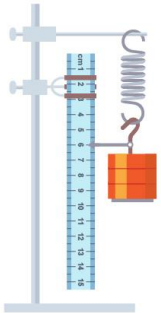
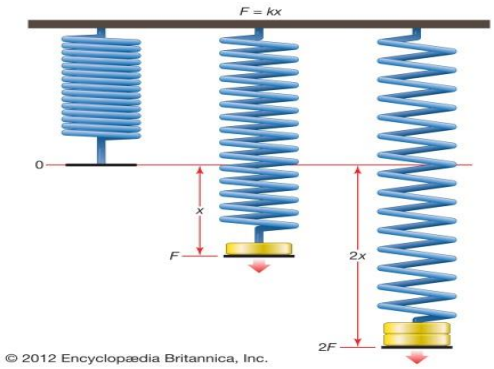
Experiment: To verify Hooke's law and determining spring constant

Hooke's law states that the strain of the material is proportional to the applied stress within the elastic limit of that material.
When the elastic materials are stretched, the atoms and molecules deform until stress is been applied and when the stress is removed they return to their initial state.
Mathematically, Hooke's law is expressed as:
$F = -K X$
In this equation, F is the force , X is the extension length
And K is the constant of proportionality known as spring constant in N/m.

Mass M	Increasing Length L	Decreasing Length L	Average Length L	X=L-Lo
0				
50				
100				
150				
200				
250				
300				



- Recorded the unloaded length of the spring Lo cm
- Attached a weight of mass 50g to the end of the spring and record the new length of the spring L cm.
- Increase the load by increment of 50 gm and record the new readings.
- Continue this process for about 6 readings.
- Start unloading the weights and again record the value of the readings.
- The extension (X) is x=L-Lo
- Lo= original length and L= new length
- Draw a graph with the values of (M) on y-axis against extension (X) on x-axis is a straight line through the origin, because Hooke's Law is obeyed.
- Calculate the slope which will be the spring constant K.