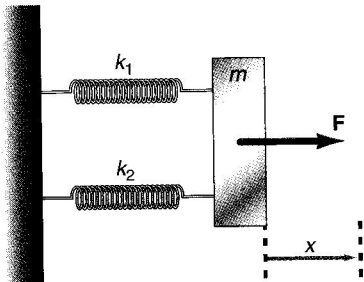


From the Nolan Text / Chapter 10:

17. A coil spring stretches 4.00 cm when a mass of 500 g is suspended from it. What is the spring constant of the spring?

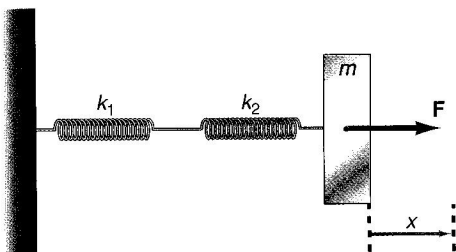
18. A coil spring stretches by 2.00 cm when an unknown load is placed on the spring. If the spring has a force constant of 3.5 N /m, find the value of the unknown force.

19. A coil spring stretches by 2.50 cm when a mass of 750 g is suspended from it. (a) Find the force constant of the spring. (b) How much will the spring stretch if 800 g is suspended from it?



44. Two springs are connected in parallel as shown in the diagram. The spring constants are $k_1 = 5.00$ N/m and $k_2 = 3.00$ N/m. A force of 10.0 N is applied as shown. If the strain is the same in each spring,

(a) find the displacement of mass m .



45. Two springs are connected in series as shown in the diagram. The spring constants are $k_1 = 5.00$ N/m and $k_2 = 3.00$ N/m. A force of 10.0 N is applied as shown.

(a) Find the displacement of mass m .

Chapter 11

1. A mass of 0.200 kg is attached to a spring of spring constant 30.0 N/m. If the mass executes simple harmonic motion, what will be its frequency?
2. A 30.0-g mass is attached to a vertical spring and it stretches 10.0 cm. It is then stretched an additional 5.00 cm and released. Find its period of motion and its frequency.
9. A 500-g mass is hung from a coiled spring and it stretches 10.0 cm. It is then stretched an additional 15.0 cm and released.
 - (a) Find the frequency of vibration,
 - (b) the period,
 - (c) and the velocity and acceleration at a displacement of 10.0 cm
11. A simple harmonic oscillator has a spring constant of 5.00 N/m. If the amplitude of the motion is 15.0 cm, find the maximum potential energy of the oscillator.
22. Springs with spring constants of 5.00 N/m and 10.0 N/m are connected in *parallel* to a 5.00-kg mass. Find (a) the equivalent spring constant and (b) the period of the motion.
23. Springs with spring constants 5.0 N/m and 10.0 N/m are connected in *series* to a 5.00-kg mass. Find (a) the equivalent spring constant and (b) the period of the motion.
15. Find the period and frequency of a simple pendulum 0.75 m long.
17. Find the frequency of a child's swing whose ropes have a length of 3.25 m.
18. What is the period of a 0.500-m pendulum on the moon where $g_m = (1/6)g_e$?
28. A simple pendulum is used to operate an electrical device. When the pendulum bob sweeps through the midpoint of its swing, it causes an electrical spark to be given off. Find the length of the pendulum that will give a spark rate of 30.0 sparks per minute.