Tesst 3 Practice

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.

1) A teacher figures that final grades in the statistics department are distributed as: A, 25%; B, 25%; C, 40%; D, 5%; F, 5%. At the end of a randomly selected semester, the following number of grades were recorded. Calculate the chi-square test statistic χ^2 to determine if the grade distribution for the department is different than expected. 1) _____

Grade	A	B	C	D	F
Number	42	36	60	8	14

2) Many track runners believe that they have a better chance of winning if they start in the inside lane that is closest to the field. For the data below, the lane closest to the field is Lane 1, the next lane is Lane 2, and so on until the outermost lane, Lane 6. The data lists the number of wins for track runners in the different starting positions. Test the claim that the number of wins is uniformly distributed across the different starting positions. The results are based on 240 wins. 2) _____

Starting Position	1	2	3	4	5	6
Number of Wins	32	36	33	45	50	44

3) In an area of the Midwest, records were kept on the relationship between the rainfall (in inches) and the yield of wheat (bushels per acre). 3) _____

Rain fall (in inches), x	10.7	9	13.6	12.7	19	10.5	7.2	15.8	16.2
Yield (bushels per acre), y	47.5	43.2	55.8	56	79.4	46.2	28.9	73	75.8

Calculate the correlation coefficient, r.

Find regression line

Test whether there exists a positive correlation at α=0.05

4) Suppose you want to test the claim that $\mu_1 \neq \mu_2$. Two samples are randomly selected from each population. The sample statistics are given below. At a level of significance of $\alpha = 0.05$, when should you reject H_0? 4) _____

$n_1 = 50$ $\quad$ $n_2 = 60$

$\bar{x}_1 = 34$ $\quad$ $\bar{x}_2 = 32$

$s_1 = 1.5$ $\quad$ $s_2 = 1.9$

5) Suppose you want to test the claim that $\mu_1 = \mu_2$. Two samples are randomly selected from normal populations. The sample statistics are given below. Assume that $\sigma_1^2 \neq \sigma_2^2$. At a level of significance of $\alpha = 0.01$, when should you reject H_0? 5) _____

$n_1 = 25$ $n_2 = 30$
$\bar{x}_1 = 32$ $\bar{x}_2 = 30$
$s_1 = 1.5$ $s_2 = 1.9$

6) Suppose you want to test the claim that $\mu_1 = \mu_2$. Two samples are randomly selected from normal populations. The sample statistics are given below. Assume that $\sigma_1^2 = \sigma_2^2$. At a level of significance of $\alpha = 0.05$, when should you reject H_0? 6) _____

$n_1 = 14$ $n_2 = 12$
$\bar{x}_1 = 15$ $\bar{x}_2 = 16$
$s_1 = 2.5$ $s_2 = 2.8$

7) Nine students took the SAT. Their scores are listed below. Later on, they took a test preparation course and retook the SAT. Their new scores are listed below. Test the claim that the test preparation had no effect on their scores. Use $\alpha = 0.05$. Assume that the distribution is normally distributed. 7) _____

Student	1	2	3	4	5	6	7	8	9
Scores before course	720	860	850	880	860	710	850	1200	950
Scores after course	740	860	840	920	890	720	840	1240	970

8) In a recent survey of gun control laws, a random sample of 1000 women showed that 65% were in favor of stricter gun control laws. In a random sample of 1000 men, 60% favored stricter gun control laws. Test the claim that the percentage of men and women favoring stricter gun control laws is the same. Use $\alpha = 0.05$. 8) _____

9) In a survey of 500 doctors that practice specialized medicine, 20% felt that the government should control health care. In a sample of 800 doctors that were general practitioners, 30% felt that the government should control health care. Test the claim that there is a difference in the proportions. Use $\alpha = 0.10$. 9) _____