

Written Homework 7, due Friday 8/15/08—NOTE CHANGE IN DUE DATE

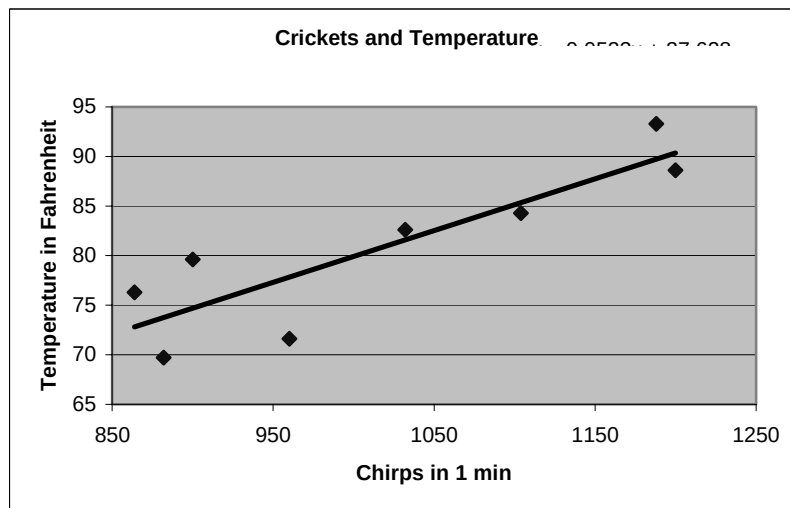
Section 10-4

Page 565, Using the data from Problem 16, complete parts a) – g). You may use software to get most of the numbers you need. See page 563 for instructions for different software options.

- a) Make a scatter plot of the data. What is the sample correlation coefficient? Do you think linear regression is a reasonable model for these data? Explain.

$$r = .874$$

You need to give the explanation



- b) Find the linear least squares regression equation for predicting the temperature in degrees Fahrenheit given the number of times a cricket chirps in 1 minute.

$\hat{y} = 0.052x + 27.63$ —okay to use more digits for the slope and y-int. estimates; you either need to show calculations or provide the appropriate computer output.

- c) Find the 95% CI for β_1 .

Based on the Excel output, a 95% CI for β_1 is (0.023, 0.081)—you might have slightly different answer due to rounding error

- d) Test the claim that the slope is the slope of the regression line is greater than 0. Be sure to indicate your null and alternative hypotheses, your test statistic, a critical value, a P-value, a decision, and a conclusion in the context of the problem. Use $\alpha = 0.05$.

You need to provide the correct hypotheses.

From Excel, $t = 4.40$

The critical t value is $t_{.05,6} = 1.943$

From Excel the P-value is 0.0023. (Note that Excel gives a two-tailed P-value)

Reject the null.

You must provide a conclusion in the context of the problem.

- e) What is the predicted value for mean temperature given 1050 chirps in 1 minute?

82.23 degrees F

NOTE: may have slightly different answer due to rounding error

- f) Find the 95% CI for the mean temperature given 1050 chirps in 1 minute. Interpret this interval.

(78.408, 86.052)

You provide the interpretation.

- g) Find the 95% prediction interval for a random, new individual temperature value given 1050 chirps in 1 minute. Interpret this interval.

(71.106, 93.354)

You provide the interpretation.