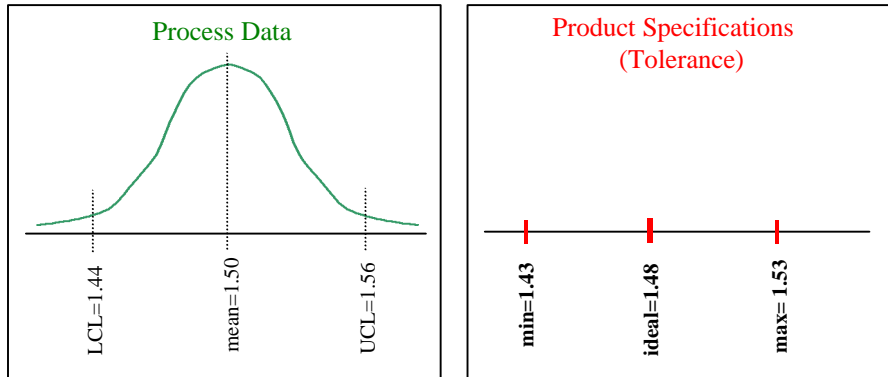




## Statistics

### Quiz 3 – SPC and Correlation

6.) The graphic on the left shows process data (with *mean*, *LCL*, and *UCL*) resulting from manufacturing a steel rod. The graphic on the right shows the designers product specifications for the steel rod.

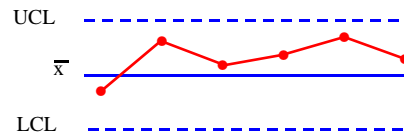


When you compare the Process Data against the Product Specifications, what observation seems to be the most accurate:

- The process appears to be making products close to the required product specifications. The process mean is close to the ideal product specification. The control limits are within the bounds of the maximum and minimum tolerance so few of the steel rods made will be defective.
- The process appears to be operating slightly to the left when compared to the product specifications. While some products made will be larger than the maximum allowable product specification, many more will be made smaller than the minimum allowable product size.
- The process appears to operating slightly to the right when compared to the product specifications. There is a greater chance of making products larger than the maximum allowable product specification, and a somewhat smaller chance that products will be made smaller than the minimum allowable product size.

7.) Given the plotted data of this production run, which interpretation seems most appropriate?

- There is a steady trend of points heading toward one of the control limits.*
- There are five or more consecutive points on one side of the centerline.*
- Several points lie near a control limit.*
- Process appears to be operating normally.*



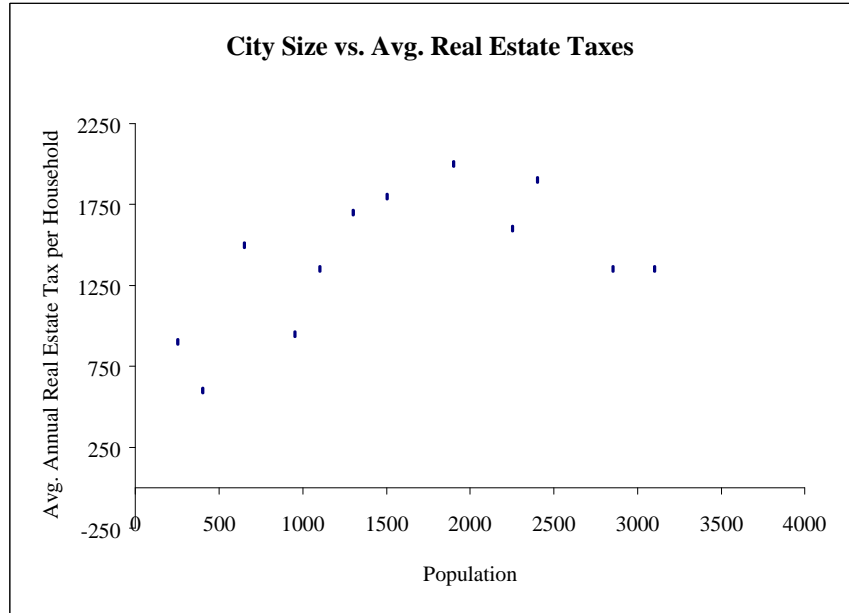


## Statistics

### Quiz 3 – SPC and Correlation

9.) Does there appear to be a correlation between the population size of a city and the average real estate tax paid by each household? Use the correlation procedure outlined in your textbook to decide. Fill-in the blanks below to help determine the answer.

Population	Avg. Real Estate Taxes Paid
250	900
400	600
650	1500
950	950
1100	1350
1300	1700
1500	1800
1900	2000
2250	1600
2400	1900
2850	1350
3100	1350



a) On the scatter plot (shown above right) use a ruler or straightedge to draw lines to show the four quadrants.

b) Quadrant I: \_\_\_\_\_ points  
 Quadrant II: \_\_\_\_\_ points  
 Quadrant III: \_\_\_\_\_ points  
 Quadrant IV: \_\_\_\_\_ points

c) Sum of Quadrants I and III: \_\_\_\_\_  
 Sum of Quadrants II and IV: \_\_\_\_\_

d) Based on the above results, there appears to be:

- a) a positive correlation
- b) a negative correlation
- c) no correlation