

# Disclaimer

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# **Chapter 8 Test**

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## Chapter 8 Test

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**DIRECTIONS:** For this multiple-choice test, select the most appropriate answer for each statement or question.

1. Which of the following are the correct null and alternative hypotheses for testing the claim that the mean body temperature for a patient who has the flu is greater than 98.6° F?

a)  $H_0: \mu = 98.6$   
 $H_A: \mu < 98.6$

b)  $H_0: \mu = 98.6$   
 $H_A: \mu \neq 98.6$

c)  $H_0: \mu \neq 98.6$   
 $H_A: \mu = 98.6$

d)  $H_0: \mu = 98.6$   
 $H_A: \mu > 98.6$

2. Compute the test statistic given the following information:

$$H_0: \mu = 116$$

$$H_A: \mu \neq 116$$

$$\bar{x} = 118$$

$$\sigma = 4$$

$$n = 36$$



- a)  $z = 3$
- b)  $z = -3$
- c)  $t = 3$
- d)  $t = -3$

3. Test the following at  $\alpha = 0.05$  and state the decision.

$$H_0: \mu = 45$$

$$H_A: \mu > 45$$

$$\bar{x} = 50$$

$$\sigma = 10$$

$$n = 50$$

- a) Reject  $H_0: \mu = 45$
- b) Do not reject  $H_0: \mu = 45$

4. It has been reported that in a large city the average price per gallon for regular gas is \$3.59. Residents believe it is different from this. To test this claim, data is gathered from 36 gas stations. The mean price is \$3.65. Assume the population standard deviation is \$0.25. Test the claim at the 10% level of significance and state the decision.

- a) Do not reject  $H_0: \mu = 3.59$
- b) Reject  $H_0: \mu = 3.59$

5. When the null hypothesis is \_\_\_\_\_ when in fact it is true, a Type I error is made.

- a) rejected
- b) not rejected
- c) accepted
- d) known



6. The probability of making a Type I error is equal to

\_\_\_\_\_.

- a)  $\alpha$
- b)  $\rho$
- c)  $\beta$
- d)  $\Sigma$

7. The probability of making a Type II error is equal to

\_\_\_\_\_.

- a)  $\Delta$
- b)  $\alpha$
- c)  $\beta$
- d)  $\sigma$

8. Small \_\_\_\_\_ provide evidence against the null hypothesis.

- a) test statistics
- b) decisions
- c) theories
- d) p-values

9. Assuming the sample was taken from a normal population, what type of test should be performed to test the following?

$$H_0: \mu = 33,897$$

$$H_A: \mu > 33,897$$

$$\bar{x} = 40,871$$

$$s = 9200$$

$$n = 25$$



- a) Z-test
- b) T-test
- c) F-test
- d) Chi-square test

10. Based on the following, should a left-tailed, right-tailed, or two-tailed test be performed?

$$H_0: \mu = 11$$

$$H_A: \mu \neq 11$$

$$\bar{x} = 16$$

$$s = 4$$

$$n = 22$$

- a) Cannot be determined
- b) Two-tailed
- c) Left-tailed
- d) Right-tailed

11. Assuming the sample was taken from a normal population, compute the test statistic given the following information:

$$H_0: \mu = 100$$

$$H_A: \mu < 100$$

$$\bar{x} = 98$$

$$s = 4$$

$$n = 25$$

- a)  $z = 2.5$
- b)  $z = -2.5$
- c)  $t = 2.5$
- d)  $t = -2.5$



12. A recent survey showed that the average time it takes to walk one mile is 15 minutes. A nutritionist believes her clients can walk one mile in less than 15 minutes. She samples 20 of her clients and finds the mean to be 14.5 minutes with a standard deviation of 2 minutes. Test at the 5% level of significance and state the decision. Assume the sample was taken from a normal population.
- a) Do not reject the null hypothesis
  - b) Reject the null hypothesis
13. Which of the following are the correct null and alternative hypotheses for testing the claim that the percentage of U.S. adults who are current smokers is less than 19%?
- a)  $H_0: p = 0.19$   
 $H_A: p > 0.19$
  - b)  $H_0: p = 0.19$   
 $H_A: p \neq 0.19$
  - c)  $H_0: p = 0.19$   
 $H_A: p < 0.19$
  - d)  $H_0: p \neq 0.19$   
 $H_A: p = 0.19$



14. Compute the test statistic given the following information:

$$H_0: p = 0.22$$

$$H_A: p \neq 0.22$$

$$x = 15$$

$$n = 75$$

- a)  $z = -0.22$   
b)  $z = 0.22$   
c)  $z = 0.42$   
d)  $z = -0.42$
15. Research shows that 27% of Americans have a four-year degree. A group of researchers believe the proportion is higher than what is reported. They sample 1000 adults and find that 30% of them have a four-year degree. Test at the 1% level of significance and state the decision.
- a) Reject the null hypothesis  
b) Do not reject the null hypothesis



## Answers

1.  $H_0: \mu = 98.6, H_A: \mu > 98.6$
2.  $z = 3$
3. Reject  $H_0: \mu = 45$
4. Do not reject  $H_0: \mu = 3.59$
5. Rejected
6.  $\alpha$
7.  $\beta$
8. P-values
9. T-test
10. Two-tailed
11.  $t = -2.5$
12. Do not reject the null hypothesis
13.  $H_0: p = 0.19, H_A: p < 0.19$
14.  $z = -0.42$
15. Do not reject the null hypothesis

