

Honors Statistics

Chapter 8 Review

- 1) Classify the two given samples as independent or dependent.

Sample 1: Pre-training weights of 19 people

Sample 2: Post-training weights of 19 people

- 2) Classify the two given samples as independent or dependent.

Sample 1: The weights in pounds of 10 newborn females

Sample 2: The weights in pounds of 10 newborn males

- 3) As part of a marketing experiment, a department store regularly mailed discount coupons to 25 of its credit card holders. Their total credit card purchases over the next three months were compared to their prior credit card purchases during the previous three months. Determine whether the samples are dependent or independent.

- 4) Classify the two given samples as independent or dependent.

Sample 1: The scores of 21 students who took the ACT

Sample 2: The scores of 21 different students who took the SAT

- 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 $\alpha = 0.05$. with the traditional method. Assume that the distribution is normally distributed.

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 sports analyst claims that the mean batting average for teams in the American League is not equal to the mean batting average for teams in the National League because a pitcher does not bat in the American League. The data listed below are from randomly selected teams in both leagues. Construct a 95% confidence interval for the difference in the means for the American League and the National League. Is there a difference between the batting averages in the American League and the National League? Explain.

American League				National League			
0.279	0.274	0.271	0.268	0.284	0.267	0.266	0.263
0.265	0.254	0.240		0.261	0.259	0.256	

- 7) A well-known study of 22,000 male physicians was conducted to determine if taking aspirin daily reduces the chances of a heart attack. Half of the physicians were given a regular dose of aspirin while the other half was given placebos. Six years later, among those who took aspirin, 104 suffered heart attacks while among those who took placebos, 189 suffered heart attacks. Does it appear that the aspirin can reduce the number of heart attacks among the sample group that took aspirin? Use $\alpha = 0.01$ with the traditional method.

- 8) A local bank claims that the waiting time for its customers to be served is the lowest in the area. A competitor's bank checks the waiting times at both banks. The sample statistics are listed below. Test the local bank's claim. Use $\alpha = 0.05$ with the p-value method.

Local Bank	Competitor Bank
$n_1 = 15$	$n_2 = 16$
$\bar{x}_1 = 5.2$ minutes	$\bar{x}_2 = 5.6$ minutes
$s_1 = 1.1$ minutes	$s_2 = 1.0$ minutes

- 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 $\alpha = 0.10$ with the p-value method.
- 10) Construct a 95% confidence interval for data sets A and B. Data sets A and B are dependent. Is there a difference between Data set A and B? Explain.

A	30	28	47	43	31
B	28	24	25	35	22

- 11) 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. Use $\alpha = 0.05$ with the traditional method.
- 12) A nutritionist believes that obesity is more prevalent among American adults than it was in the past. He discovers that in a study conducted in the year 1994, 380 of the 1630 randomly chosen adults were classified as obese. However, in a more recent study, he finds 726 out of 2350 randomly chosen adults were classified as obese. Construct a 95% confidence interval. Is there a difference between the proportion of obese adults in 1994 and today? Explain.
- 13) A pharmaceutical company wishes to test a new drug with the expectation of lowering cholesterol levels. Ten subjects are randomly selected and pretested. The results are listed below. The subjects were placed on the drug for a period of 6 months, after which their cholesterol levels were tested again. The results are listed below. (All units are milligrams per deciliter.) Test the company's claim that the drug lowers cholesterol levels. Use $\alpha = 0.01$. Assume that the distribution is normally distributed. Use the traditional method.

Subject	1	2	3	4	5	6	7	8	9	10
Before	195	225	202	195	175	250	235	268	190	240
After	180	220	210	175	170	250	205	250	190	225