WS9

Name_____

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

Provide an appropriate response.

1) A study was conducted to determine if the salaries of elementary school teachers from two neighboring states were equal. A sample of 100 teachers from each state was randomly selected. The mean from the first state was $29,100 with a standard deviation of $2300. The mean from the second state was $30,500 with a standard deviation of $2100. Test the claim that the salaries from both states are equal. Use $\alpha = 0.05$. 1) _____

2) A statistics teacher believes that students in an evening statistics class score higher than the students in a day class. The results of a special exam are shown below. Can the teacher conclude that the evening students have a higher score? Use $\alpha = 0.01$. 2) _____

Day Students	Evening Students
$n_1 = 36$	$n_2 = 41$
$\bar{x}_1 = 73$	$\bar{x}_2 = 76$
$s_1 = 5.8$	$s_2 = 6.3$

3) A study was conducted to determine if the salaries of elementary school teachers from two neighboring districts were equal. A sample of 15 teachers from each district was randomly selected. The mean from the first district was $28,900 with a standard deviation of $2300. The mean from the second district was $30,300 with a standard deviation of $2100. Test the claim that the salaries from both districts are equal. Assume that $\sigma_1^2 = \sigma_2^2$. Use $\alpha = 0.05$. 3) _____

4) A women's advocacy group claims that women golfers receive significantly less prize money than their male counterparts when they win first place in a professional tournament. The data listed below are the first place prize monies from randomly selected male and female tournament winners. At $\alpha = 0.01$, test the group's claim. Assume the population variances are not equal. 4) _____

Female Golfers

180,000	150,000	240,000	195,000	202,500
120,000	165,000	225,000	150,000	315,000

Male Golfers

864,000	810,000	1,170,000	810,000	630,000
1,050,000	945,000	1,008,000	900,000	756,000
630,000	900,000			

5) 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. 5) _____

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

6) A recent survey showed that in a sample of 100 elementary school teachers, 15 smoked. In a sample of 180 high school teachers, 36 smoked. Is the proportion of high school teachers who smoke greater than the proportion of elementary teachers who smoke? Use $\alpha = 0.01$. 6) _____

7) A random sample of 100 students at a high school was asked whether they would ask their father or mother for help with a homework assignment in science. A second sample of 100 different students was asked the same question for an assignment in history. If 43 students in the first sample and 47 students in the second sample replied that they turned to their mother rather than their father for help, test the claim whether the difference between the proportions is due to chance. Use $\alpha = 0.02$. 7) _____

1) critical values $z_0 = \pm 1.96$; standardized test statistic $z \approx -4.50$; reject H_0; There is sufficient evidence to reject the claim.
2) critical value $z_0 = -2.33$; standardized test statistic $z \approx -2.18$; fail to reject H_0; There is not sufficient evidence to support the claim.
3) critical value $t_0 = \pm 2.048$; standardized test statistic $t \approx -1.741$; fail to reject H_0; There is not sufficient evidence to reject the claim.
4) Standardized test statistic ≈ -13.663; critical value $t_0 = -2.821$; reject H_0; There is sufficient evidence to support the claim.
5) claim: $\mu_d = 0$; critical values $t_0 = \pm 2.306$; standardized test statistic $t \approx -2.401$; reject H_0; There is sufficient evidence to reject the claim.
6) claim: $p_1 < p_2$; critical value $z_0 = -2.33$; standardized test statistic $t \approx -1.039$; fail to reject H_0; There is not sufficient evidence to support the claim.
7) claim: $p_1 = p_2$; critical values $z_0 = \pm 2.33$; standardized test statistic $t \approx -0.569$; fail to reject H_0; There is not sufficient evidence to reject the claim.