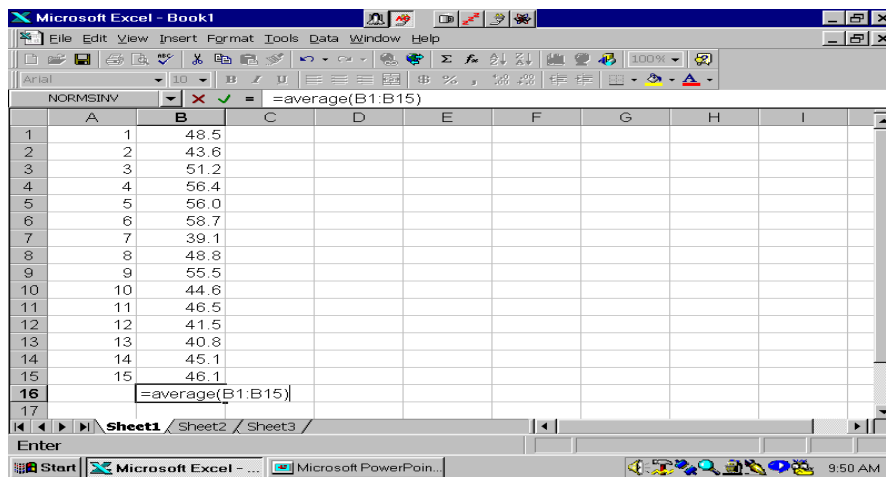


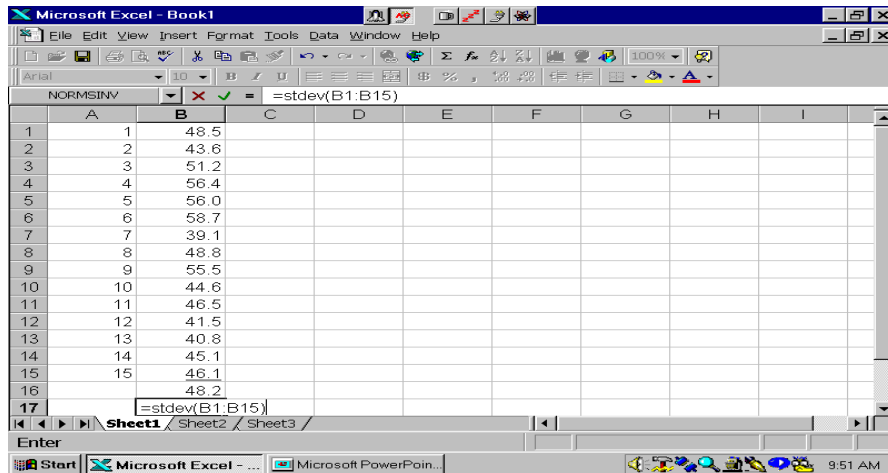
# Excel Tutorial

## How to Create a Control Chart

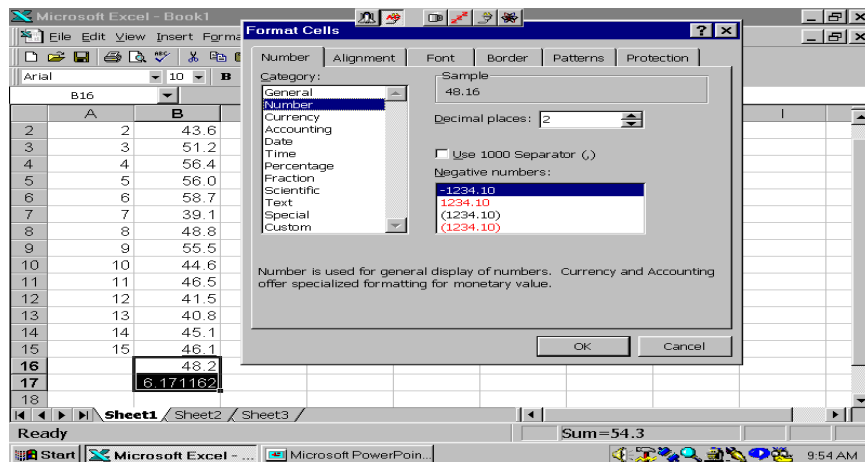
### Calculate the mean



# Calculate the standard deviation



# Format the Statistics to have the correct number of decimal places



# Calculate the Upper and Lower Warning and Control Limits

Microsoft Excel - Control\_Charts.xls

File Edit View Insert Format Tools Data Window Help

Normal

Formula Bar: =B\$16-2\*B\$17

|    | A  | B     | C | D  | E | F | G | H | I |
|----|----|-------|---|----|---|---|---|---|---|
| 1  | 1  | 48.5  |   |    |   |   |   |   |   |
| 2  | 2  | 43.6  |   |    |   |   |   |   |   |
| 3  | 3  | 51.2  |   |    | 1 |   |   |   |   |
| 4  | 4  | 56.4  |   | 15 |   |   |   |   |   |
| 5  | 5  | 56.0  |   |    |   |   |   |   |   |
| 6  | 6  | 58.7  |   | 1  |   |   |   |   |   |
| 7  | 7  | 39.1  |   | 15 |   |   |   |   |   |
| 8  | 8  | 48.8  |   |    |   |   |   |   |   |
| 9  | 9  | 55.5  |   | 1  |   |   |   |   |   |
| 10 | 10 | 44.6  |   | 15 |   |   |   |   |   |
| 11 | 11 | 46.5  |   |    |   |   |   |   |   |
| 12 | 12 | 41.5  |   | 1  |   |   |   |   |   |
| 13 | 13 | 40.8  |   | 15 |   |   |   |   |   |
| 14 | 14 | 45.1  |   |    |   |   |   |   |   |
| 15 | 15 | 46.1  |   |    |   |   |   |   |   |
| 16 |    | 48.16 |   |    |   |   |   |   |   |
| 17 |    | 6.17  |   |    |   |   |   |   |   |

Sheet1 Sheet2 Sheet3

Enter

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# Calculate the Upper and Lower Warning and Control Limits

Microsoft Excel - Control\_Charts.xls

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Normal

Formula Bar: =B\$16+2\*B\$17

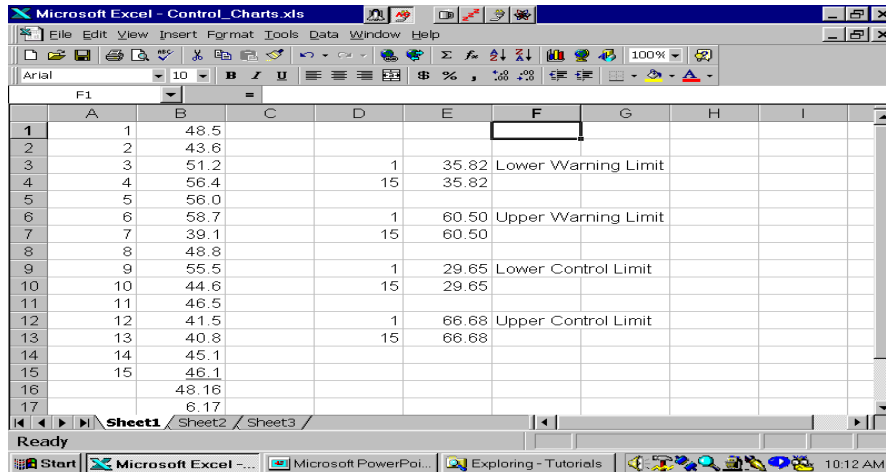
|    | A  | B     | C | D  | E     | F | G | H | I |
|----|----|-------|---|----|-------|---|---|---|---|
| 1  | 1  | 48.5  |   |    |       |   |   |   |   |
| 2  | 2  | 43.6  |   |    |       |   |   |   |   |
| 3  | 3  | 51.2  |   |    | 1     |   |   |   |   |
| 4  | 4  | 56.4  |   | 15 | 35.82 |   |   |   |   |
| 5  | 5  | 56.0  |   |    |       |   |   |   |   |
| 6  | 6  | 58.7  |   | 1  | 60.50 |   |   |   |   |
| 7  | 7  | 39.1  |   | 15 |       |   |   |   |   |
| 8  | 8  | 48.8  |   |    |       |   |   |   |   |
| 9  | 9  | 55.5  |   | 1  |       |   |   |   |   |
| 10 | 10 | 44.6  |   | 15 |       |   |   |   |   |
| 11 | 11 | 46.5  |   |    |       |   |   |   |   |
| 12 | 12 | 41.5  |   | 1  |       |   |   |   |   |
| 13 | 13 | 40.8  |   | 15 |       |   |   |   |   |
| 14 | 14 | 45.1  |   |    |       |   |   |   |   |
| 15 | 15 | 46.1  |   |    |       |   |   |   |   |
| 16 |    | 48.16 |   |    |       |   |   |   |   |
| 17 |    | 6.17  |   |    |       |   |   |   |   |

Sheet1 Sheet2 Sheet3

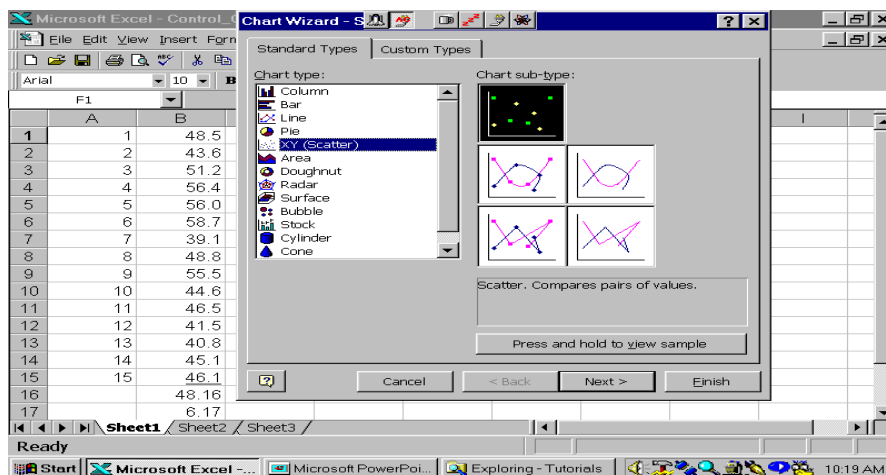
Ready

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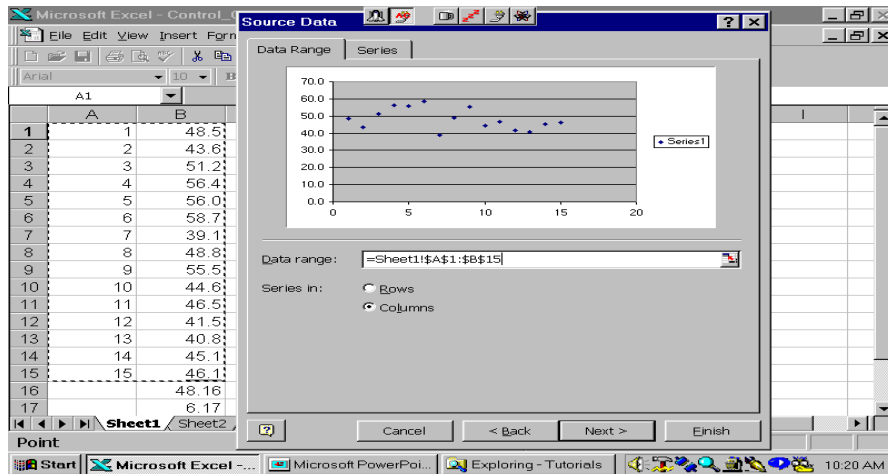
# Calculate the Upper and Lower Warning and Control Limits



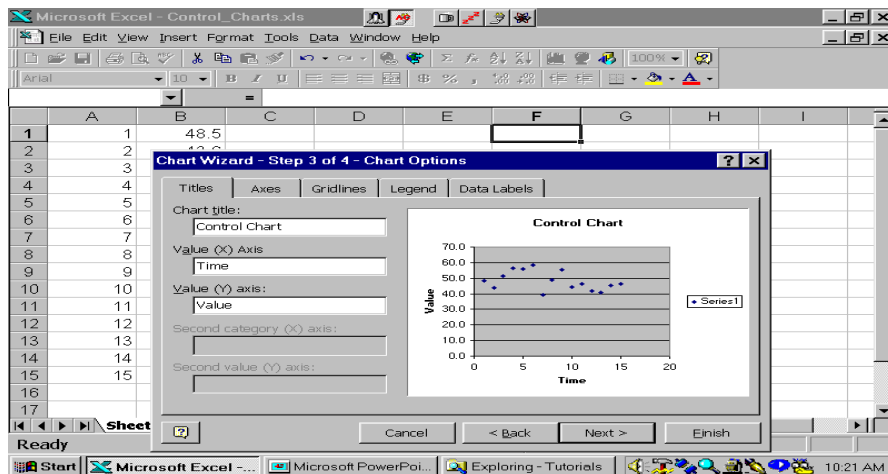
# Create a Scatter Plot of Time versus the Variable of Interest



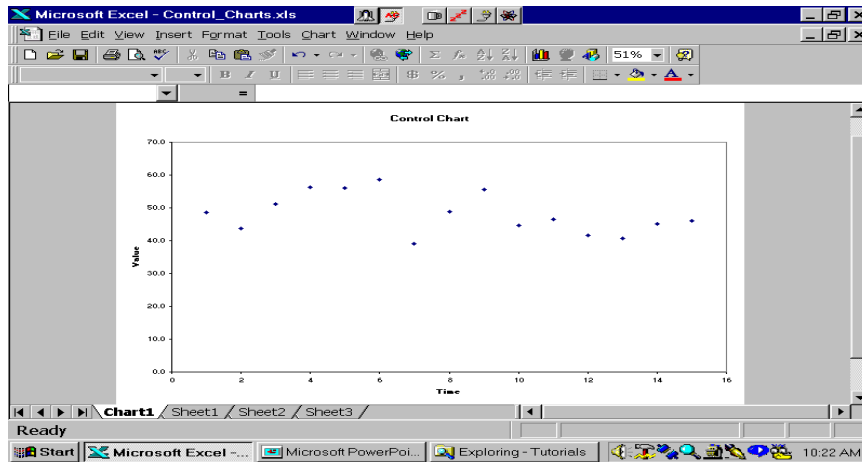
# Enter the Data Range



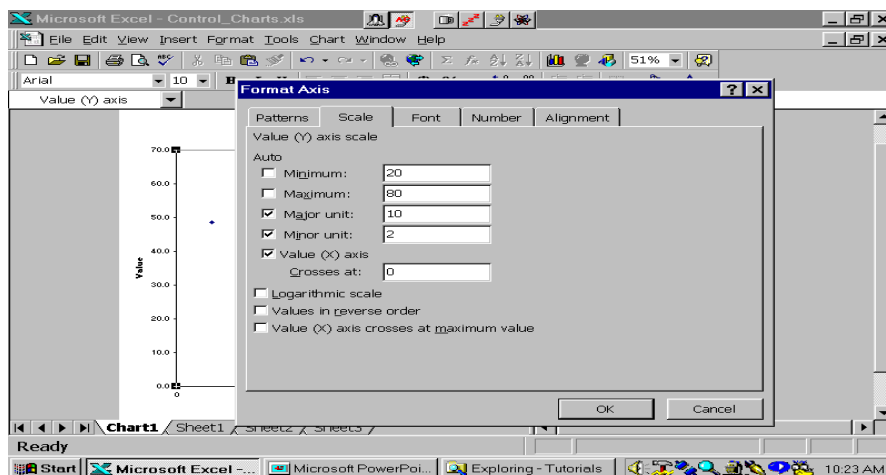
# Enter the Chart and Axes Titles



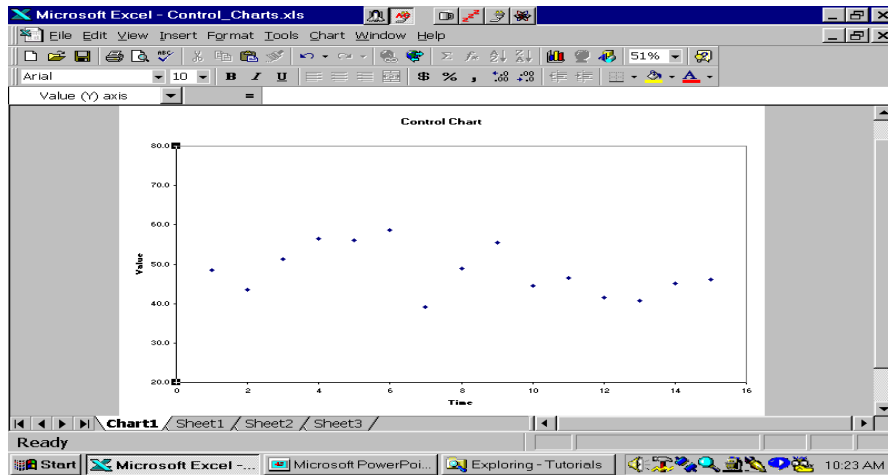
# Format the Chart to Look Good



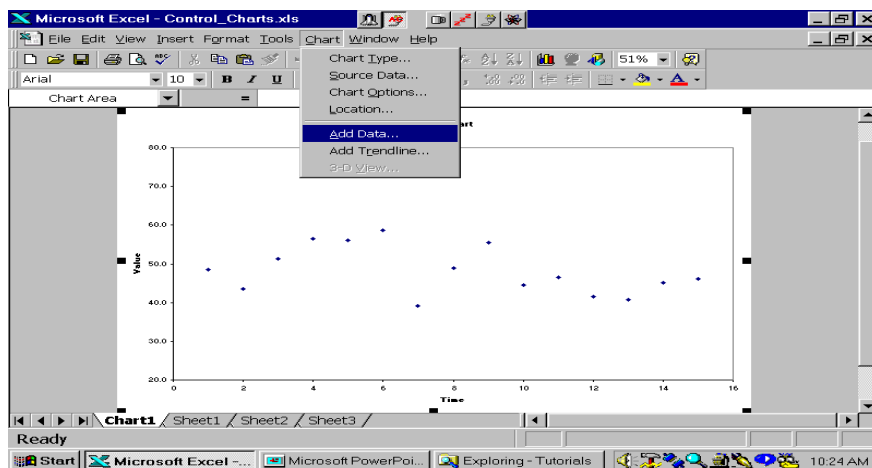
# Change the Axes Scales to Cover the Data Range and the Limits



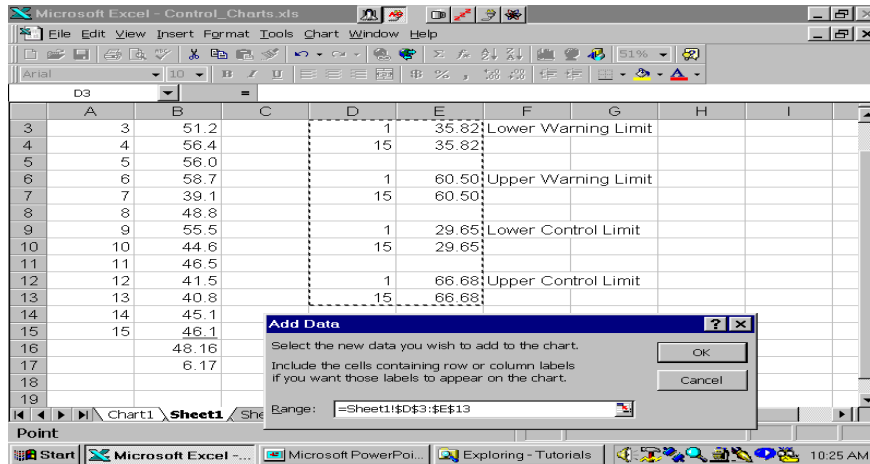
# Here's the Chart Now



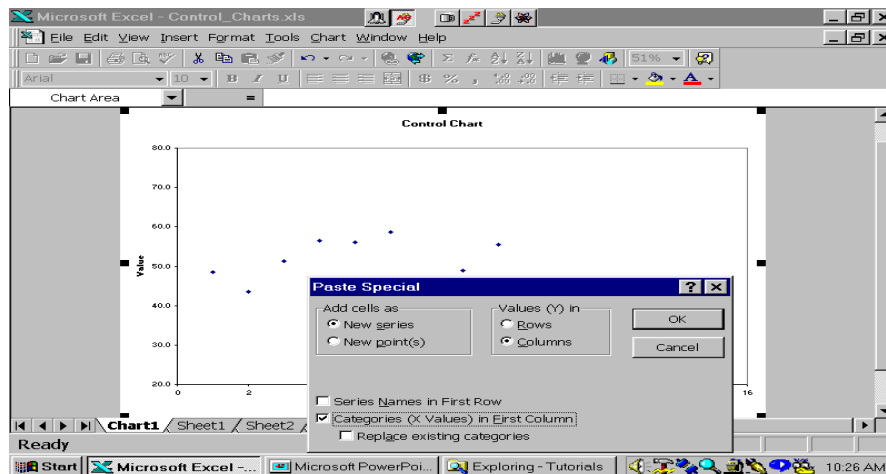
# Click Chart/Add Data



# Highlight the Range Where You've Entered the Limits

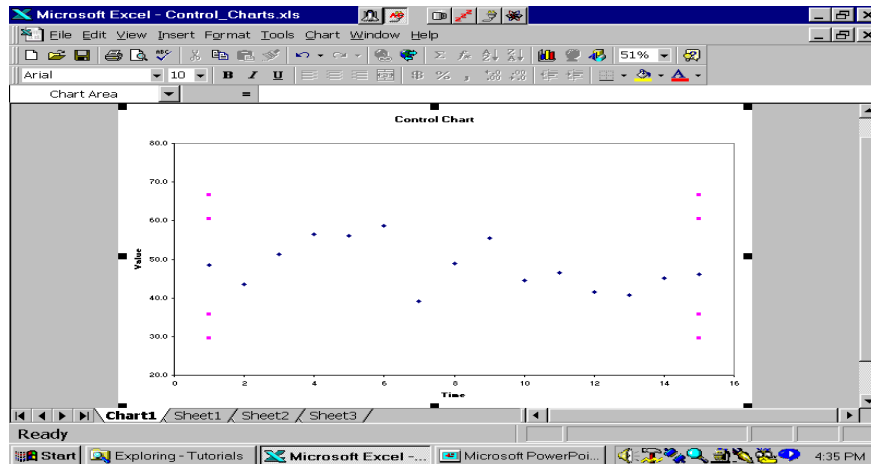


# Check These Boxes

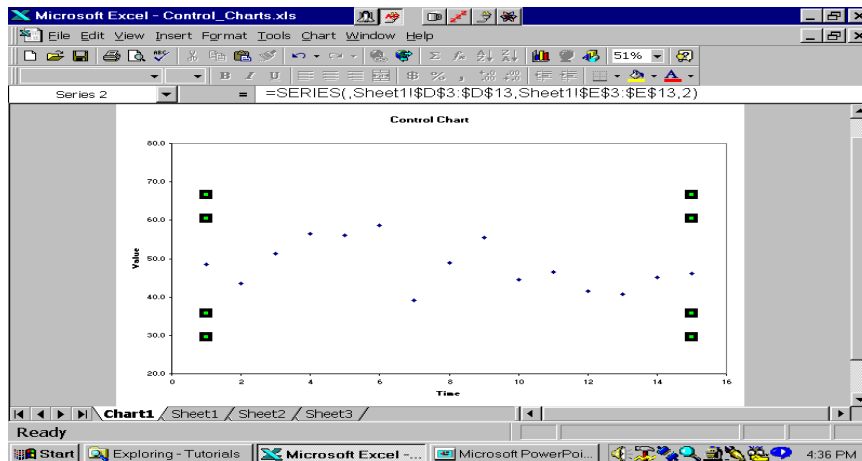




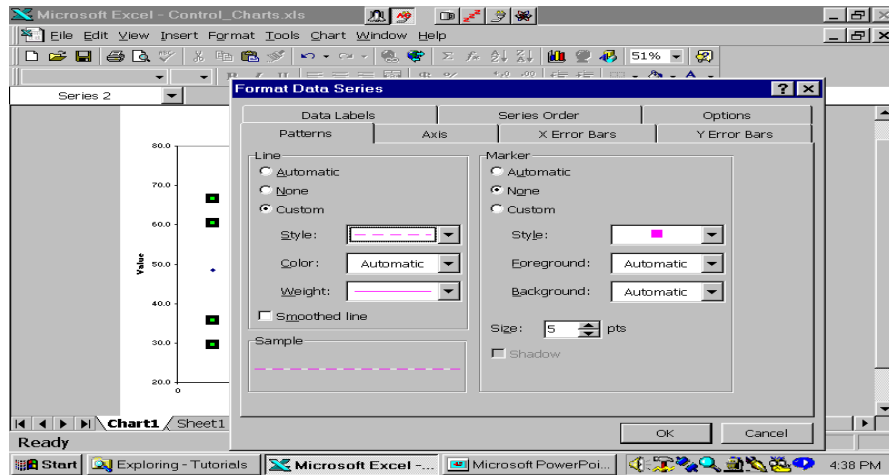
# That Entered the New Series as Points



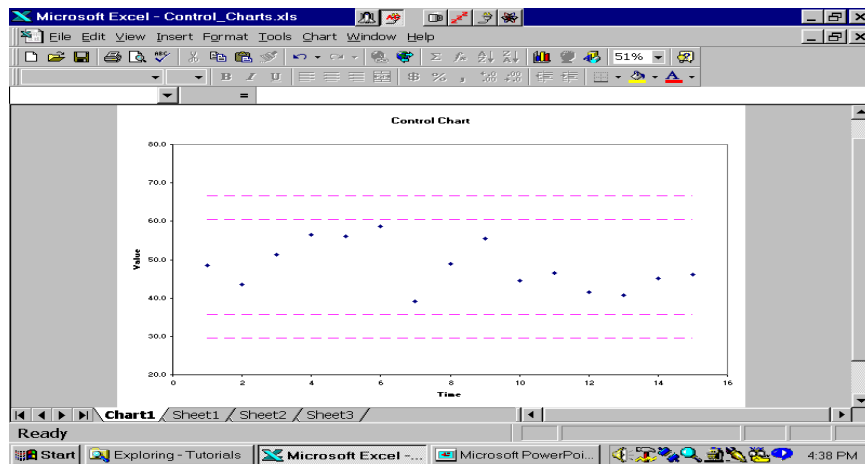
# Click on the Points to Highlight Them



Double Click the Points, Set Marker to None, Line to Custom and Select Line Style



Here's the Chart with the Limits

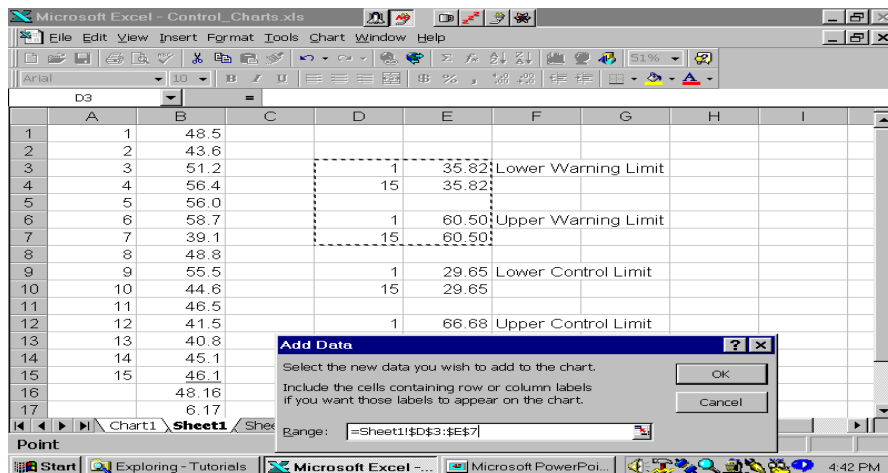


OR

You can be fancier and show the warning limits and the control limits using:

- either different line styles
- or different colors
- or both

To Use Different Line Styles and/or Colors, Add the Data as Separate Series and Set the Line Styles and Colors to be Different



# Here's the Final Chart

