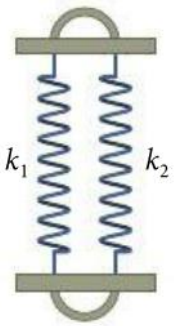
# PHY151H1F – Practice Problem Set 8

**Ch. 8, Q.s 52 & 53**

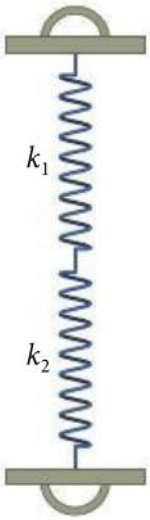
**52.** Two springs have spring constants $k_1$ and $k_2 > k_1$. Connected as shown in Figure P8.52, they act like one spring. Compute the spring constant of the combination, and determine whether it is smaller than $k_1$, equal to $k_1$, between $k_1$ and $k_2$, equal to $k_2$, or greater than $k_2$. ●●

**Figure P8.52**




**53.** Two springs have spring constants $k_1$ and $k_2 > k_1$. Connected as shown in Figure P8.53, they act like one spring. Compute the spring constant of the combination. Is the combination smaller than $k_1$, equal to $k_1$, between $k_1$ and $k_2$, equal to $k_2$, or greater than $k_2$? ●●

**Figure P8.53**



**Ch. 9, Q. 47**

Stretching a certain spring 0.10 m from its relaxed length requires 18 J of work. How much more work does it take to stretch this spring an additional 0.10 m? •

**Ch. 9, Q. 60**

Your 1000-kg car, moving at 7.0 m/s, approaches the bottom of a hill that is 20 m high (Figure P9.60). To save gas, you use on average only 3.3 kW of engine power, realizing that half of the energy delivered by the engine and half of the initial kinetic energy will be dissipated. If you calculated correctly, your car will just barely make it over the hill. What time interval is required for your car to travel from the bottom to the top of the hill? ••

**Figure P9.60**