## The Spring Force

## Practice Your Understanding

Name:	
Date:	

1. Using the Hooke's Law simulation, set the mass of the bob to 10kg, the spring constant to  $0.05 \frac{N}{m}$ , and the damping coefficient to  $0.01 \frac{Ns}{m}$ . Before you start the simulation, set the bob to a distance of 5 m. As you run the simulation, count the amount of times the bob completes one cycle. (A cycle being the bob going to the other side and back once). Using the built in stop watch in the simulation, you can record the time of each cycle as the bob starts to lose energy based on the damping coefficient. What do you think happens to the force as the spring starts to lose energy. Record your observations and answers in the box below.

2. Now repeat question 1 choosing a larger mass, spring constant, damping coefficient, but a smaller distance for starting the bob. What do you think happens to the force as the spring starts to lose energy. Will it have the same effect as in the previous simulations? Record your observations and answers in the box below.

3. You will now go to the Programming Exercises Hooke's Law Graph and plot the spring force vs. extension. What is the curve of the graph? Is it linear? Parabolic? What can you understand from the graphical trend relating the spring force with the extension of the string? Record your answer in the box below.