WS 7
Name_____

Chapter 6.1–6.3

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

**Provide an appropriate response.**

1) Find the critical value $z_c$ that corresponds to a 94% confidence level. 1) _____

2) A random sample of 120 students has a test score average with a standard deviation of 11.4. Find the margin of error if c = 0.90. 2) _____

3) A random sample of 40 students has a test score with $\bar{x} = 81.5$ and s = 10.2. Construct the confidence interval for the population mean, $\mu$ if c = 0.90. 3) _____

4) In a recent study of 84 eighth graders, the mean number of hours per week that they watched television was 22.3 with a standard deviation of 5.8 hours. 4) _____

a) Find the 90% confidence interval of the mean.
b) If the standard deviation is doubled to 11.6, what will be the effect on the confidence interval?

5) In a sample of **10** randomly selected women, it was found that their mean height was 63.4 inches. From previous studies, it is assumed that the standard deviation **$\sigma$ is 2.4** and that the population of height measurements is **normally distributed**. Construct the 95% confidence interval for the population mean. 5) _____

6) The standard IQ test has a mean of 100 and a standard deviation of 13. We want to be 98% certain that we are within 2 IQ points of the true mean. Determine the required sample size. 6) _____

7) In order to set rates, an insurance company is trying to estimate the number of sick days that full time workers at an auto repair shop take per year. A previous study indicated that the standard deviation was 2.8 days. How large a sample must be selected if the company wants to be 95% confident that the true mean differs from the sample mean by no more than 1 day? 7) _____

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

8) Find the critical value, $t_c$, for c = 0.95 and n = 16. 8) _____

A) 2.602 B) 2.131 C) 2.947 D) 2.120

9) In a random sample of 28 families, the average weekly food expense was \$95.60 with a standard deviation of \$22.50. 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 weekly food expenses is normally shaped. 9) _____

A) Use normal distribution.
B) Use the t-distribution.
C) Cannot use normal distribution or t-distribution.

10) 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. 10) _____

A) Cannot use normal distribution or t-distribution.
B) Use the t-distribution.
C) Use normal distribution.

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

11) Construct a 95% confidence interval for the population mean, μ. Assume the population has a normal distribution. A sample of 20 college students had mean annual earnings of $3120 with a standard deviation of $677. 11) _____

12) Construct a 95% confidence interval for the population mean, μ. Assume the population has a normal distribution. A sample of 25 randomly selected students has a mean test score of 81.5 with a standard deviation of 10.2. 12) _____

13) A survey of 400 non-fatal accidents showed that 152 involved the use of a cell phone. Find a point estimate for p, the population proportion of non-fatal accidents that involved the use of a cell phone. 13) _____

14) A survey of 300 fatal accidents showed that 123 were alcohol related. Construct a 98% confidence interval for the proportion of fatal accidents that were alcohol related. 14) _____

15) A survey of 2450 golfers showed that 281 of them are left-handed. Construct a 98% confidence interval for the proportion of golfers that are left-handed. 15) _____

1) ±1.88
2) 1.71
3) (78.8, 84.2)
4) a) (21.3, 23.3)
   b) An increase in the standard deviation will widen the confidence interval.
5) (61.9, 64.9)
6) 230
7) 31
8) B
9) B
10) A
11) ($2803, $3437)
12) (77.29, 85.71)
13) 0.380
14) (0.344, 0.476)
15) (0.100, 0.130)