

Math - 227: Introductory Statistics- Test # 3

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Name _____

Instructions. Show all your work. Clearly state the Null and alternate hypothesis and your final conclusion about the claims in # 7 - 12

1. Set up a 99% confidence interval around the number of students at LACC with GPA more than 3.0. The number of students with GPA more than 3.0 follows a normal distribution. A sample of 100 students showed that 17 of the students had GPA more than 3.0, with an standard deviation of 3. (10 pts.)
2. Set up a 95% confidence interval around the average number of students who pass Math - 227 every semester at LACC . The number of students who pass Math-227 every semester follows a normal distribution. A sample of 20 students who took Math-227 in an specific semester showed that 14 of the students had passed Math-227 with an standard deviation of 4. (10 pts.)
3. Set up a 90% confidence interval around the percent of students in four year colleges who take their introductory statistics required class at a community college. A sample of 40 of such students resulted in 24 of them having passed their statistics requirement at a community college.(10 pts.)
4. Set up a 99% confidence interval around the standard deviation of students at LACC who speak more than one language. A sample of 20 students resulted in an standard deviation of 4.5. (10 pts.)
5. Find the sample size needed for having a margin of error of 1.5 in testing mean of a population that is normally distributed with an standard deviation of 10 at a confidence level of 95%. (10 pts.)
6. Find margin of error (E) and the sample mean (\bar{x}) in the following confidence interval : $10.44 < \mu < 14.54$ (10 pts.)
7. In a study of factors affected by hypnotism, visual analogue scale (VAS) sensory rating were obtained for 36 subjects. The mean and standard deviation of all VAS studies are 8.33 and 1.96. At 0.05 significance level, test the claim that this sample comes from a population with a mean rating more than 10. (15 pts.)
8. Use the P - value approach to test the claim that the mean pH level of the water at the nearby river is less than 6.8. The standard deviation of all nearby rivers is 1.8. You randomly select 40 water samples and measure the pH of each and find the sample mean pH of 7.4. Use a significance level of 0.05 to test this claim (15 pts.)
9. Researchers designed a questioner to identify compulsive buyers. For a sample of 16 consumers who identified themselves as compulsive buyers, questioner scores have a mean of 92 and standard deviation of 28. Using a 0.05 significance level, test the claim that the self-identified compulsive-buyer population has a mean greater than 21. (15 pts.)
10. Researchers studied crashes of general aviation (noncommercial and nonmilitary) airplanes and found that pilots in 473 of 7456 crash landed. Use a 0.01 significance level to test the claim that pilots die in at least 5% of such crashes.(15 pts.)
11. As part of the National Institute of Health (NIH) survey, data were collected on the variation of weights of men in the united states. For a sample of 20 men aged 25 to 34 the standard deviation of the weights is 21 pounds. Check the claim that the standard deviation of mens weight in the USA is not equal to 20 pounds. (15 pts.)

12. Use the P-value approach to test the claim that average age of LACC students is less than 23 years old. Use a sample of 20 students with a mean age of 26 and an standard deviation of 5 at a significance level of 0.01. Ages of LACC students follows a normal distribution. (15 pts.)