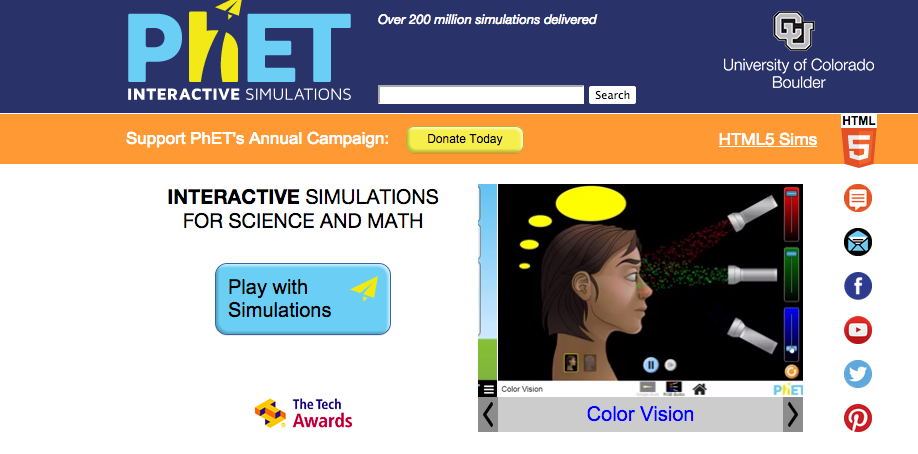
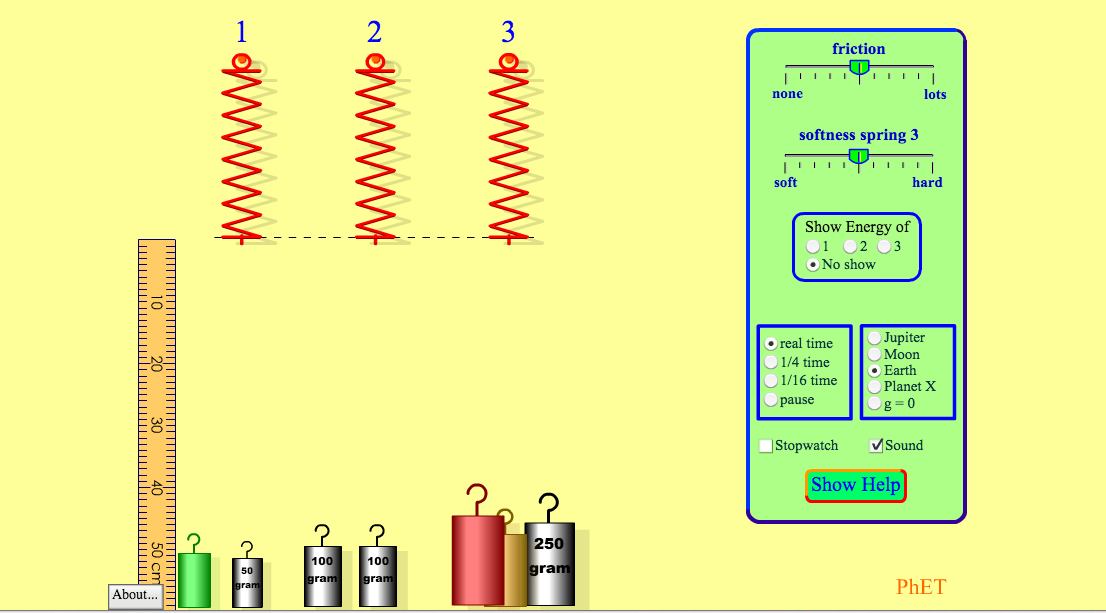
Jacqueline Sutton

**Measuring Mass With Springs**

In this activity you will investigate the physical science of various masses and springs.

1. Click this link: <http://phet.colorado.edu/>

This is a screen shot of the website: 

1. Click the “Play with sims” button.
2. Click “New Sims” -> Click “Masses and Springs” -> Click “Run Now!”
3. It will take time to load and then this screen appears: 

Switch between this document and the sim to complete the activity

Exploration Phase:

1. Place various objects on the springs
2. Freely explore the effect of adding friction, making the spring softer and harder, and changing the environment of the springs.

Questions:

1. What happens to a spring when a lighter object is added to it?
2. What happens to a spring when a heavier object is added to it?

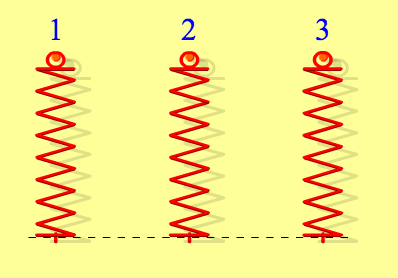
3. Explain why you think this happens.

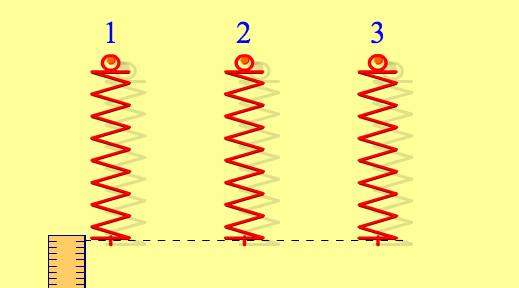
**Explanation Phase:**

Aim: Create rule that describes the relationship between the mass and the movement of the spring.

Describe the rule here:

Reset the sim. Make sure the reference line is here:



Use the sim and fill in the blanks of the following table for 3 different conditions of the springs. Use the draggable ruler provided to make measurements. The ruler should be aligned with the reference line as seen below. 

|  |  |
| --- | --- |
| **Mass of Object (g)** | **What was the extension of the spring? (cm)** |
| 50 grams |  |
| 100 grams |  |
| 250 grams |  |

Come up with a rule for the length of the spring when a mass is added to it based on the completed chart.

Write here:

Use your rule to complete the chart below.

|  |  |
| --- | --- |
| **Mass of Object (g)** | **What was the extension of the spring? (cm)** |
| 40 grams |  |
|  | 7 cm |
|  | 12 cm |
|  | 19 cm |
| 300 grams |  |
| 500 grams |  |
|  | 56 cm |
| 1,000 grams |  |

**Application Phase**

Use the rule you created to find the mass of the mystery objects.

|  |  |  |
| --- | --- | --- |
| **Mystery Object** | **Mass (grams)** | **What was the extension of the spring? (cm)** |
| Red Object |  |  |
| Green Object |  |  |
| Gold Object |  |  |

How were you able to calculate the mass of the mystery objects?

Finished: Congratulations! You can now spring on forward!