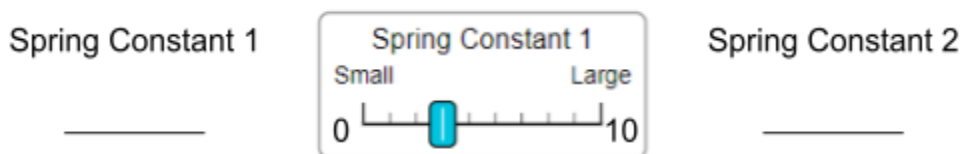


## SCI 9 (Burnett) U1A2.5 - Mass and Spring Simulation Take 2

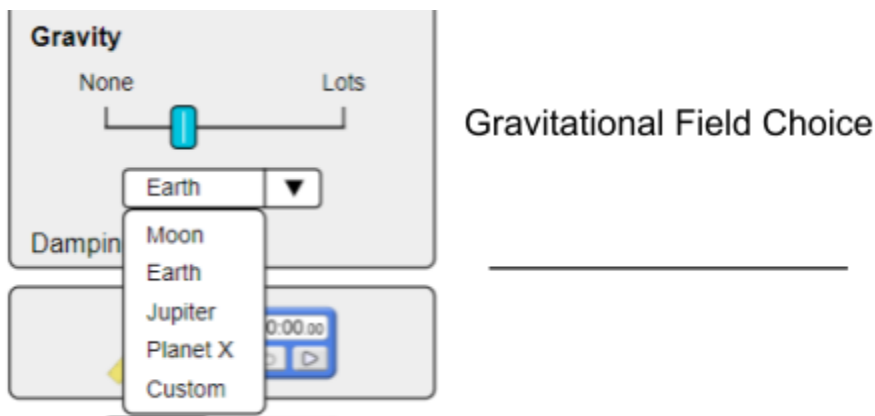
**Purpose:** What is the relationship between the mass hanging on a spring and the length that the spring is stretched? By collecting, organizing and representing the data they collect, students can begin to quantify energy stored, yet still in a qualitative way. This is an opportunity to discuss measurement precision and accuracy, and simple graphical methods.

**Simulation Site Address:** Google Search “Phet mass and springs html5” or click the link [https://phet.colorado.edu/sims/html/masses-and-springs/latest/masses-and-springs\\_en.html](https://phet.colorado.edu/sims/html/masses-and-springs/latest/masses-and-springs_en.html)

Working in the “Intro” tab only start by selecting two different spring constants at the top of the page. Consider they range from 0 to 10 (small to large)



Next choose a gravitational field to work with in this experiment. Choose only from Earth, Moon, and Jupiter.



Now you are ready to start your investigation:

**What is the relationship between the mass hanging on a spring and the length that the spring is stretched?**

Using the tools in the simulation, create an experiment that would allow you to gather data about the effects of mass on spring stretch. Perform the experiment, gather the data, and analyze the data in an effort to answer the above question.

# General Layout for an Experimental Design Diagram

## **TITLE**

The Effect of \_\_\_\_\_ (Independent Variable)  
on \_\_\_\_\_ (Dependent Variables)

## **HYPOTHESIS**

If \_\_\_\_\_ (planned change in independent variable),  
then \_\_\_\_\_ (predicted change in dependent variables).

## **INDEPENDENT VARIABLE**

\_\_\_\_\_

## **LEVELS OF INDEPENDENT VARIABLE AND NUMBERS OF REPEATED TRIALS**

Level 1 ( <b>Control</b> )	Level 2	Level 3	Level 4
Number of trials	Number of trials	Number of trials	Number of trials

## **DEPENDENT VARIABLE AND HOW MEASURED**

\_\_\_\_\_

## **CONSTANTS**

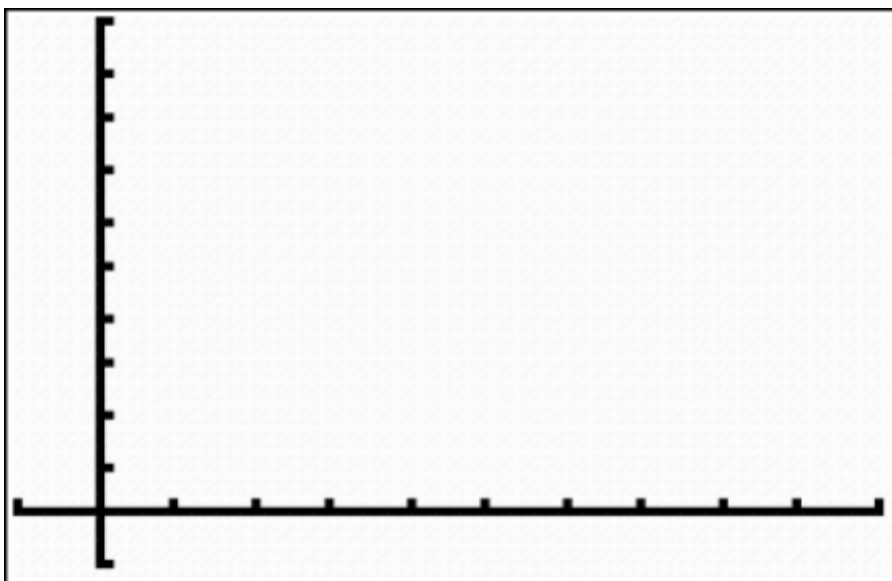
- 1.
- 2.
- 3.
- 4.

**Procedure:**(Please list the steps needed to gather your data)

**Data:**

Spring 1		Spring 2	
X Axis Value	Y Axis Value	X Axis Value	Y Axis Value
Mass (g)	Stretch (cm)	Mass (g)	Stretch (cm)
50		50	
100		100	
250		250	

**Data Analysis: (The Graph)**



From your graph, determine the mass of the Pink (\_\_\_\_\_g), Teal (\_\_\_\_\_g), and Yellow (\_\_\_\_\_g) masses.