02-04 Spring Constants Lab *Name: _____*

Adapted from Take-Home Physics by Michael Horton

Objectives

- Find the relationship between stretching and force.

Materials

- Spring (or Rubber Band)
- Paper clip
- Ruler
- 250 g slotted mass set
- Device capable of doing regressions (Vernier Graphical App or graphing calculator)

Procedure

1. Hang the spring and attach the mass hanger to the other end of the spring.
2. Measure the spring's length.
3. Hang a 20 g mass on the hanger and measure the spring's length.
4. Finish filling out the table. (Remember $W = mg$.)
5. Create a graph to find the relationship between the weight and length. Put the length on the x-axis and the weight on the y-axis.
6. The points should be an approximate straight line. Use a device to find the equation of the best-fitting line. Since length is on the x-axis and weight (force) is on the y-axis, use x for the x-variable and F for the y-variable. _____
7. Since the graph is a straight line, the slope is constant. What are the units of the slope? _____
8. The slope is called the spring constant and is a measure of the stiffness of a spring. What is the spring constant of your spring? _____
9. Use your best-fitting line equation to find the length the spring would be with 200 g. _____
10.

Mass (kg)	Weight (N)	Length (m)
0.050 kg		
0.070 kg		
0.090 kg		
0.110 kg		
0.130 kg		
0.150 kg