Learning Intentions

- Learn the relationship between the force in an elastic band and the change in the length of the elastic band.

Materials

1. Metal stand
2. 1 elastic band
3. 20 N spring scale
4. Ruler

Procedures

1. Put the metal stand into the holder on the desk.
2. Put the elastic band around the metal stand.
3. Attach the spring scale, and pull it so that the elastic band is at its full, unstretched length.
4. Place the ruler so that it can measure the change in length of the elastic band.
5. Pull on the spring scale until the elastic band has increased in length to 3 cm. Record the measured force. Repeat for 5 data points, up to 15 cm.
6. Using Excel, graph the force of tension versus the change in length of the elastic.
7. Using Excel, add a best-fit line to the graph. The slope of this line represents k, the constant of elasticity.

Data

Circle the type of elastic band   #19   #32   #64

Change in length of elastic	Tension in elastic
0.0 cm	0.0 N
3.0 cm	
6.0 cm	
9.0 cm	
12.0 cm	
15.0 cm	

Questions

1. Draw a free body diagram of the point where the elastic band touches the spring scale.

2. Using Excel, graph the spring force vs. change in length for the elastic band.

3. Using Excel, find the equation of the best-fit line for this graph.

4. What is the spring constant for your elastic?