

1. Open the Minitab worksheet Gas.mtw in Student 9.
 - a) First, consider the third column, C3: Gallons.
 - (i) What is the shape of the distribution? Does it have a long tail? If so, on which side?
 - (ii) How many values, if any, satisfy the rule for determining outliers? Are they at the bottom end of the distribution, the top end, or both?
 - (iii) What is the percentile value of 11.9?
 - b) Now consider the scatter diagram for the columns C3 and C4. What is the correlation coefficient, r ? Please give your answer to six decimal places.

2. Suppose given a binormal distribution with

$$\begin{aligned}\bar{x} &= 280 & \bar{y} &= 145 \\ \sigma_x &= 25 & \sigma_y &= 40 & r &= -.6\end{aligned}$$

- a) What is the slope-intercept formula for the regression line? (I.e., write it as $y = mx + b$.)
 - b) What is the slope-intercept formula for the SD line?
 - c) What is the regression estimate for $x = 325$?
 - d) Suppose the x -value is in the 30-th percentile. What is the percentile value of its regression estimate?
 - e) Suppose $y = 115$. What is the regression estimate for predicting the value of x from that of y ?
3. Suppose given a binormal distribution with

$$\begin{aligned}\bar{x} &= 350 & \bar{y} &= 500 \\ \sigma_x &= 100 & \sigma_y &= 150 & r &= .85\end{aligned}$$

Control for $x = 490$.

- a) What is the average of the controlled y -distribution?
- b) What is the standard deviation of the controlled y -distribution?
- c) What is the 58-th percentile of the controlled y -distribution?
- d) What is the percentile value of 600 in the controlled y -distribution?
- e) What percent of the controlled y -values are between 600 and 700?