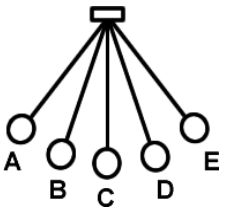
Due Thurs, Mar 22

2011-12 PreAP Harmonic Motion 1

1. Period	A. The number of cycles per second.
2. Equilibrium position	B. A unit of one cycle per second.
3. Amplitude	C. The size or strength of a cycle.
4. Damping	D. Time it takes to complete one cycle.
5. Frequency	E. A part of motion that repeats over and over with a set series of events.
6. Cycle	F. Halfway between the two sides and where the motion comes to rest.
7. Hertz	G. The motion dying out over time.

8.



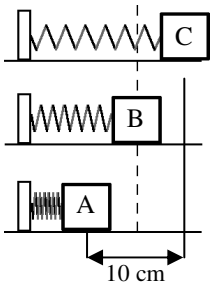
Where is the equilibrium position for this pendulum?

If the pendulum starts at C going to the right, where does 1 cycle end?

From letter A to letter ____ would be the amplitude.

If the pendulum starts at A, how many times does it pass point C in 1 cycle?

9. A spring vibrates between points A and C.



Where is its equilibrium position?

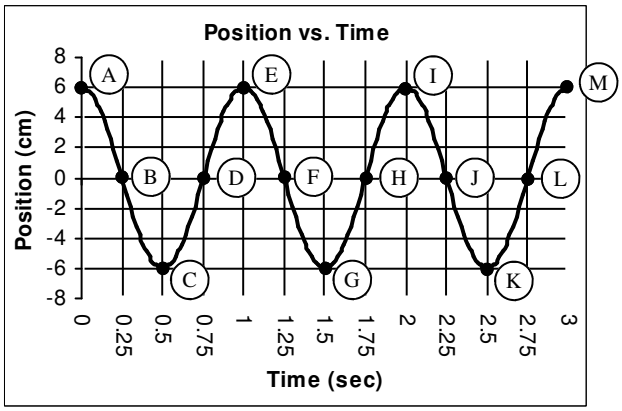
If the spring starts at position A, how much of a cycle does it complete from A to C?

If the spring moves 10 cm from C to A (side to side), how big is it's amplitude?

10. An spring has a period of 4 seconds. What is its frequency?

11. A pendulum has a frequency of 3 Hz. What is its period?

12.



1 cycle after A is E, so 2 cycles after D is ____.

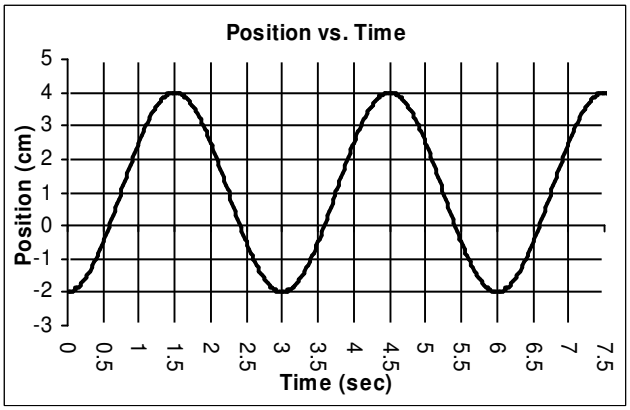
1/2 cycle after G is I, so 1/4 cycle ***before*** M is ____.

Number of complete cycles shown is ____.

Period (T) = Frequency (f) =

Equilibrium position = Amplitude (A) =

13.



Mark 1 cycle of the harmonic motion.

Starting at 1.5 secs, when does the 2nd cycle end:

Number of cycles shown on the graph is ____.

Period (T) = Frequency (f) =

Equilibrium position = Amplitude (A) =

Understanding frequency vs period. You know that T = 1/f or f = 1/T, where f is frequency and T is the period.

14. A pendulum has a period of 2 seconds.
   A. That means it takes ___ seconds for it to complete one full swing or one c_____.
   B. * Calculate the frequency of the pendulum.
   C. This is how frequent the motion is. It completes _____ cycles each second.

B. 1/2 = 0.5 Hz
C. 1/2 times

15. A second pendulum has a period of 0.25 seconds. f
   A. That means it takes _____ seconds for it to complete one full swing or one c_____.
   B. * Calculate the frequency of the pendulum.
   C. This is how frequent the motion is. It completes _____ cycles each second.

B. 1/.25 = 4 Hz
C. 4 times

This second pendulum is more frequent, so it has a higher frequency!