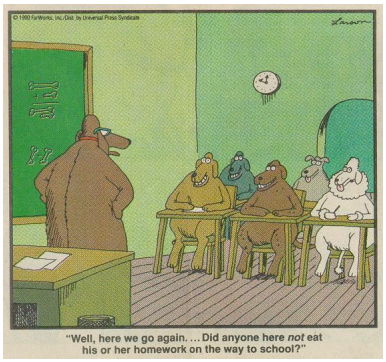
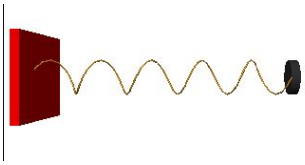


Simple Harmonic Motion

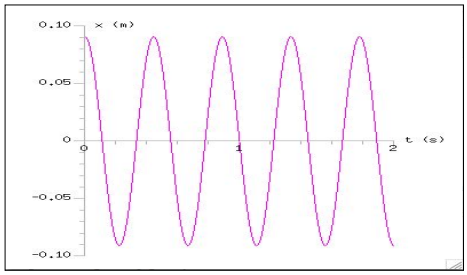
Mass on a compressible spring.



Vertical mass-on-spring

Treat the **equilibrium** length of the spring as if it is the **unstretched** length of the spring. Then, you can **neglect the gravitational force** on the object.

x(t) for SHO



Frequency and Stiffness

Which has a greater frequency, a spring of stiffness k or a spring of stiffness 2k?

Frequency and Mass

Which has a greater frequency, a spring and object of mass *m* or a spring and object of mass 2*m*?

Derivation of frequency of a mass-spring system -- solving Newton's second law

Poll

If you double the stiffness of the spring, by what factor does the frequency change?

1. 2
2. 1/2
3. sqrt(2)
4. 1/sqrt(2)
5. 4

Poll

If you double the mass of the object, by what factor does the frequency change?

1. 2
2. 1/2
3. sqrt(2)
4. 1/sqrt(2)
5. 4

Poll

In one experiment you pull back the object a distance A and release it from rest. In a second experiment, you pull back the object a distance 2A and release it from rest. The frequency of the oscillation in the second experiment is

1. Twice the frequency in the first experiment
2. Half the frequency in the first experiment
3. The same as in the first experiment