More Practice 6.1

Name TEACHER

SHORT ANSWER/ PROBLEM SOLVING. Be sure to explain reasoning where necessary

Solve the problem.

1) A random sample of 200 high school seniors is given the SAT-V test. The mean score for this sample is $\bar{x} = 483$. What can you say about the mean score μ of all high school seniors? 1) _____

same 483

2) The grade point averages for 10 randomly selected students in a statistics class with 125 students are listed below. What can you say about the mean score μ of all 125 students? 2) 3

2.4 2.9 3.7 2.0 3.6 3.2 2.6 3.5 2.7 3.4

3) The grade point averages for 10 randomly selected students in a statistics class with 125 students are listed below. 3) _____

2.0 3.2 1.8 2.9 0.9 4.0 3.3 2.9 3.6 0.8

n↑ n=20 ( ) n=50 ( ) √n

What is the effect on the width of the confidence interval if the sample size is increased to 20?

width decreases

4) Determine the margin of error if the grade point averages for 10 randomly selected students from a class of 125 students has a mean of $\bar{x} = 2.7$. Assume the grade point average of the 125 students has a mean of $\mu = 3.0$. 4) .3

5) A random sample of 150 students has a grade point average with a standard deviation of 0.78. Find the margin of error if c = 0.98. 5) .15

6) A random sample of 150 students has a grade point average with a mean of 2.86 and with a standard deviation of 0.78. Construct the confidence interval for the population mean, μ, if c = 0.98. 6) _____

$z_c = 2.33$

(2.71, 3.01)

7) A random sample of 40 students has a mean annual earnings of \$3120 and a standard deviation of \$677. Construct the confidence interval for the population mean, μ if c = 0.95. 7) _____

(\$2910, \$3330)

8) A group of 49 randomly selected students has a mean age of 22.4 years with a standard deviation of 3.8. Construct a 98% confidence interval for the population mean. 8) _____

(21.1, 23.7)

9) In a random sample of 60 computers, the mean repair cost was \$150 with a standard deviation of \$36. Construct a 99% confidence interval for the population mean. 9) _____

138.03, 161.97

(138, 162)

$z_c = 2.575$ $2.575\left(\frac{36}{\sqrt{60}}\right) = 11.97$ .005

10) In a recent study of 42 eighth graders, the mean number of hours per week that they watched television was 19.6 with a standard deviation of 5.8 hours. Find the 98% confidence interval for the population mean. 10) _____

(17.5, 21.7)

11) 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, σ, is 2.4. Construct the 95% confidence interval for the population mean. 11) _____

(61.9, 64.9)

$z_c = 1.96$

12) 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. 12) 230

13) 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? 13) 31

$n = \left(\frac{z_c SD}{\sqrt{n}}\right)^2$ $E = z_c \frac{SD}{\sqrt{n}}$