

Scatterplots-Quadratic

An engineer is interested in finding out about how average speed influences the miles per gallon a car gets. Her data for a particular car is in the table below.

Average Speed (mph)	Miles Per Gallon (mpg)
30	18
35	19
40	22
45	25
50	29
55	31
60	30
65	25
70	23
75	19

1. Enter the data into your calculator.
2. Graph the scatterplot.
3. Describe the shape of the data.
4. Explain in everyday language and in terms of the problem what is happening.

5. Use your calculator to find an equation that fits the data.
 - a. What equation will fit best?
 - b. Why did you make this choice?
 - c. What did you see in the data that influenced your decision?

Keystrokes for the *fx-9750G Plus*

From the Main Menu, press 2 for STAT.

If there are data in List 1 and List 2, follow these directions:

- Press F6 (make sure that the highlighted cell is in List 1 by pressing the right/left/up/down arrow).
- Press F4 (delete all) then press F1 (yes).
- Repeat this process for List 2 if necessary.

Enter Data:

- Type the average speed data in List 1
(With appropriate cell highlighted, type numerical value then EXE to store.)
- Use the right arrow key to go over to List 2 and then type in the miles per gallon data.
- Make sure your data is matched up correctly and that you have 10 entries in both List 1 and List 2.

	List 1	List 2	List 3	List 4
1	30	18		
2	35	19		
3	40	22		
4	45	25		
5	50	29		
				30.0

SRTA SRTB DEL CLR INS D

Graph the scatterplot:

- Press F6 (more) and then Press F1 (graph).
- Press F6 (set) to set up your graph.
- Press down arrow key to Graph Type, press F1 (scatterplot).
- Press down arrow key to XList then press F1 (List 1).
- Press down arrow key to Ylist then press F2 (List 2).

```
StatGraph1
Graph Type : Scatter
XList      : List1
YList      : List2
Frequency  : 1
Mark Type  : □
GPB1 GPB2 GPB3
```

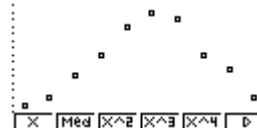
- The frequency should be 1 and you can choose the type of mark you would like to make.
- Press EXIT and then F1 for Graph 1.
-

To get the line of best fit:

- Press F3 (x^2) to find a quadratic regression model.

To see the line of best fit with the data:

- Press F6 (Draw)



```
QuadReg
a=-0.0221212
b=2.40636363
c=-36.7
y=ax^2+bx+c
COPY DRAW
```

