

Questions 1–5 pertain to the data presented in Exercise 7.12 on page 379 of the text. Labelling the males as Population 1, we will test the hypotheses $H_0 : \mu_1 - \mu_2 = 0$ vs. $H_a : \mu_1 - \mu_2 > 0$.

- (1) The rejection region is:
- (2) The value of the test statistic is:
- (3) The correct decision is:
- (4) In the context of the problem the decision is:
- (5) The observed significance of the test is:

Questions 6–9 pertain to the data presented in Exercise 7.120 on page 441 of the text. We will first test the alternative hypothesis that the mean pulling force for males exceeds that of females against the null hypothesis that the means are the same.

- (6) The rejection region is:
- (7) The value of the test statistic is:
- (8) The correct decision is:
- (9) A 90% confidence interval for the amount by which the mean pulling force for males exceeds that for females is:

Questions 10–13 pertain to the data presented in Exercise 7.124 on page 442 of the text for the variable “duration” (the last two rows of the table only). We will perform the test $H_0 : \mu_1 - \mu_2 = 0$ vs. $H_a : \mu_1 - \mu_2 \neq 0$.

- (10) The rejection region is:
- (11) The value of the test statistic is:
- (12) The correct decision is:
- (13) In the context of the problem the decision is:

Questions 14–18 pertain to the summary statistics presented in Exercise 9.87 on page 555 of the text, *not* including the table of data, but only the fact that $n = 10$.

- (14) If x is increased by one unit, describe the change in y .
- (15) The average value of y when x is four is:
- (16) The sum of the squares errors for the regression line is:
- (17) The proportion in the variability in y that is explained by x is:
- (18) To test whether x and y are linearly related the two relevant hypotheses H_0 and H_a are:

Questions 19–22 pertain to the following situation.

To investigate the relationship between monthly electrical usage y in hundreds of kilowatt hours and house size x in hundreds of square feet a random sample of ten houses was taken, yielding the summary information

$$\bar{x} = 18.40 \quad \bar{y} = 1072.1 \quad SS_{xx} = 171.54 \quad SS_{xy} = 115.917 \quad SS_{yy} = 84.6402$$

- (19) Find the regression line.
- (20) Find the correlation coefficient.
- (21) An interval estimate for the mean usage of all 1700 square foot homes at 90% confidence (either a confidence interval or a prediction interval, as appropriate) is:
- (22) Horace Smith plans to buy a 1700 square foot house. An interval estimate for the electrical usage of that house at 90% confidence (either a confidence interval or a prediction interval, as appropriate) is:

Questions 23–25 pertain to the following situation.

To investigate the relationship between the percentage x of graduating senior who take the SAT and the high school's average score y on the exam a random sample of 25 high schools was taken, yielding the summary information

$$\bar{x} = 39.71 \quad SS_{xx} = 44086.6 \quad s = 46.808$$

and the regression line $\hat{y} = 1151 - 1.986x$. (If 30% of the seniors take the exam then $x = 30$.) We will test $H_0 : \beta_1 = -2$ vs. $\beta_1 \neq -2$.

- (23) The rejection region is:
- (24) The value of the test statistic is
- (25) The correct decision is: