**IFS 104 Homework #6**

Math & Science Applications

This homework will test your Excel skills in the area of the sciences! It will require a portion of your cunning... no WAIT... all your cunning!

Save all your files in the `homework06` folder on your k: drive.

1. **XY Scatter Charts** - Prof. David Horner from our very own North Central College Chemistry department has run some experiments on the effects of temperature on tire pressure during their use. Well, actually, Prof. Joe Lomax at the U.S. Naval Academy cooked this experiment as a nice Excel example that I'd like you to now complete:

   a) Import (web query) the tire experiment data from Prof. Horner's web site: http://david.horner.faculty.noctrl.edu/Excel_tutorial/xlstut3.htm ... the data is in the "Exercise 2" section, actually.

   b) Please niftily format your worksheet. Insert a hyperlink to Prof. Horner's web page somewhere in your sheet, acknowledging his contribution.

   c) Create a chart like the one below. This is an `XY Scatter` chart in Excel. You'll have to choose what data goes in the x-axis (horizontal) and what goes in the y-axis (vertical) by smartly manipulating the Chart Wizard.

   d) After creating the chart, move it into place and change the formatting. You can modify your axes by right-clicking and selecting "Format Axis". Match my example as closely as you can.
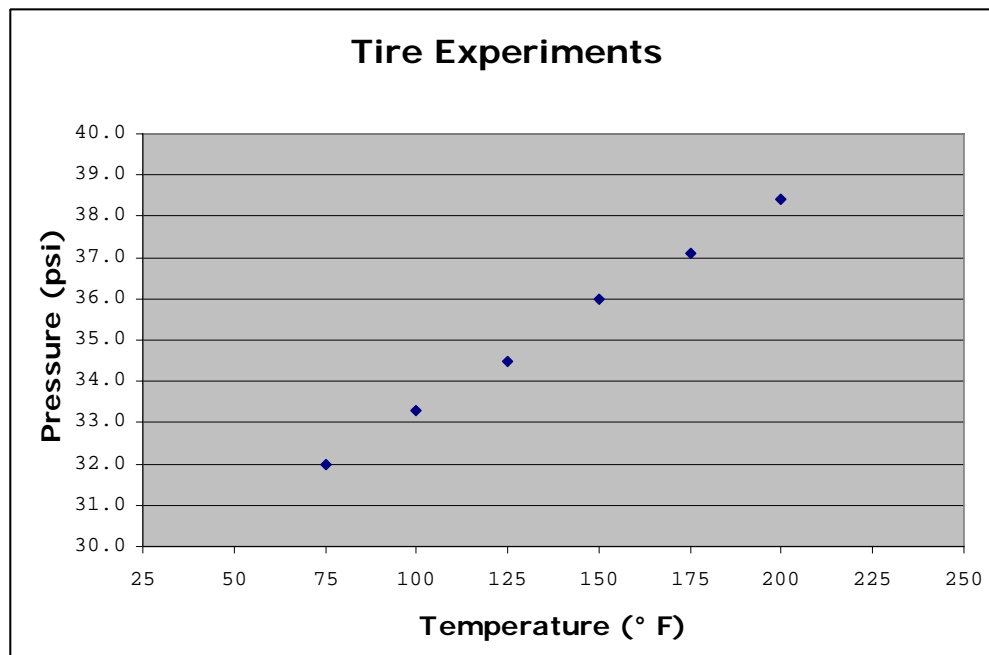
2. **Trig functions** - In this exercise, we're going to learn a couple of the Trigonometry (trig) functions in Excel: sine and cosine. You can find them using the `Insert/Function` menu.

    a) Create a new worksheet that shows the sine and cosine values for values of 0 degrees to 360 degrees, by 5 degree increments. To use the trig functions, you'll have to convert your degrees into what are called "radians". Find a function in Excel to help you do this.

    b) Once you have your degrees, radians, and their corresponding sin and cos values, then please format your worksheet. Use `Courier New` font for your numbers and `Verdana` for everything else. For radians, sine and cosine, format your numbers so that they use scientific notation with two decimal places… you'll see this option in `Format/Cells`.

    c) Create two charts: one for sine and one for cosine. Use the `XY Scatter` chart again. There's mine below, if that helps. Place each chart on a separate sheet with a descriptive title and chart "tabbie" name.

The sin Function
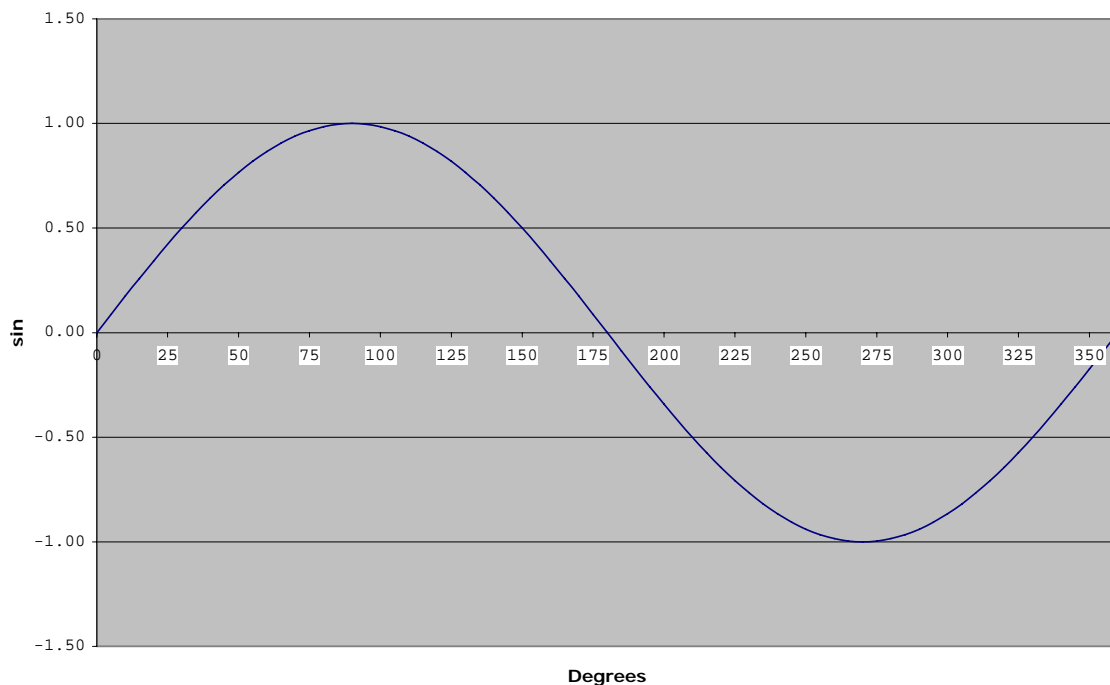
3. **Some statistics** – By now, we've done our class survey and gathered some interesting data for our study: determining the correlation between student height and other variables. So onward and upward:

   a) Import the raw data for our social experiment. The data is on the k: drive in the `common_area/homework` folder.

   b) Add another variable that is random, for fun. Look for an excel function to help you generate random numbers. We might talk about this in class.

   c) Format everything up.

   d) Calculate the correlation coefficients between student height and each of the other variables. Excel has a function to do this, of course.

   e) Create an `XY Scatter` chart for each variable too. The X-axis should be height. The Y-axis should be one of your variables. Put each chart on its own page. Make sure you tend to the axes, so that your charts make sense and look nice. Don't forget axis titles!

4. **Chapter 6** - Complete Cases & Places 3 on page 463. This is a template/3-D reference question. Please:
   a) Complete your template first and save it to file: `tupelo_template.xls`

   b) Then, complete your workbook for the entire problem. Create a fun, cool WordArt title for your summary sheet, please. Save this solution to file: `tupelo.xls`