Instructions: You will be proctoring an activity for confidence intervals and hypothesis testing. You can give hints and encouragement if a student misses the question. Do not reveal the correct answer until the student gets it correct. After the student gets it correct, reveal the answer and move on to the next question. Students use StatCrunch rather than formulas. if the student asks for help give guide them through using StatCrunch for confidence intervals or p-values. Small rounding errors are okay. Do not interpret the results for the student. You can help with the interpretation.

Question

Suppose a confidence interval for mu is (-9.3, 156.5). Compute the sample mean and the margin of error. Round to 1 decimal and label each answer.

Answer

Sample mean: 73.6
Margin of Error: 82.9

Question

A student was asked to find a 99% confidence interval for widget width using data from a random sample of size n = 24. Which of the following is a correct interpretation of the interval $11.2 < \mu < 31.5$? Report all that are correct.

a) The mean width of all widgets is between 11.2 and 31.5, 99% of the time. We know this is true because the mean of our sample is between 11.2 and 31.5.
b) With 99% confidence, the mean width of all widgets is between 11.2 and 31.5.
c) With 99% confidence, the mean width of a randomly selected widget will be between 11.2 and 31.5.
d) There is a 99% chance that the mean of a sample of 24 widgets will be between 11.2 and 31.5.

Answer
b) is the only correct answer.

Question (2 parts)

Consider the file in the Math 105 group called student housing cost which gives the monthly rental costs of a random selection of college students. The file can be found at the following link:
https://www.statcrunch.com/app/index.html?dataid=4362300&token=OTI3Z8%2F0N6hSC1KVw9hTXrTusRImkEMg0hx3c%2Bz9g6KSD8gXkv3eBBqT4%2Bcprw8dKGO28GegNpex1ykKReMqurdwPwQuG12aVAciicl1r3Ij3J2eSd14B08rHX1UCBrO9XVlTR78QWTRkzbzlNWdVGNwrUAfqg8tyeVPPiArcLRvo8DqfEYJhhz4Pl%2FObGfC0YCNcRROHeGiA8bPn5O%2FlA%3D%3D

Part 1: Calculate a 95% confidence interval for mu, the mean rental price for college students. Round to the nearest whole integer.
(Do not interpret the confidence interval)

Answer
$582 to $642

Question
Part 2: Interpret the confidence interval.

Answer

We can be 95% confident that the average monthly rental price for college students is between $582 and $642.

Question

A student was asked to find a 99% confidence interval for widget width using data from a random sample of size n = 29. Which of the following is a correct interpretation of the interval (13.9,24.8)?

a) We are 99% confident the mean width of all widgets is between 13.9 and 24.8.
b) The mean width of all widgets is between 13.9 and 24.8, 99% of the time. We know this is true because the mean of our sample is between 13.9 and 24.8.
c) With 99% confidence, the mean width of a randomly selected widget will be between 13.9 and 24.8.
d) There is a 99% chance that the mean of the population is between 13.9 and 24.8.

Answer
a) is correct

Question

A hypothesis test for the mean of a population was performed and a p-value was obtained, p-value=0.007. At the 0.01 significance level, would we reject or fail to reject the null hypothesis. Explain.

Answer

Since the p-value is less than the significance level we would reject the null hypothesis.

Question

A drug company claims that an allergy medication causes headaches in 5% of those who take it. A medical researcher believes that more than 5% of those who take the drug actually get headaches.

In one complete sentence, identify the parameter.

Answer

p is the proportion of those who take the drug who get a headache.

Question

For the scenario in the previous question, identify the null and alternative hypotheses.

Answer

H0: p=0.05
H1: p>0.05

Question

For a hypothesis test, alpha=0.05. The computed p-value is 0.022. Which is the correct conclusion?

a) There is not sufficient evidence to reject the Null Hypothesis and accept the alternative.
b) There IS sufficient evidence to reject the Null Hypothesis and accept the alternative.

Answer
b) is correct

Question
Past studies have indicated that the percentage of smokers is estimated to be about 35%. Given the new smoking cessation programs that have been implemented, you now believe that the percentage of smokers has reduced. State the null and alternative hypotheses.

Answer
H0: p=0.35
H1: p<0.35

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