

Hooke's Law - The Force in Springs

Purpose - to verify Hooke's Law through graphing and calculation and determine the spring constant from a Force vs. Extension graph.

Procedure: -

1.) Obtain a spring and a 0-5 N spring scale. Measure and record the length (unstretched) of the spring.

2.) Complete the table below.

Force (N)	Length (m)
0.0	
1.0	
2.0	
3.0	
4.0	
5.0	

3.) Prepare a graph of force vs. length using the data above.

4.) Return the spring and scale, obtain 0-20 N spring scale and a rubber band, record the length of the rubber band.

5.) Complete the table below.

Force (N)	Length (m)
0.0	
5.0	
10.0	
12.0	
15.0	

6.) Prepare a graph of force vs. length for the rubber band

7.) Return all apparatus.

Discussion -

- 1.) Calculate the slopes of both graphs showing the appropriate units. Do not use the last data point in the elastic graph as this point pertains to the elastic limit as mentioned below in question 3.
- 2.) What does the x-intercept of each graph represent?
- 3.) Your second graph should start linear then curve. This shows the elastic limit of your material is being reached. Define elastic limit.

Conclusion - state what the slopes of the lines mean, and what the magnitude of the slope of each material is.