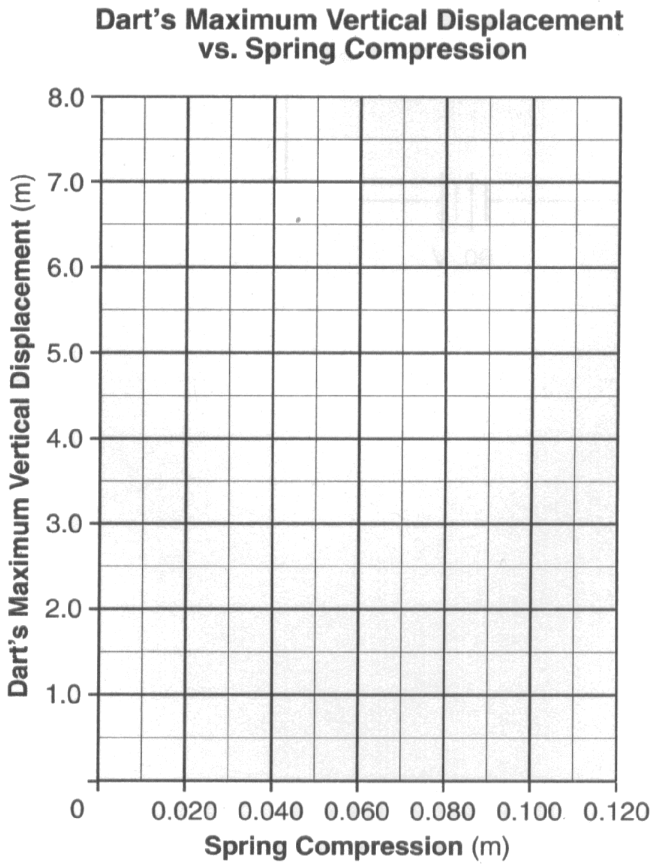
Name **Part 2 Review C**

Base your answers to questions **1** through **3** on the information and data table below.

The spring in a dart launcher has a spring constant of 140 newtons per meter. The launcher has six power settings, 0 through 5, with each successive setting having a spring compression 0.020 meter beyond the previous setting. During testing, the launcher is aligned to the vertical, the spring is compressed, and a dart is fired upward. The maximum vertical displacement of the dart in each test trial is measured. The results of the testing are shown in the table below.



Data Table

Power Setting	Spring Compression (m)	Dart's Maximum Vertical Displacement (m)
0	0.000	0.00
1	0.020	0.29
2	0.040	1.14
3	0.060	2.57
4	0.080	4.57
5	0.100	7.10

1. Determine the magnitude of the force, in newtons, needed to compress the spring 0.040 meter.

2. Draw the line or curve of best fit.

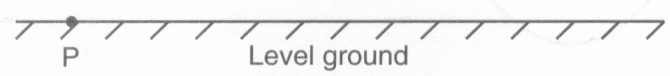
3. Plot the data points for the dart's maximum vertical displacement versus spring compression on the grid below.

Part 2 Review C

Base your answers to questions **4** through **6** on the information below.

A kicked soccer ball has an initial velocity of 25 meters per second at an angle of 40º above the horizontal, level ground. [Neglect friction.]

4. On the diagram below, sketch the path of the ball's flight from its initial position at point P until it returns to level ground.



5. Calculate the maximum height the ball reaches above its initial position. [Show all work, including the equation and substitution with units.]

6. Calculate the magnitude of the vertical component of the ball's initial velocity [Show all work, including the equation and substitution with units.]