

**Honors Statistics**  
**Senior Final Exam Review**

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

**Provide an appropriate response.**

- 1) Find the area under the standard normal curve to the left of  $z = 1.5$ . 1) \_\_\_\_\_  
A) 0.0668                      B) 0.7612                      C) 0.9332                      D) 0.5199
- 2) Find the area under the standard normal curve between  $z = -1.25$  and  $z = 1.25$ . 2) \_\_\_\_\_  
A) 0.7888                      B) 0.6412                      C) 0.8817                      D) 0.2112
- 3) Find the area of the indicated region under the standard normal curve. 3) \_\_\_\_\_



- A) 0.9177                      B) 0.0968                      C) 0.9032                      D) 0.0823
- 4) For the standard normal curve, find the  $z$ -score that corresponds to the first quartile. 4) \_\_\_\_\_  
A) 0.67                      B)  $-0.23$                       C) 0.77                      D)  $-0.67$
- 5) Use a standard normal table to find the  $z$ -score that corresponds to the 98th percentile. 5) \_\_\_\_\_  
A) 0.25                      B) 2.055                      C) 2.33                      D) 1.405

**Provide an appropriate response. Use the Standard Normal Table to find the probability.**

- 6) IQ test scores are normally distributed with a mean of 100 and a standard deviation of 15. Find the IQ score that corresponds to a  $z$ -score of 1.96. 6) \_\_\_\_\_  
A) 129.4                      B) 122.4                      C) 115.6                      D) 132.1
- 7) The distribution of cholesterol levels in teenage boys is approximately normal with  $\mu = 170$  and  $\sigma = 30$  (Source: U.S. National Center for Health Statistics). Levels above 200 warrant attention. Find the probability that a teenage boy has a cholesterol level greater than 200. 7) \_\_\_\_\_  
A) 0.2138                      B) 0.1587                      C) 0.8413                      D) 0.3419
- 8) The lengths of pregnancies of humans are normally distributed with a mean of 268 days and a standard deviation of 15 days. A baby is premature if it is born three weeks early. What percent of babies are born prematurely? 8) \_\_\_\_\_  
A) 9.21%                      B) 10.31%                      C) 6.81%                      D) 8.08%
- 9) An airline knows from experience that the distribution of the number of suitcases that get lost each week on a certain route is approximately normal with  $\mu = 15.5$  and  $\sigma = 3.6$ . What is the probability that during a given week the airline will lose between 10 and 20 suitcases? 9) \_\_\_\_\_  
A) 0.8314                      B) 0.4040                      C) 0.3944                      D) 0.1056

**Provide an appropriate response.**

- 10) Assume that blood pressure readings are normally distributed with a mean of 116 and a standard deviation of 4.8. If 36 people are randomly selected, find the probability that their mean blood pressure will be less than 118. 10) \_\_\_\_\_  
A) 0.8819                      B) 0.8615                      C) 0.9938                      D) 0.0062
- 11) Assume that the heights of women are normally distributed with a mean of 63.6 inches and a standard deviation of 2.5 inches. If 100 women are randomly selected, find the probability that they have a mean height greater than 63.0 inches. 11) \_\_\_\_\_  
A) 0.0082                      B) 0.8989                      C) 0.2881                      D) 0.9918
- 12) Find the critical value  $z_c$  that corresponds to a 90% confidence level. 12) \_\_\_\_\_  
A)  $\pm 1.96$                       B)  $\pm 1.645$                       C)  $\pm 2.575$                       D)  $\pm 2.33$
- 13) A random sample of 40 students has a mean annual earnings of \$3120 and a standard deviation of \$677. Find the margin of error if the confidence level is 95%. 13) \_\_\_\_\_  
A) \$2891                      B) \$210                      C) \$77                      D) \$7
- 14) A nurse at a local hospital is interested in estimating the birth weight of infants. How large a sample must she select if she desires to be 98% confident that the true mean is within 3 ounces of the sample mean? The standard deviation of the birth weights is known to be 6 ounces. 14) \_\_\_\_\_  
A) 4                      B) 22                      C) 5                      D) 21
- 15) A researcher wishes to estimate the number of households with two cars. How large a sample is needed in order to be 95% confident that the sample proportion will not differ from the true proportion by more than 4%? A previous study indicates that the proportion of households with two cars is 22%. 15) \_\_\_\_\_  
A) 291                      B) 4                      C) 529                      D) 413
- 16) A manufacturer of golf equipment wishes to estimate the number of left-handed golfers. How large a sample is needed in order to be 98% confident that the sample proportion will not differ from the true proportion by more than 5%? A previous study indicates that the proportion of left-handed golfers is 8%. 16) \_\_\_\_\_  
A) 174                      B) 160                      C) 41                      D) 114
- 17) A survey of 280 homeless persons showed that 63 were veterans. Construct a 90% confidence interval for the proportion of homeless persons who are veterans. 17) \_\_\_\_\_  
A) (0.161, 0.289)                      B) (0.184, 0.266)                      C) (0.167, 0.283)                      D) (0.176, 0.274)
- 18) Construct a 90% confidence interval for the population mean,  $\mu$ . Assume the population has a normal distribution. A sample of 15 randomly selected students has a grade point average of 2.86 with a standard deviation of 0.78. 18) \_\_\_\_\_  
A) (2.51, 3.21)                      B) (2.37, 3.56)                      C) (2.41, 3.42)                      D) (2.28, 3.66)
- 19) Find the value of E, the margin of error, for  $c = 0.90$  (90% confidence)  $n = 10$  and  $s = 3.7$ . 19) \_\_\_\_\_  
A) 0.68                      B) 2.12                      C) 2.14                      D) 1.62

- 20) A random sample of 15 statistics textbooks has a mean price of \$105 with a standard deviation of \$30.25. Determine whether a normal distribution or a t-distribution should be used or whether neither of these can be used to construct a confidence interval. Assume the distribution of statistics textbook prices is not normally distributed. 20) \_\_\_\_\_
- A) Use the t-distribution.  
 B) Cannot use normal distribution or t-distribution.  
 C) Use normal distribution.
- 21) Find the critical value,  $t_C$  for a 90% confidence interval;  $n = 15$ . 21) \_\_\_\_\_
- A) 2.145                      B) 1.753                      C) 2.624                      D) 1.761
- 22) Find the critical value,  $t_C$  for a 99% confidence interval;  $n = 10$ . 22) \_\_\_\_\_
- A) 2.262                      B) 1.833                      C) 3.169                      D) 3.250
- 23) A researcher claims that 73% of voters favor gun control. Determine whether the hypothesis test for this claim is left-tailed, right-tailed, or two-tailed. 23) \_\_\_\_\_
- A) two-tailed                      B) right-tailed                      C) left-tailed
- 24) The owner of a professional basketball team claims that the mean attendance at games is over 25,000 and therefore the team needs a new arena. Determine whether the hypothesis test for this claim is left-tailed, right-tailed, or two-tailed. 24) \_\_\_\_\_
- A) right-tailed                      B) two-tailed                      C) left-tailed
- 25) Suppose you are using  $\alpha = 0.05$  to test the claim that  $\mu > 13$  using a P-value. You are given the sample statistics  $n = 50$ ,  $\bar{x} = 13.3$ , and  $s = 1.2$ . Find the P-value. 25) \_\_\_\_\_
- A) 0.1321                      B) 0.0416                      C) 0.0012                      D) 0.0128
- 26) Suppose you are using  $\alpha = 0.01$  to test the claim that  $\mu = 1120$  using a P-value. You are given the sample statistics  $n = 35$ ,  $\bar{x} = 1090$ , and  $s = 82$ . Find the P-value. 26) \_\_\_\_\_
- A) 0.0376                      B) 0.0077                      C) 0.3169                      D) 0.0154
- 27) Given  $H_0: \mu = 25$ ,  $H_a: \mu \neq 25$ , and  $P = 0.033$ . Do you reject or fail to reject  $H_0$  at the 0.01 level of significance? 27) \_\_\_\_\_
- A) fail to reject  $H_0$   
 B) not sufficient information to decide  
 C) reject  $H_0$
- 28) Find the critical value of  $z$  for a left-tailed test with  $\alpha = 0.05$  and  $n = 48$ . 28) \_\_\_\_\_
- A) -2.575                      B) -1.645                      C) -2.33                      D) -1.96
- 29) Find the critical value of  $z$  for a two-tailed test with  $\alpha = 0.06$  and  $n = 36$ . 29) \_\_\_\_\_
- A)  $\pm 2.575$                       B)  $\pm 1.88$                       C)  $\pm 1.96$                       D)  $\pm 2.33$

- 30) Suppose you want to test the claim that  $\mu > 25.6$  (sigma known). Given a sample size of  $n = 42$  and a level of significance of  $\alpha = 0.1$ , when should you reject  $H_0$ ? 30) \_\_\_\_\_
- A) Reject  $H_0$  if the standardized test statistic is greater than 2.575.  
 B) Reject  $H_0$  if the standardized test statistic is greater than 1.28.  
 C) Reject  $H_0$  if the standardized test statistic is greater than 1.96.  
 D) Reject  $H_0$  if the standardized test statistic is greater than 1.645.

- 31) You wish to test the claim that  $\mu = 1200$  at a level of significance of  $\alpha = 0.01$  and are given sample statistics  $n = 35$ ,  $\bar{x} = 1170$  and  $s = 82$ . Compute the value of the standardized test statistic. Round your answer to two decimal places. 31) \_\_\_\_\_
- A) -4.67                      B) -3.82                      C) -5.18                      D) -2.16

- 32) Determine the standardized test statistic,  $z$ , to test the claim about the population proportion  $p > 0.015$  given  $n = 50$  and  $\hat{p} = .029$ . Use  $\alpha = 0.01$ . 32) \_\_\_\_\_
- A) 2.18                      B) 1.42                      C) 0.81                      D) 3.01

- 33) Calculate the correlation coefficient,  $r$ , for the data below. 33) \_\_\_\_\_

|   |     |     |    |    |    |    |    |    |    |     |
|---|-----|-----|----|----|----|----|----|----|----|-----|
| x | -10 | -8  | -1 | -4 | -6 | -7 | -5 | -3 | -2 | -9  |
| y | -12 | -10 | 7  | -1 | -4 | -8 | -3 | 1  | 4  | -10 |

- A) 0.990                      B) 0.792                      C) 0.819                      D) 0.881

- 34) The data below are the final exam scores of 10 randomly selected statistics students and the number of hours they studied for the exam. Find the equation of the regression line for the given data. 34) \_\_\_\_\_

|           |    |    |    |    |    |    |    |    |    |    |
|-----------|----|----|----|----|----|----|----|----|----|----|
| Hours, x  | 3  | 5  | 2  | 8  | 2  | 4  | 4  | 5  | 6  | 3  |
| Scores, y | 65 | 80 | 60 | 88 | 66 | 78 | 85 | 90 | 90 | 71 |

- A)  $\hat{y} = -56.113x - 5.044$                       B)  $\hat{y} = 56.113x - 5.044$   
 C)  $\hat{y} = -5.044x + 56.113$                       D)  $\hat{y} = 5.044x + 56.113$

- 35) The data below are the number of absences and the final grades of 9 randomly selected students from a statistics class. What is the best predicted value for  $y$  given  $x = 13$ ? Assume that the variables  $x$  and  $y$  have a significant correlation. 35) \_\_\_\_\_

|                       |    |    |    |    |    |    |    |    |    |
|-----------------------|----|----|----|----|----|----|----|----|----|
| Number of absences, x | 0  | 3  | 6  | 4  | 9  | 2  | 15 | 8  | 5  |
| Final grade, y        | 98 | 86 | 80 | 82 | 71 | 92 | 55 | 76 | 82 |

- A) 59                      B) 61                      C) 62                      D) 60

## Answer Key

Testname: STATS SENIOR FINAL REVIEW

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