

1. Consider the data in the minitab worksheet e1-1.
  - a) What is the shape of the distribution? Does it have a long tail? If so, on which side?
  - b) Which values, if any, satisfy the rule for determining outliers?
  - c) Recall that for a small data set, the percentile value of a given number is the percentage of the data points that are less than or equal to the given value. What is the percentile value of 74?
2. Consider the data in the minitab worksheet e1-2.
  - a) What is the correlation coefficient,  $r$ , for c1 and c2?
  - b) Can you detect a pattern in the scatter diagram? Is there greater spread in either direction (right or left)?

3. Suppose given a binormal distribution with

$$\begin{aligned}\bar{x} &= 185 & \bar{y} &= 120 \\ S_x &= 80 & S_y &= 45 & r &= -.75\end{aligned}$$

- a) What is the slope of the regression line?
  - b) What is the  $y$ -intercept of the regression line?
  - c) What is the regression estimate for  $x = 80$ ?
  - d) Suppose the  $x$ -value is in the 70-th percentile. What is the percentile value of its regression estimate?
  - e) Suppose  $y = 170$ . What is the regression estimate for predicting the value of  $x$  from that of  $y$ ?
  - f) What percent of the  $x$ -values are between 200 and 250?
4. Suppose given a binormal distribution with

$$\begin{aligned}\bar{x} &= 750 & \bar{y} &= 950 \\ S_x &= 100 & S_y &= 120 & r &= .65\end{aligned}$$

**Control for  $x = 900$ .**

- 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 35-th percentile of the controlled  $y$ -distribution?
- d) What is the percentile value of 950 in the controlled  $y$ -distribution?
- e) What percent of the controlled  $y$ -values are between 950 and 1200?