**Oil Changes and Engine Repair**

Adapted from an NCTM Illuminations’ activity - <http://illuminations.nctm.org/Lesson.aspx?id=1189>

The table gives data relating the number of oil changes per year to the cost of car repairs. Plot the data on the grid provided, with the number of oil changes on the horizontal axis.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Oil Changes Per Year | 3 | 5 | 2 | 3 | 1 | 4 | 6 | 4 | 3 | 2 | 0 | 10 | 7 |
| Cost of Repairs | 300 | 300 | 500 | 400 | 700 | 400 | 100 | 250 | 450 | 650 | 600 | 0 | 150 |

1. Plot the data on the grid provided, with the number of oil changes on the horizontal axis.

 What is the independent variable? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 What is the dependent variable? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



1. Does the data appear to be linear?
2. Is this an increasing, decreasing, or constant function?
3. Using a ruler, sketch a line of best fit through the center of the data.
4. Is the slope positive or negative?
5. Find the slope of the line. Describe in words what the slope represents.
6. Find the equation of the line. Show your steps.

1. Based on the equation that you found in #7 above, what is the initial value and explain in terms of oil changes and engine repairs what this represents?

1. Use your line of best fit to predict the cost of engine repairs if the car had four oil changes. How accurate do you think your prediction is? Explain your answer.