

STA 1020 Section 002: Hand-In HW #9

Directions: Show all work when appropriate. You are to work on this assignment in your groups. Your engagement will be included in your participation score. Upload this assignment to the dropbox on Canvas. This assignment is out of 20 points.

1. [7] A researcher wanted to determine if a daily dose of vitamin C (in mg) would affect a subject's red blood cell count (in million cells per mL). Below is data for 5 subjects that participated in the experiment.

Dose of vitamin C	116	104	124	112	108
Change in Red blood cell count	0.46	0.42	0.50	0.45	0.44

- a. [1] What is the explanatory variable in this experiment?
- b. [3] Construct a scatterplot for the given data.
- c. [1] Estimate the correlation (positive, negative, or no correlation) between the variables.
- d. [2] Can we estimate the change in red blood cell count for a patient with a dose of vitamin C of 130? Explain.

2. [2] Describe the correlation (positive, negative, or no correlation) between the following variables.
 - a. $x =$ Height of a person, $y =$ Weight of a person.
 - b. $x =$ Age of a used car, $y =$ Value of a used car.
3. [8] A toy company is analyzing the relationship between the amount of sales (in thousands of dollars) and the amount spent on advertising (in thousands of dollars) during a particular fiscal year.
 - a. [1] Which of the two variables is the response variable?
 - b. [1] Estimate the correlation (positive, negative, or no correlation) between the variables.

Suppose the equation of the least-squares line is $y = 49.25 + 0.51x$

- c. [3] Interpret the slope of the LSR line.
 - d. [3] Estimate the amount of sales during a fiscal year where 70 thousand dollars is spent on advertising.
4. [3] Suppose that the types of anesthesia used and death rates associated with various types of surgeries are correlated such that $r = 0.903$. Can we say that the type of anesthesia used is causing more deaths during surgery to occur? Why or why not?