

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

- Hang the spring and attach the mass hanger to the other end of the spring.
- Measure the spring's length.
- Hang a 20 g mass on the hanger and measure the spring's length.
- Finish filling out the table. (Remember $W = mg$.)
- 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.
- 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. _____
- Since the graph is a straight line, the slope is constant. What are the units of the slope? _____
- 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? _____
- Use your best-fitting line equation to find the length the spring would be with 200 g. _____

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