Step 1:
From the list below use the variable indicated below that correspond with your 4 digit ID number for this class.

- Age & Height (1000-2250)
- Height & weight (2251-3500)
- Age & weight (3501-4750)
- Age & foot length (4751-6000)
- Height & foot length (6001-7250)
- Age & waist size (7251-8500)
- Waist size & body weight (8501-9999)

Step 2:
Determine which is your independent & dependent variables. Then collect your data (minimum of 50 pairs of data). Your target population is Louisville residents. Data sheets MUST be turned in with the project. Zero points for the project if you don’t collect your data or if data is made up!!!!

Step 3:
Graph your data on an 8.5 X 11 sheet of graph paper. Axes MUST be labeled & appropriate scales for axes used. Use as much of the page as possible for the graph.

Step 4:
Draw a line through the middle of your data (use a straight edge). Remember that the line you draw should have approximately the same number of points above & below the line. If you have outliers, you may include or exclude them when drawing your line. However, if you have outliers you must circle them with a red pen/pencil & provide an explanation of why you included or excluded the points. (Hint, if you can draw your line through a point close to each end of your data it will make the steps 5 & 6 below easier)

Step 5:
Calculate the slope of your line drawn through your data ($\Delta Y/\Delta X$). Show your work.

Step 6:
Calculate the equation (in slope intercept form → $Y = mX + b$) for your line. Show your work.

Step 7:
Use your new equation to predict a dependent value based on an independent value NOT collected in your data, but within the range of data you collected. Show your work.

Step 8:
Use your new equation to predict a dependent value based on an independent value NOT collected in your data AND well outside the range of data you collected. Show your work.

Step 9:
Answer the following questions: a) Was your prediction equation accurate in predicating the value in step 7 & step 8.  b) Was a linear graph a good fit for your data?  c) Do you feel you had a large enough range of your independent variable?  d) Would have only collecting individuals in the range of 2 years old to 18 years old given you different results than if you would have collected from 2-80 years old (explain)?  e) Would have only collecting individuals in the range of 2 years old to 18 years old given you different results than if you would have collected from 20 - 80 years old (explain)?
Scatter Plot - Prediction Equation Project Rubric

The following rubric will be used to grade your project. This will be a 100-point project and remember that Projects/Writing/Calc work/Group work count for 40% of your semester grade. You will be graded based on the following rubric:

1. **Data Collection (20 points)**  [Zero points if you don't collect your data or if made up!!!]
   a. Used approved variables. (5 pts)
   b. Identify independent variable. (5 pts)
   c. Identify dependent variable. (5 pts)
   d. Includes completed data collection sheets. (5 pts)

2. **Graph data (20 points)**
   a. Used 8.5 X 11 sheet of graph paper. (5 pts)
   b. Independent & dependent variables on correct axes. (5 pts)
   c. Axes labeled & appropriately scaled for data range. (5 pts)
   d. If outliers exist they are circled with a red pen/pencil & explanation provided on why you felt they should be included or excluded. (5 pts)

3. **Calculate slope of line drawn through data.** (15 points)
   a. Correct slope for points chosen. (10 pts)
   b. Calculation work shown. (5 pts)

4. **Calculate equation of line drawn through data** (15 points)
   a. Correct equation calculated. (10 pts)
   b. Calculation work shown. (5 pts)

5. **Use equation to predict values** (25 points)
   a. Predict values within the range of data collected. (5 pts)
   b. Predict values outside the range of data collected. (5 pts)
   c. Show your work. (5 pts)
   d. Explain if prediction was accurate in prediating values within & outside of the collected range. (5 pts)
   e. Answer questions. (5 pts)

6. **Format** (5 points)
   a. Neatness (2.5 pts)
   b. Page order: Cover page with name, class & period; scatter plot with drawn prediction line; explanation of outlier inclusion/exclusion (if applicable); calculation of: slope, line, point within & outside of the collected range, explanation if prediction was accurate in prediating values within & outside of the collected range; data collection sheets. (2.5 pts)

**Due:** See online class schedule (10 points will be deducted for each day the scatter plot prediction equation project is late. Not class days but actual days)