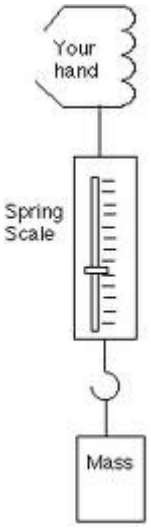
Name: _____

Estimating and Measuring Forces
SPH4C



A spring scale.

Please adjust the scale if necessary to make sure it is properly zeroed before suspending masses from it.

And do be gentle with the springs.

Part 1: Estimating and Measuring Forces

1. Carefully pull on a spring scale so that you can "feel" forces of 1 N, 2 N, and so on.

2. Select 5 different everyday objects that could be picked up with the spring scale and estimate the magnitude of the force (in Newtons, again) that would be required to hold the object. Record these estimates in Table 1 below.

3. Test each of your estimations by using the spring scale to hold the objects and record the measurements of the magnitude of the force required to hold the objects in Table 1 below.

Table 1: Estimated and Measured Force for 5 Everyday Objects

Object Description	Estimated Force (N)	Measured Force (N)

Which object took the most force to hold it. Is this what you would have guessed? Explain why.

_____

_____

Part 2: Force and Mass

1. Pick up a 100 g mass and estimate the magnitude of the force that would be required to hold it. Record this estimate in Table 2 below.

2. Use the spring scale to hold the mass and record the force required to hold it in Table 2 below.

3. Repeat Steps 1 and 2 for masses of 200 g, 300 g (use a 100 g mass and a 200 g mass together), 400 g (two 200 g masses), and 500 g.

Table 2: Force Required to Hold Objects of Known Mass

Object Mass	Estimated Force (N)	Measured Force (N)
100 g		
200 g		
300 g		
400 g		
500 g		

4. Plot a graph of the data in Table 2 with mass on the horizontal axis and force on the vertical axis. Draw a line of best fit through your data points.

5. Determine the slope of the line of best fit for your graph. Note that N/kg = m/s^2.

$$slope = \frac{rise}{run} =$$