Purpose: To review the types of graphs, and use MS Excel 2010 to create them from a dataset.
Outline: You will be provided with several datasets and will use MS Excel 2010 to create graphs.
Materials Needed: Data file, MS Excel 2010.
Topical Objectives: Bar, line, circle graphs, scatter plot and measures of central tendency.
Instructions: Answer the following questions.

You will need to use MS Excel 2007-2010 to complete this lab. Locate and open the file on the course website. Then follow the instructions below for each graph type. For the first graph you will be provided with a great deal of detail. However, since the procedure is quite repetitive, you will be given less detail as we proceed.

Part A: Be sure to be on the tab that says Bar Graph
1. Click on an empty cell.
2. Click on the Insert tab, then click on the Column button.
3. After the menu pops up, click on the first type, which is called Clustered Column.
NOTE: You will usually only have one dataset, which means the first is best.
4. Sometimes Excel tries to guess what you want, so you may see a graph. But many times you will see a blank ‘canvas.’ So we will need to indicate some details of the data set. Right click on the blank chart, and then click on **Select Data**.

5. Click on the top most value of your data, and drag the mouse down to highlight to the bottom most data value. Include the column heading. Then click **OK**.
6. Play around with the **Chart Tools**, particularly be sure to title your graph (“Rainfall at Flamingo Wash for 2004”) by using the **Chart Title** button, and label the horizontal axis (“Date”) and vertical axis (“Rainfall in inches”) by using the **Axis Titles** button.

![Chart Tools](image)

![Chart Title](image)

7. You can also modify just about any feature, including lines, background, colors, size of bars… Play around with it, and make your graph look different than your neighbors.

**Part B:** Be sure to click on the tab that says **Line Graph**

1. Click on an empty cell.
2. Click on the **Insert** tab, then click on the **Line** button.

![Insert Tab](image)

3. After the menu pops up, click on the first type, which is called **Line**.
   
   **NOTE:** A line graph is typically made up of the data points and connected lines.

![Line Graph Selection](image)

4. Again, right click on the blank chart, and then click on **Select Data**.
5. Click on the top most value of your data, and drag the mouse down to highlight to the bottom most data value. Include the column heading. Then click **OK**.
6. Again, play around with the **Chart Tools**, particularly be sure to title your graph by using the **Chart Title** button, and label the horizontal axis and vertical axis by using the **Axis Titles** button.

**Part C:** Be sure to click on the tab that says **Circle Graph**
1. Click on an empty cell.
2. Click on the **Insert** tab, then click on the **Pie** button.

3. After the menu pops up, click on the first type, which is called **Pie**.

4. Again, right click on the blank chart, and then click on **Select Data**.
5. Click on the top most value of your data, and drag the mouse down to highlight to the bottom most data value. Include the column heading. Then click **OK**.

1. Again, play around with the **Chart Tools**, particularly be sure to title your graph.
2. By right clicking on the pie, you can **Add Data Labels**. Once they are on the pie, you can right click on them to format exactly what you see by clicking on **Format Data Labels**.
Part D: Be sure to click on the tab that says **Scatterplot**

NOTE: Typically with a scatter plot you do NOT want to connect the data points with a line.

1. Click on an empty cell.
2. Click on the **Insert** tab, then click on the **Scatter** button.
3. After the menu pops up, click on the first type, which is called **Scatter with only Markers**.

   ![Scatterplot Image]

4. Again, right click on the blank chart, and then click on **Select Data**.
5. You are only using the Height and Weight columns. Click on the top most value of your data, and drag the mouse down to highlight to the bottom most data value. Include the column heading. Then click **OK**.
6. Again, play around with the **Chart Tools**, particularly be sure to title your graph.

Adding a trendline:

1. You can fit a linear equation to any scatterplot.
2. Once you have the data in a plot, right click on any data point, and click on **Add Trendline**.
3. Under **Trendline Options**, make sure **Linear** is checked.

   ![Trendline Image]

4. Also be sure to check the boxes indicating **Display Equation on Chart** and **Display R squared Value on Chart**.
5. Click Close.
6. The linear regression line will be added to your chart, along with the equation for that line and correlation coefficient.

Part E: Measures of Central Tendency
1. You can use excel to find various measures of central tendency
2. Below, “DataRange” indicates the range of values where your data is. In our example, DataRange is A4:A18
3. To find the minimum value, click on the yellow cell next to it and type in
   \[=\text{Min}(A4:A18)\]
4. For the rest of the questions, you will type in (or click and drag with the mouse) your particular data range instead of typing “DataRange”
5. To find the maximum value, click on the yellow cell next to it and type in
   \[=\text{Max}(\text{DataRange})\]
6. To find the median value, click on the yellow cell next to it and type in
   \[=\text{Median}(\text{DataRange})\]
7. To find the average value, click on the yellow cell next to it and type in
   \[=\text{Average}(\text{DataRange})\]
8. To find the 25\textsuperscript{th} percentile, click on the yellow cell next to it and type in
   \[=\text{Percentile}(\text{DataRange}, 0.25)\]
9. To find the 75\textsuperscript{th} percentile, click on the yellow cell next to it and type in
   \[=\text{Percentile}(\text{DataRange}, 0.75)\]