Problem Set #1

1. Suppose the Claremont Colleges report a total of 5,729 undergraduate students. Of this total, 1,586 attend Pomona, 1,301 attend CMC, 1,099 attend Pitzer, 966 attend Scripps, and 777 attend HMC. Using Excel, develop a bar chart and a pie chart depicting this information.

2. A selective private college surveys 17 students about their mother’s weight. Their weights are reported as:
   97, 145, 120, 140, 120, 125, 130, 107, 172, 130, 140, 110, 120, 147, 135, 160

   The same college surveys 19 students about their father’s weight. Their weights are reported as:
   216, 123, 200, 180, 185, 180, 205, 200, 180, 150, 160, 140, 190, 190, 150, 165, 215, 180

   a. Make back to back stem-and-leaf display of the mother’s and father’s weights.
   b. Compare the medians and the ranges of the two distributions.
   c. Make a histogram of the mother’s weights and of the father’s weights using Excel.

3. In 2016 the U.S. Census Bureau reported that the mean household income in the United States was $79,263, while the median household income was $59,039. Explain why the mean household income was much higher than the median household income. What does this tell you about the skewness of the distribution?

4. Mammoth Mountain averages about 350 inches of snowfall every year. Unfortunately they are running below average this year. The total annual snowfall (in inches) for the past ten years is:
   617.5, 362.2, 176.0, 238.0, 308.3, 263.0, 668.5, 557.9, 470.0, 333.5

   a. compute the mean, variance, and standard deviation of these values.
   b. calculate the median, the first and third quartiles, and the IQR (interquartile range).

5. A statistics class collected data about height (inches) and weight (pounds) from a random sample of seven fathers:

   height    77   68   66   70   65   70   74
   weight    200  180  150  160  140  190  190

   a. Develop a scatter diagram with height on the horizontal axis.
   b. Compute and interpret the sample covariance.
   c. Compute the sample correlation coefficient. What does this value tell us about the relationship between height and weight?

6. If there is a 50% chance of rain on Saturday, and 50% chance of rain on Sunday, what is the probability of some rain over the weekend? Assume the probability of rain on Saturday is independent of Sunday.

Due Wednesday 31 January