Grade 11 Physics Lab 2

Spring Force Lab

**Purpose:**

To determine the spring constant for two different springs

**Theory:**

Refer to your notes on springs and forces. When completing your lab report, include any and all formulas in this section. Also, include definitions used in the lab.

**Materials**

* Two sets of scales (these are your springs)
* Ruler
* Set of masses

**Procedure**

1. Hang the 0-5N Scale
2. Select the correct mass and hang it on the scale
3. Measure the displacement in the spring at the back of the scale and record your data
4. Complete this process for all of your masses or until the scale has reached its maximum.
5. Hang the 0-20N Scale
6. Select the correct mass and hang it on the scale
7. Measure the displacement in the spring at the back of the scale and record your data
8. Complete this process for all of your masses or until the scale has reached its maximum
9. Hang two of 0-5N scales in parallel and measure the displacement for 200g. Record the displacement
10. Hang two of the 0-5N scales so that they share the mass of 200g. Measure the displacement of 200g

**Data**

**0-5N Scale 0-20N Scale**

|  |  |
| --- | --- |
| **Mass (g)** | **Displacement (cm)** |
| **10** |  |
| **20** |  |
| **30** |  |
| **50** |  |
| **100** |  |
| **200** |  |
| **350** |  |
| **500** |  |
| **1000** |  |

|  |  |
| --- | --- |
| **Mass (g)** | **Displacement (cm)** |
| **10** |  |
| **20** |  |
| **30** |  |
| **50** |  |
| **100** |  |
| **200** |  |
| **350** |  |
| **500** |  |
| **1000** |  |

Displacement for 200g in parallel:

Displacement for 200g when sharing 200g:

**Analysis**

1. Graph the data for both of the scales
2. For the straight line portion, find slope
3. State the Spring Force Constant for the springs
4. What displacement do you expect in a parallel spring? Describe what you observed during the lab.
5. What displacement do you expect when springs share a load? Describe what you observed during the lab.
6. What are some sources of error? Try and think of errors besides human error

**Conclusion**

What are the spring constants of the springs?