

1. (10 points) A survey was done by the academic support center at UDC to determine if the number of hours a student studies per day, X , is related to the student's grade point average (GPA), Y . The survey found a mean daily study time of 4 hours with a standard deviation of 2.5 hours; and a mean GPA of 2.5 with a standard deviation of 0.8. The correlation coefficient was 0.76.

a. State the appropriate prediction equation in the form $Y_x = a + bX$

b. Identify and carefully state the meaning of the slope and y-intercept.

c. Predict the GPA for a student who studies for 6 hours per day.

d. What proportion of variability in GPA can be accounted for (explained) by variability in hours studied.

2. (10 points) A sample of 22 patients at a hospital emergency room gives a mean waiting time of 30 minutes with a standard deviation of 10 minutes. Construct a 90% confidence interval for the mean waiting time for all patients at this hospital emergency room.

3. (10 points) A set of test scores has a standard deviation of 5. A score of 79 has a z-score of -1.2 . What is the mean test score? (circle one answer; show how you arrived at the answer)

- a) 73 b) 85 c) 80.2 d) 77.8 e) 74

4. (10 points) What is the z-critical value for an 84% confidence interval? (circle one answer; show how you arrived at the answer)

- a) 1.96 b) 1.84 c) .42 d) .92 e) 1.41

5. (10 points) The lengths of stay at an acute care hospital are normally distributed with a mean of 8 days and a standard deviation of 2 days. What is the 65th percentile hospital stay? (circle one answer; show how you arrived at the answer)
- a) 65 days b) 8.8 days c) 0.39 days d) 7.2 days e) 11 days

Use this information for questions 6 through 8: A set of bivariate data has these summary statistics: $\bar{X} = 30$; $S_x = 8$; $\bar{Y} = 70$; $S_y = 6$; $r = -2/3$

6. (10 points) What is the slope of the regression equation? (circle one answer; show how you arrived at the answer)
- a) $1/2$ b) $-1/2$ c) 85 d) -85 e) 95
7. (10 points) What is the mean value for Y when $X = 36$? (circle one answer; show how you arrived at the answer)
- a) 49 b) 85 c) 100 d) 82 e) 67

8. (10 points) What proportion of variability in Y is NOT accounted for by variability in X?
(circle one answer; show how you arrived at the answer)

- a) $1/2$ b) $2/3$ c) $1/3$ d) $4/9$ e) $5/9$

9. (10 points) The following information is known for a set of bivariate data:
 $X = 24$; $S_x = 4$; $Y = 50$; $S_y = 10$; and the predicted Y for $X = 30$ is 40. What is the value of r?
(circle one answer; show how you arrived at the answer)

- a) $4/5$ b) $2/3$ c) $-4/5$ d) $-2/3$ e) can't tell

10. (10 points) In a sample of 40 D.C. residents, 24 support a commuter tax. What is the 90% confidence interval for the population proportion of D.C. residents that supports a commuter tax?

(circle one answer; show how you arrived at the answer)

- a) [0.500, 0.700] b) [0.470, 0.730] c) [0.474, 0.726] d) [0.501, 0.699] e) [0.400, 0.688]