Chapter 12: More about Regression

Key Vocabulary:

* sample regression line
* true regression line
* t interval for slope
* standard error of slope
* t test for slope
* standardized test statistic
* standard error
* exponential model
* power model
* logarithmic model

12.1 Inference for Linear Regression (pp.739-757)

1. What is the difference between a *sample regression line* and *population (true) regression line*?
2. Explain the *sampling distribution* of *b*?
3. Give the equation for the *true regression line*, and state what each component of the equation represents.
4. Summarize the *conditions* for regression inference:

* L
* I
* N
* E
* R

1. Explain how to *check the conditions* for regression inference:

* L
* I
* N
* E
* R

1. Record the formula for the *standard error of the slope*? Define the variables.
2. What is the formula for the *t-interval of the slope* of a least-squares regression line? Is this on the AP exam formula sheet?
3. What is the formula for the *t-test for the slope* of the population regression line? Is this on the AP exam formula sheet?
4. Describe the distribution of the *standardized test statistic* .
5. What is the formula for constructing a *confidence interval for a slope*?

1. What calculator commands are used to get the value of *t*\*?
2. Can you use your calculator to conduct a test and confidence interval for the slope?

12.2 Transforming to Achieve Linearity (pp.765-783)

* 1. What does it mean to *transform data*?
  2. What is a *power model*?
  3. Give three *example*s of power models?
  4. Aside from power transformations, how can you *linearize an association* that follows a power model in the form *y* = *axp*?
  5. Describe a *logarithmic model*. Give two examples.
  6. Describe an *exponential model*. Give two examples.
  7. Describe the two methods used to linearize a relationship that follows an exponential model.
  8. Show how to use logarithms to transform the data given by *y* = *axp* to produce a linear relationship.
  9. The big idea using logarithms to transform data is that "if a variable grows \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ grow linearly."
  10. Describe how to *achieve linearity* from a power model as explained on page 777.
  11. After using a logarithm transformation, what does the *scatter plot* of the data show?