energy (see above)?
   E. ____ What is Spring 1's amplitude?
   F. ____ How much distance does Spring 2 move in 1 complete cycle?
   G. Mark the equilibrium position of Spring 1.
   H. Mark Spring 2 with these maximums: a, F, Ep, and Ek.
   I. Mark Spring 1 with these minimums: a, F, Ep, and Ek.
   J. If M = 5 kg, find the period of spring 2.





6. A pendulum has a length of 30 cm. Find it's period.

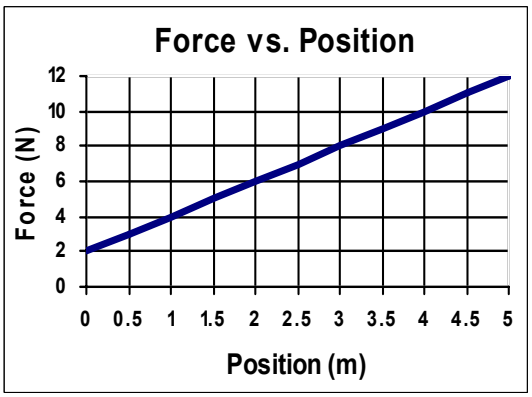
7. The same pendulum as in #6 is taken to a Zorg, a new planet. If the period of the pendulum is 4.2 seconds on Zorg, find the acceleration due to gravity on Zorg.

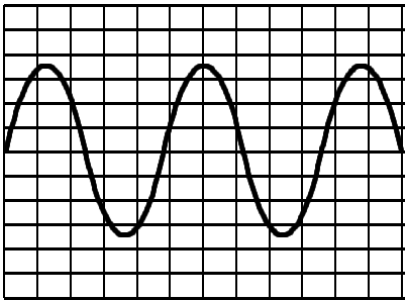
From the Lab

8. Describe how you found the spring constant of your spring (3 parts).

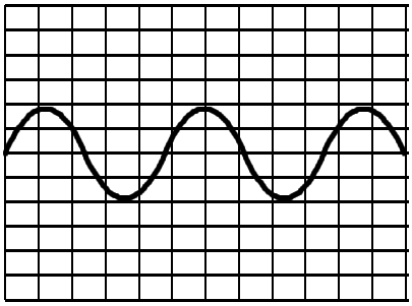
9. A 3 kg mass is hung on a spring. The spring stretches 10 cm. Find the spring's spring constant.

10. Find the spring constant from the graph at the right.

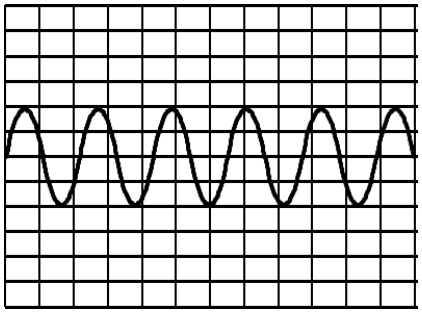




Graph 1



Graph 2



Graph 3

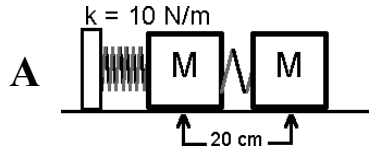
11. Match the springs at the right with the correct graph above.

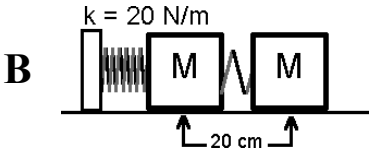
    A. Spring A =

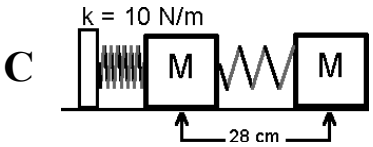
    B. Spring B =

    C. Spring C =

12. The above graphs show what mathematical function?







From the notes:

13. In sound:
    A. ____Increase in volume = an increase in what?
    B. ____A higher pitched sound = an increase in what?
    C. ____A lower pitched sound = an increase in what?

14. Can we hear 10 Hz?

15. Use the harmonic at the right to answer the following:
    A. ____ Which harmonic is it?
    B._____How many nodes does it have?
    C._____How many antinodes does it have?
    D._____If it's frequency = 20 Hz, find the frequency of the fundamental (H_1).

16. What does the balance read?

17. What is the balance measuring? (What quantity.)