UCONN Physics Name_____

Hooke's Law worksheet II **/36** Date _____ Period_____

1. If a spring has a spring constant of 2 N/m and it is stretched 5 cm, what is the force of the spring? (Answer = 0.1 N)

2. If a spring has a spring constant of 0.5 N/m and it is stretched 0.5 m, what is the force of the spring? (Answer = 0.25 N)

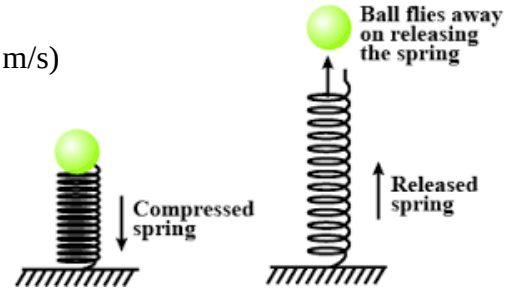
3. A spring is stretched 6 cm when a mass of 200 g is hung on it. Calculate the spring constant of this spring. (Answer = 32.67 N/m)

4. If you use the spring from problem #3 and hang a 500 g mass on it, how far will it stretch? Convert your answer to cm. (Answer = 15 cm)

5. A spring with a spring constant of 400 N/m has a mass hung on it so that it stretches 8 cm. Calculate how much mass the spring is supporting. (Answer = 3.3 kg)

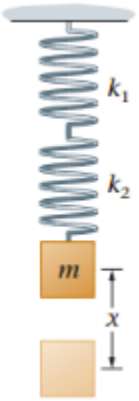
6. A vertical spring (ignore its mass), whose spring stiffness constant is 950 N/m, is attached to a table and is compressed down 0.150 m with a ball resting on the spring.

   a. What upward speed can it give to a 0.3 kg ball when released?(8.4 m/s)

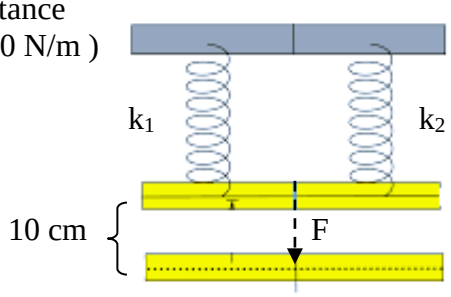


   b. How high above its original position (spring compressed) Will the ball fly?(3.6 m)

7. Two Springs, with force constants k_1 = 150 N/m and k_2 =250 N/m, are connected in series, as shown. When a mass "m" = 0.90 kg is attached to the springs, what is the amount of stretch, i.e. "x". (9.4 cm)



8. Two springs, with force constants k_1 and k_2 are connected in parallel, as shown. How much work is required to stretch this system a distance of 10 cm from the equilibrium position? (k_1 = 150 N/m ; k_2 = 250 N/m) (2 J)



9. Three springs with the same constant connected in series and parallel. A 2-kg object attached at one end of a spring, as shown below. Spring constant is $k_1 = k_2 = k_3 = 300$ N/m. What is the change in length of the three springs? (9.8 cm)