

Chapter 3

1. Many teachers believe that getting more sleep could help their students score higher on final exams. When studying these variables, which of the following is true?

I. The explanatory variable is sleep, and the response variable is finals grade.

II. The teachers expect to see a moderately strong to strong positive correlation.

III. If the correlation of the data gathered is 1, the teachers can assume that sleeping more will raise a student's final grade.

a. I only

b. II only

c. III only

d. I and II only.

e. I, II, and III.

2. The least squares regression line of data describing the relationship between age (x) and number of driving accidents (y) is $y = 4.7 - 0.17x$. Which of the following statements is incorrect?

a. Typically, the incidence of driving accidents decreases with age.

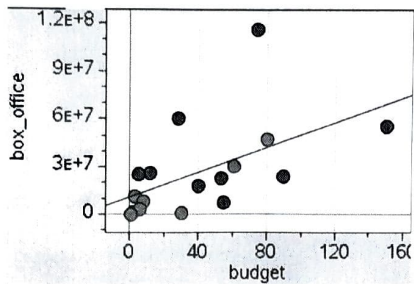
b. The equation can be used to accurately predict driving accidents for any age.

c. The predicted number of driving accidents for a 16 year old is 1.98

d. Driving accidents, on average, decrease by 0.17 for every year older a driver gets.

e. Timmy Tim is 18 years old and has been in two accidents this year. He is above average for his age group.

1. An AP statistics student set out to study the relationship between a movie's budget and box office success. The scatterplot below shows her findings (with budget in millions of dollars).



a. Briefly describe the association of the scatterplot.

b. The least squares regression line is: $y=10936900+389535x$. Analyze this in the context of the study.

c. Calculate and interpret the residual for *The Hunger Games, Mockingjay: Part 2*, which had a budget of \$160 million dollars, and made \$102,665,981 in the box office its opening weekend.

d. The r^2 of the data is 0.2933. Can the least squares regression line be relied upon to make accurate predictions?

2. Explain why a high correlation does not imply causation.