Unit 2 Homework

Assignment 2

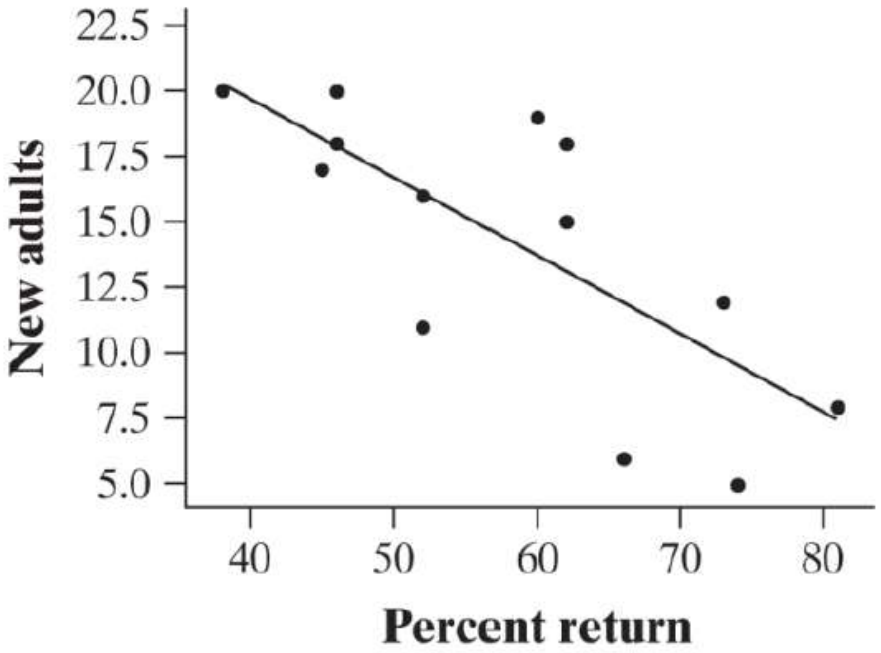
Exercises, page 191:

3.35 The equation is $\hat{y} = 80 - 6x$ where $\hat{y}$ = the estimated weight of the soap and x = the number of days since the bar was new.

3.37 (a) The slope is 1.109. For each 1 mpg increase in city mileage, the predicted highway mileage will increase by 1.109 mpg.
(b) The y intercept is 4.62 mpg. This value is not statistically meaningful because this would represent the highway mileage for a car that gets 0 mpg in the city. There are no cars that get such poor gas mileage.
(c) With city mpg of 16, the predicted highway mpg is $4.62 + 1.109(16) = 22.36$ mpg.

3.38 (a) The slope is 0.882; this means that we predict reading scores will increase by 0.882 for each one-point increase in IQ. (b) The y-intercept is -33.4. This would only be statistically meaningful if a child could have an IQ score of 0. (c) The predicted scores for $x = 90$ and $x = 130$ are $-33.4 + 0.882(90) = 45.98$ and $-33.4 + 0.882(130) = 81.26$.

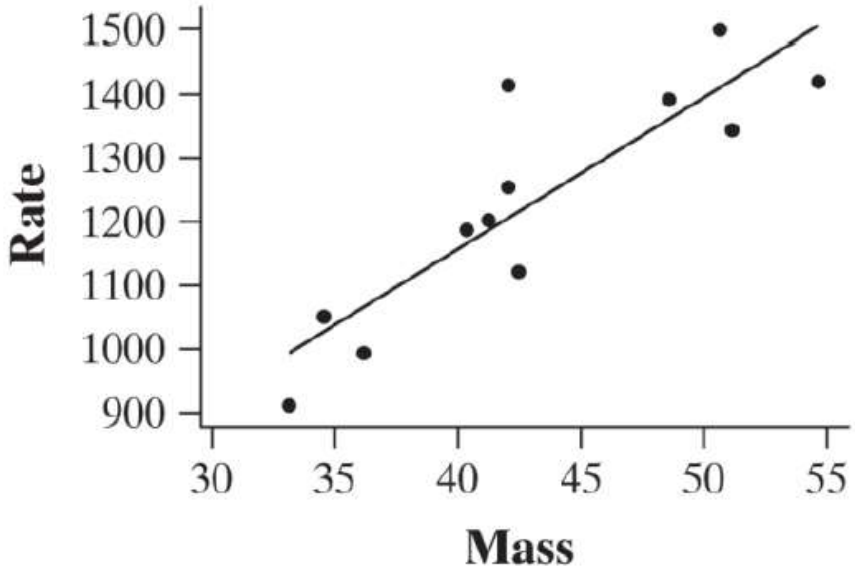
3.47 (a) The scatterplot (with regression line) is shown below.



(b) The equation of the least-squares regression line is $\hat{y} = 31.9 - 0.304x$.

(c) For each increase of 1 in the percent of returning birds, the predicted number of new adult birds will decrease by 0.304.

3.48 (a) The scatterplot (with regression line) is shown below.



(b) The least-squares regression equation is $\hat{y} = 201.2 + 24.026x$.

(c) For each additional kilogram of body mass, the predicted metabolic rate increases by about 24 cal/day.