

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) The null hypothesis states that there is no difference between a parameter and a specific value, or that there is no difference between two parameters. 1) _____
A) True B) False

- 2) Is the statement $H_0 : = 12$ a valid null hypothesis? 2) _____
A) Yes, this is a statement that compares a parameter to a value.
B) No, equalities are not permitted in a null hypothesis.
C) Yes, this is a statement that compares two parameters.
D) No, there is no parameter contained in this statement.

- 3) Is the statement $H_0 : 18 = 6$ a valid null hypothesis? 3) _____
A) No, equalities are not permitted in a null hypothesis.
B) Yes, this is a statement that compares a parameter to a value.
C) Yes, this is a statement that compares two parameters.
D) No, there is no parameter contained in this statement.

- 4) Is the statement $H_0 : \mu = 6$ a valid null hypothesis? 4) _____
A) Yes, this is a statement that compares a parameter to a value.
B) Yes, this is a statement that compares two parameters.
C) No, there is no parameter contained in this statement.
D) No, equalities are not permitted in a null hypothesis.

- 5) Are the following statements $H_0 : = 12$ and $H_1 : \neq 12$ valid null and alternative hypotheses? 5) _____
A) Yes, these statements are two non-overlapping hypotheses and compare a parameter to a value.
B) No, there are no parameters contained in these statements.
C) Yes, these statements are two non-overlapping hypotheses and compare two parameters.
D) No, the alternative hypothesis cannot contain numeric values.

- 6) Are the following statements $H_0 : \lambda = 11$ and $H_1 : \lambda < 11$ a valid pair of null and alternative hypothesis? 6) _____
A) Yes, the null hypothesis specifies an equality and the alternative specifies a difference.
B) Yes, the alternative hypothesis specifies an equality and the null hypothesis specifies a difference.
C) No, the null hypothesis should not state an equality.
D) No, λ cannot be a parameter

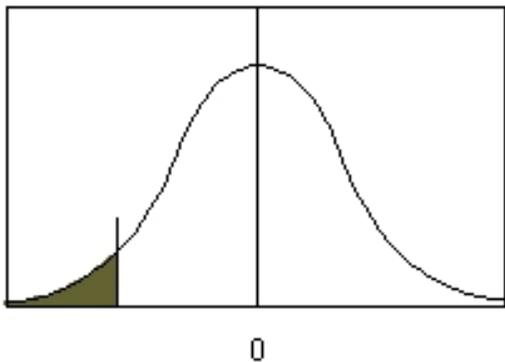
7) Sandra Johnson, a researcher, believes her pulse rate will decrease with exercise. Her alternative hypothesis would contain an equal sign. 7) _____
 A) False B) True

8) The probability of a type I error is represented by which of the following symbols? 8) _____
 A) φ B) η C) β D) α

9) A right-tailed test is used when $H_0 : \mu \geq k$. 9) _____
 A) False B) True

10) Determine whether the alternative hypothesis is left-tailed, right-tailed, or two-tailed. 10) _____
 $H_0 : \mu = 71$ $H_1 : \mu < 71$
 A) left-tailed B) right-tailed C) two-tailed

11) Which type of null hypothesis is used in the figure below? 11) _____



A) $H_0 : \mu \leq k$ B) $H_0 : \mu \neq k$ C) $H_0 : \mu > k$ D) $H_0 : \mu = k$

12) Stating the hypothesis should be the first step used in hypothesis testing. 12) _____
 A) False B) True

13) Using the z table, find the critical value (or values) for an $\alpha = 0.015$ left-tailed test. 13) _____
 A) -1.09 B) -2.17 C) -2.43 D) -1.22

14) Using the z table, determine the critical values for a two-tailed test when $\alpha = 0.03$. 14) _____
 A) ± 2.17 B) ± 0.06 C) ± 0.18 D) ± 1.88

15) Using the z table, determine the critical value for the left-tailed test with $\alpha = 0.02$. 15) _____
 A) 2.05 B) -2.05 C) 2.33 D) -2.33

16) For the conjecture "The average age of students in this class is 22", the null hypothesis is: 16) _____
 A) We accept the hypothesis that the average age of students in this class is 22.
 B) We reject the hypothesis that the average age of students in this class is 22.
 C) The average age of students in this class is 22.
 D) The average age of students in this class is not 22.

- 17) A garbage collector believes that he averages picking up more than four tons of garbage per day. What is the null hypothesis for his statement? 17) _____
 A) $H_0 : \mu = 4$ B) $H_0 : \mu \neq 4$ C) $H_0 : \mu \geq 4$ D) $H_0 : \mu < 4$
- 18) For the conjecture "The average rent of an apartment is more than \$950 per month," the alternative hypothesis is: 18) _____
 A) We reject the hypothesis that the average rent of an apartment is more than \$950 per month.
 B) We accept the hypothesis that the average rent of an apartment is more than \$950 per month.
 C) The average rent of an apartment is less than or equal to \$950 per month.
 D) The average rent of an apartment is greater than \$950 per month.
- 19) For the conjecture "The average weight of a cuckoo bird is less than 1.6 pounds", the null and alternative hypotheses are: 19) _____
 A) H_0 : The average weight of a cuckoo bird is equal to 1.6 pounds.
 H_1 : The average weight of a cuckoo bird is less than 1.6 pounds.
 B) H_0 : The average weight of a cuckoo bird is less than 1.6 pounds.
 H_1 : The average weight of a cuckoo bird is more than or equal to 1.6 pounds.
 C) H_0 : The average weight of a cuckoo bird is more than 1.6 pounds.
 H_1 : The average weight of a cuckoo bird is less than 1.6 pounds.
 D) H_0 : The average weight of a cuckoo bird is less than or equal to 1.6 pounds.
 H_1 : The average weight of a cuckoo bird is less than 1.6 pounds.
- 20) A new organic pest control formula is being tested on potato plants to see whether it can reduce the level of potato beetle infestation. The mean number of beetles per untreated plant is 7. It is hoped that the new formula may reduce this infestation rate. State the appropriate null and alternate hypotheses. 20) _____
 A) $H_0 : \mu < 7, H_1 : \mu > 7$ B) $H_0 : \mu < 7, H_1 : \mu = 7$
 C) $H_0 : \mu = 7, H_1 : \mu < 7$ D) $H_0 : \mu = 7, H_1 : \mu \neq 7$
- 21) A grocery store owner claims that the mean amount spent per checkout is more than \$73. A test is made of $H_0 : \mu = 73$ versus $H_1 : \mu > 73$. The null hypothesis is not rejected. State the appropriate conclusion. 21) _____
 A) The mean checkout amount is less than or equal to \$73.
 B) The mean checkout amount is greater than \$73.
 C) There is not enough evidence to conclude that the mean checkout price is greater than \$73.
 D) There is not enough evidence to conclude that the mean checkout price is less than or equal to \$73.

- 27) A recent survey indicated that the average amount spent for breakfast by business managers was \$7.58 with a standard deviation of \$0.42. It was felt that breakfasts on the West Coast were higher than \$7.58. A sample of 81 business managers on the West Coast had an average breakfast cost of \$7.65. Find the P -value for the test. 27) _____
 A) 0.0668 B) 0.2734 C) 0.4332 D) 0.1325
- 28) When conducting a two-tailed z test with $\alpha = 0.01$, the test value was computed to be 2.07. The decision would be to not reject the null hypothesis. 28) _____
 A) False B) True
- 29) At a certain university, the average cost of books was \$370 per student last semester and the population standard deviation was \$80. This semester a sample of 45 students revealed an average cost of books of \$390 per student. The Dean of Students believes that the costs are greater this semester. What is the test value for this hypothesis? 29) _____
 A) 0.25 B) 1.68 C) 0.44 D) 11.25
- 30) The average greyhound can reach a top speed of 18.8 meters per second. A particular greyhound breeder claims her dogs are faster than the average greyhound. A sample of 50 of her dogs ran, on average, 19.2 meters per second with a population standard deviation of 1.4 meters per second. With $\alpha = 0.05$, is her claim correct? 30) _____
 A) Yes, because the test value 0.04 falls in the noncritical region.
 B) Yes, because the test value 2.02 falls in the critical region.
 C) No, because the test value 0.04 falls in the critical region.
 D) No, because the test value 0.40 falls in the critical region.
- 31) Nationwide, the average waiting time until a electric utility customer service representative answers a call is 310 seconds. The Gigantic Kilowatt Energy Company randomly sampled 40 calls and found that, on average, they were answered in 287 seconds with a population standard deviation of 30 seconds. Can the company claim that they are faster than the average utility at $\alpha = 0.05$? 31) _____
 A) Yes, because the test value -0.12 falls in the critical region.
 B) Yes, because the test value -4.85 falls in the critical region.
 C) No, because the test value -0.77 falls in the critical region.
 D) No, because the test value -0.12 falls in the critical region.
- 32) State whether the null hypothesis should be rejected on the basis of the given P -value. 32) _____
 P -value = 0.001, $\alpha = 0.05$, one-tailed test
 A) Reject B) Do not reject
- 33) What is the critical value for a two-tailed t test when $\alpha = 0.02$ and $n = 19$? 33) _____
 A) 2.878 B) 2.567 C) 2.110 D) 2.552

34) A sample of 35 students enroll in a program that claims to improve scores on the quantitative reasoning portion of the Graduate Record Examination (GRE). The participants take a mock GRE test before the program begins and again at the end to measure their improvement.

34) _____

The mean number of points improved was $\bar{x} = 20$. Assume the standard deviation is $\sigma = 64$ and let μ be the population mean number of points improved. To determine whether the program is effective, a test is made of the hypotheses $H_0: \mu = 0$ versus $H_1: \mu > 0$.

Do you reject H_0 at the $\alpha = 0.01$ level?

- A) Yes
- B) There is not enough information to draw a conclusion.
- C) No

35) The following display from a TI-84 Plus calculator presents the results of a hypothesis test.

35) _____

Z-Test

$\mu \neq 47$
 $z = 1.991084$
 $p = 0.046472$
 $\bar{x} = 49.69$
 $n = 57$

What is the value of the test statistic?

- A) 1.991084 B) 0.046472 C) 47 D) 49.69

Answer Key
Testname: HW8

- 1) A
- 2) D
- 3) D
- 4) A
- 5) B
- 6) A
- 7) A
- 8) D
- 9) A
- 10) A
- 11) D
- 12) B
- 13) B
- 14) A
- 15) B
- 16) C
- 17) A
- 18) D
- 19) A
- 20) C
- 21) C
- 22) A
- 23) D
- 24) C
- 25) A
- 26) B
- 27) A
- 28) B
- 29) B
- 30) B
- 31) B
- 32) A
- 33) D
- 34) C
- 35) A