**STUDY QUESTIONS**

1. When a statistic taken from the sample is used to estimate a population

parameter, it is called a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ estimate.

1. When a range of values is used to estimate a population parameter, it is

called a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ estimate.

3. The *z* value associated with a two-sided 90% confidence interval is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. The *z* value associated with a two-sided 95% confidence interval is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. The *z* value associated with a two-sided 80% confidence interval is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

6. Suppose a random sample of 40 is selected from a population with a

standard deviation of 13. If the sample mean is 118, the 98% confidence

interval to estimate the population mean is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

7. Suppose a random sample of si*z*e 75 is selected from a population with a

standard deviation of 6.4. The sample yields a mean of 26. From this

information, the 90% confidence interval to estimate the population mean

can be computed as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

8. The following random sample of numbers are drawn from a population:

45, 61, 55, 43, 49, 60, 62, 53, 57, 44, 39, 48, 57, 40, 61, 62, 45, 39, 38, 56,

55, 59, 63, 50, 41, 39, 45, 47, 56, 51, 61, 39, 36, 57. Assume that the

population standard deviation is 8.62. From these data, a 99% confidence

interval to estimate the population mean can be computed as

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

9. A random sample of 63 items is selected from a population of 400 items.

The sample mean is 211. The population standard deviation is 48. From

this information, a 95% confidence interval to estimate the population mean

can be computed as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

10. Generally, when estimating a population mean and the population standard

deviation is not known, you should use the \_\_\_\_\_ statistic.

11. The *t* test was developed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12. In order to find values in the *t* distribution table, you must convert the

sample si*z*e or si*z*es to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

13. The table *t* value associated with 10 degrees of freedom and used to

compute a 95% confidence interval is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

14. The table *t* value associated with 18 degrees of freedom and used to

compute a 99% confidence interval is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

15. A researcher is interested in estimating the mean value for a population.

She takes a random sample of 17 items and computes a sample mean of 224

and a sample standard deviation of 32. She decides to construct a 98%

confidence interval to estimate the mean. The degrees of freedom

associated with this problem are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It can be assumed that

these values are normally distributed in the population.

16. The table *t* value used to construct the confidence interval in question 15 is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

17. The confidence interval resulting from the data in question 15 is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

18. A researcher wants to estimate the proportion of the population which

possesses a given characteristic. A random sample of si*z*e 800 is taken

resulting in 380 items which possess the characteristic. The point estimate

for this population proportion is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

19. A researcher wants to estimate the proportion of a population which

possesses a given characteristic. A random sample of si*z*e 1250 is taken and

.67 of the sample possess the characteristic. The 90% confidence interval to

estimate the population proportion is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

20. A random sample of 255 items from a population results in 44% possessing

a given characteristic. Using this information, the researcher constructs a

99% confidence interval to estimate the population proportion. The

resulting confidence interval is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

21. What proportion of a population possesses a given characteristic? To

estimate this, a random sample of 1700 people are interviewed from the

population. Seven hundred and fourteen of the people sampled possess the

characteristic. Using this information, the researcher computes an 88%

confidence interval to estimate the proportion of the population who possess

the given characteristic. The resulting confidence interval is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

22. A confidence interval to estimate the population variance can be constructed

by using the sample variance and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

distribution.

23. Suppose we want to construct a confidence interval to estimate a population

variance. A sample variance is computed from a sample of 14 items. To

construct a 95% confidence interval, the chi-square table values are

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

24. We want to estimate a population variance. A sample of 9 items produces a

sample standard deviation of 4.29. The point estimate of the population

variance is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

25. In an effort to estimate the population variance, a sample of 12 items is taken. The sample variance is 21.96. Using this information, it can be determined that the 90% confidence interval is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

26. In estimating the sample si*z*e necessary to estimate *µ*, the error of

estimation, *E*, is equal to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

27. In estimating sample si*z*e, if the population standard deviation is unknown, it

can be estimated by using \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

28. Suppose a researcher wants to conduct a study to estimate the population

mean. He/she plans to use a 95% level of confidence to estimate the mean

and the population standard deviation is approximately 34. The researcher

wants the error to be no more than 4. The sample si*z*e should be at least

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

29. A researcher wants to determine the sample si*z*e necessary to adequately conduct a study to estimate the population mean to within 5 points. The range of population values is 80 and the researcher plans to use a 90% level of confidence. The sample si*z*e should be at least \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

30. A study is going to be conducted in which a population mean will be estimated using a 92% confidence interval. The estimate needs to be within 12 of the actual population mean. The population variance is estimated to be around 2200. The necessary sample si*z*e should be at least \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

31. In estimating the sample si*z*e necessary to estimate *p*, if there is no good approximation for the value of *p* available, the value of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ should be used as an estimate of *p* in the formula.

32. A researcher wants to estimate the population proportion with a 95% level of confidence. He/she estimates from previous studies that the population proportion is no more than .30. The researcher wants the estimate to have an error of no more than .02. The necessary sample si*z*e is at least \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

33. A study will be conducted to estimate the population proportion. A level of confidence of 99% will be used and an error of no more than .05 is desired. There is no knowledge as to what the population proportion will be. The si*z*e of sample should be at least \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

34. A researcher conducts a study to determine what the population proportion is for a given characteristic. Is it believed from previous studies that the proportion of the population will be at least .65. The researcher wants to use a 98% level of confidence. He/she also wants the error to be no more than .03. The sample si*z*e should be at least \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**ANSWERS TO STUDY QUESTIONS**

1. Point 18. .475

2. Interval 19. .648 < *p* < .692

3. 1.645 20. .36 < *p* < .52

4. 1.96 21. .401 < *p* < .439

5. 1.28 22. Chi-square

6. 113.2 < *μ* < 122.8 23. 5.00874, 24.7356

7. 24.8 < *μ* < 27.2 24. *s*2 = 18.4041

8. 46.6 < *μ* < 54.2 25. 12.277 < *σ*2 < 52.802

9. 200.1 < *μ* < 221.9 26. 

10. *t* 27. ¼ Range

11. William S. Gosset 28. 278

12. Degrees of Freedom 29. 44

13. 2.228 30. 47

14. 2.878 31. .50

15. 16 32. 2,017

16. 2.583 33. 664

17. 203.95 < *μ* < 244.05 34. 1,373