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Algebra 2 Unit 8 Confidence Intervals

SHOW ALL WORK on the worksheet.

1. A poll of 388 randomly chosen office workers showed that they spend an average of 1.8 hours not working while on the clock. The standard deviation is 0.6 hour. Determine a 90% confidence interval for the population mean.

2. A poll of 184 randomly selected biotechnology researchers showed that they spent an average of 16.8 hours per week reading and studying research done by others on genetically modified organism (GMO) issues, with a standard deviation of 2.9 hours. Determine a 95% confidence interval for the population mean.

3. A poll of 233 randomly chosen high school athletes showed that they spend an average of 1.6 hours per week practicing their sport during the off-season. The standard deviation is 0.5 hours. Determine the 99% confidence interval for the population mean.

4. A sample of 76 albums had a mean run time of 61.3 minutes with a standard deviation of 5.2 minutes. Use a 95% confidence level to calculate the margin of error.

5. A poll of 218 students at a university showed that they spend 11.8 hours per week studying. The standard deviation is 3.7 hours. Determine a 90% confidence interval for the population mean.

6. The 90% confidence interval for a population mean was 10.2 to 12.5. Find the sample mean and the margin of error.

7. A hardware manufacturer produces bolts used to assemble various machines. The diameter of the bolts in a sample of 50 bolts has a mean of 5.11 mm and a standard deviation of 0.1 mm. Determine the 95% confidence interval for the population mean.

8. You want to rent a one-bedroom apartment in Boston. The monthly rent for a sample of 32 apartments is $1,400 with a standard deviation of $220. Determine the 99% confidence interval for the population mean.

9. Create a box plot from the given dot plot

Determine the type of study (survey, observational, experiment). Explain your reasoning.

10. Ken wants to compare how many hours a week that sixth graders spend doing math homework to how many hours a week eleventh graders spend doing math homework. He randomly selects ten sixth graders and ten eleventh graders and records how many hours each student spent on math homework in a certain week.

11. A large high school wants to know the proportion of students who currently use illegal drugs. Uniformed police officers asked a random sample of 200 students about their drug use.

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1. 90% confident that μ will be between 1.75 and 1.85

2. 95% confident that μ will be between 16.38 and 17.22

3. 99% confident that μ will be between 1.52 and 1.68

4. $M \approx 1.17$

5. 90% confident that μ will be between 11.39 and 12.21

6. Mean $= 11.35$; M $= 1.15$

7. 5.0823 mm to 5.1377 mm

8. \$1,299.82 to \$1,500.18

9. Min $= 0$
   1st Quartile $= 2$
   Median $= 4.5$
   3rd Quartile $= 7$
   Max $= 9$

10. Observational

11. Survey