

- 1) Find the critical values for the following values of the significance level α , sample size n , and alternate hypothesis H_1 . 1) _____

$$\alpha = 0.01, n = 8, H_1: \mu \neq \mu_0$$

- A) -2.326, 2.326 B) -3.355, 3.355 C) -2.998, 2.998 D) -3.499, 3.499

- 2) What is the critical value for a right-tailed t test when $\alpha = 0.025$ and $n = 13$? 2) _____

- A) 0.695 B) 0.697 C) 2.201 D) 2.179

- 3) Find the critical value for the following values of the significance level α , sample size n , and alternate hypothesis H_1 . 3) _____

$$\alpha = 0.10, n = 14, H_1: \mu < \mu_0$$

- A) -1.771 B) -1.350 C) -1.282 D) -1.345

- 4) Reginald Brown, an inspector from the Department of Weights and Measures, weighed 15 eighteen-ounce cereal boxes of corn flakes. He found their mean weight to be 17.8 ounces with a standard deviation of 0.4 ounces. At $\alpha = 0.01$, are the cereal boxes lighter than they should be? 4) _____

- 5) Science fiction novels average 290 pages in length. The average length of 14 randomly chosen novels written by I. M. Wordy was 305 pages in length with a standard deviation of 35. At $\alpha = 0.05$, are Wordy's novels significantly longer than the average science fiction novel? 5) _____

- 6) The mean annual tuition and fees for a sample of 8 private colleges was \$31,900 with a standard deviation of \$5500. A dotplot shows that it is reasonable to assume that the population is approximately normal. You wish to test whether the mean tuition and fees for private colleges is different from \$35,300. 6) _____

i). State the null and alternate hypotheses.

ii). Compute the value of the test statistic and state the number of degrees of freedom.

iii). State a conclusion regarding H_0 . Use the $\alpha = 0.05$ level of significance.

7) Historically, a certain region has experienced 97 thunder days annually. (A "thunder day" is day on which at least one instance of thunder is audible to a normal human ear). Over the past six years, the mean number of thunder days is 73 with a standard deviation of 29. Can you conclude that the mean number of thunder days is less than 97? Use the $\alpha = 0.10$ level of significance. 7) _____

- A) No. There is insufficient evidence to conclude that the number of thunder days is less than 97.
- B) Yes. The number of thunder days appears to be less than 97.
- C) There is not enough information to draw a conclusion.

8) A machine that fills beverage cans is supposed to put 24 ounces of beverage in each can. Following are the amounts measured in a simple random sample of eight cans. 8) _____

24.00	23.94	23.96	23.98
23.91	23.90	23.83	23.95

Assume that the sample is approximately normal. Can you conclude that the mean volume differs from 24 ounces? Use the $\alpha = 0.1$ level of significance.

- A) No. There is insufficient evidence to conclude that the mean fill volume differs from 24 ounces.
- B) There is not enough information to draw a conclusion.
- C) Yes. The mean fill volume appears to differ from 24 ounces.

Answer Key

Testname: PRACTICE23

1) D

2) D

3) B

4) $H_0 : \mu = 18.0$ (claim) and $H_1 : \mu < 18.0$

Critical value: -2.624

Test value: -1.94

Do not reject the claim since -1.94 does not fall within the critical region.

There is not enough evidence to reject the claim that the cereal boxes weigh 18 ounces.

5) $H_0 : \mu = 290$ and $H_1 : \mu > 290$ (claim)

Critical value: 1.771

Test value: 1.604

The conclusion is to not reject the null hypothesis.

There is not enough evidence to support the claim that Wordy's novels are longer than the average science fiction novel.

6) i). $H_0 : \mu = 35,300$, $H_1 : \mu \neq 35,300$

ii). -1.748; 7 degrees of freedom

There is insufficient evidence to conclude that the mean annual tuition and fees is

iii). Do not reject H_0 . different from \$35,300.

7) B

8) C