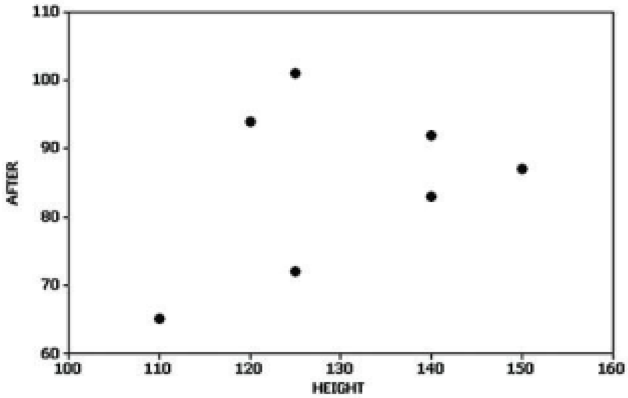
2. a. The scatterplot suggests that there is not sufficient sample evidence to support the claim of a linear correlation between heights of eruptions and interval-after times.

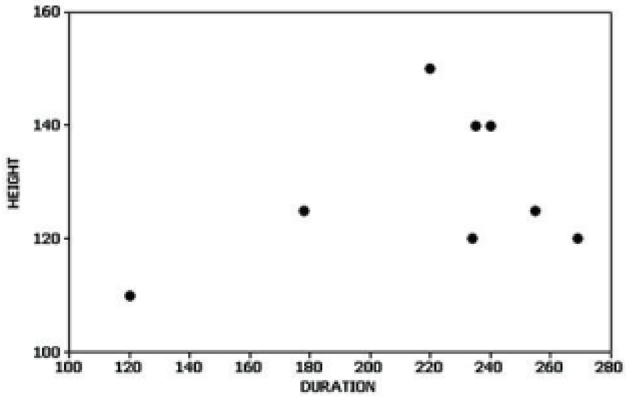


b. $r = 0.259$. Critical values: $r = \pm 0.707$ (assuming a 0.05 significance level). P-value $= 0.519$. There is not sufficient evidence to support the claim that there is a linear correlation between height and interval-after time.

c. $\hat{y} = 54.3 + 0.246x$

d. 86.0 min

3. a. The scatterplot suggests that there is not sufficient sample evidence to support the claim of a linear correlation between duration and height.



b. $r = 0.389$. Critical values: $r = \pm 0.707$ (assuming a 0.05 significance level). P-value $= 0.340$. There is not sufficient evidence to support the claim that there is a linear correlation between duration and height.

c. $\hat{y} = 105 + 0.108x$

d. 128.8 ft

4. $r = 0.450$. Critical values: $r = \pm 0.632$ (assuming a 0.05 significance level). P-value $= 0.192$. There is not sufficient evidence to support the claim that there is a linear correlation between time and height. Although there is no *linear* correlation between time and height, the scatterplot shows a very distinct pattern revealing that time and height are associated by some function that is not linear.

5. AFTER $= 50.1 + 0.242$ Duration $- 0.178$ BEFORE, or $\hat{y} = 50.1 + 0.242x_1 - 0.178x_2$. $R^2 = 0.872$; adjusted $R^2 = 0.820$; P-value $= 0.006$. With high values of R^2 and adjusted R^2 and a small P-value of 0.006, it appears that the regression equation can be used to predict the time interval after an eruption given the duration of the eruption and the time interval before that eruption.

Chapter 10: Cumulative Review Exercises

1. $\bar{x} = 3.3$ lb, $s = 5.7$ lb
2. The highest weight before the diet is 212 lb, which converts to $z = 1.55$. The highest weight is not unusual because its z score of 1.55 shows that it is within 2 standard deviations of the mean.
3. H_0: $\mu_d = 0$. H_1: $\mu_d > 0$. Test statistic: $t = 1.613$. Critical value: $t = 1.895$. P-value > 0.05 (Tech: 0.075). Fail to reject H_0. There is not sufficient evidence to support the claim that the diet is effective.
4. $161.8 \text{ lb} < \mu < 197.0 \text{ lb}$. We have 95% confidence that the interval limits of 161.8 lb and 197.0 lb contain the true value of the mean of the population of all subjects before the diet.
5. a. $r = 0.965$. Critical values: $r = \pm 0.707$ (assuming a 0.05 significance level). P-value $= 0.000$. There is sufficient evidence to support the claim that there is a linear correlation between before and after weights.

   b. $r = 1$ c. $r = 1$

   d. The effectiveness of the diet is determined by the amounts of weight lost, but the linear correlation coefficient is not sensitive to different amounts of weight loss. Correlation is not a suitable tool for testing the effectiveness of the diet.
6. a. 43.64% (Tech: 43.58%)

   b. 2786.4 g (Tech: 2785.6 g)

   c. 5.00%. Yes, many of the babies do require special treatment.
7. a. H_0: $p = 0.5$. H_1: $p > 0.5$. Test statistic: $z = 3.84$. Critical value: $z = 1.645$. P-value: 0.0001. Reject H_0. There is sufficient evidence to support the claim that the majority of us say that honesty is always the best policy.

   b. The sample is a voluntary response (or self-selected) sample. This type of sample suggests that the results given in part (a) are not necessarily valid.
8. a. Nominal. b. Ratio.

   c. Discrete. d. 0.575

   e. Parameter.
9. a. 0.330 b. 0.870 c. 0.972 d. 7.37%
10.