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Math_Questions_0034

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1.

Given the following hypothesis:

$H_0: \mu = 400$

$H_1: \mu \neq 400$

For a random sample of 12 observations, the sample mean was 407 and the sample standard deviation 6. Using the .01 significance level:

A: state the decision rule.

B: Compute the value of the test statistic.

C: What is your decision regarding the null hypothesis?

2.

Most air travelers now use e-tickets. Electronics ticketing allows passengers to not worry about a paper ticket, and it costs the airline companies less to handle than a paper ticketing. However, in recent times the airline has received complaints from passengers regarding their e-tickets, particularly when connecting flights and a change of airlines were involved. To investigate the problem an independent watchdog agency contacted a random sample of 20 airports and collects information on the number of complaints the airport had with the e-tickets for the month of March. Information is reported below.

14 14 16 12 12 14 13 16 15 14 12 15 15 14 13 13 12 13 10 13

At the .05 significance level can the watchdog agency conclude the mean number of complaints per airport is less than 15 per month?

A: What assumption is necessary before conducting a test of hypothesis?

B: Plot the number of complaints per airport in a frequency distribution or a dot plot. Is it reasonable to conclude that the population follows a normal distribution?

C: Conduct a test of hypothesis and interpret the results.

3.

Give the following hypothesis:

$H_0: \mu = 100$

$H_1: \mu \neq 100$

A random sample of six resulted in the following values: 118, 105, 112, 119, 105, and 111.

Using the .05 significance level, can we conclude the mean is different from 100?

a. state the decision rule.

b. Compute the value of the test statistic.

c. What is your decision regarding the null hypothesis?

d. Estimate the p-value.

4.

The liquid chlorine added to swimming pools to combat algae has a relatively short shelf life before it loses its effectiveness. Records indicate the mean shelf life of a 5 –gallon jug of chlorine is 2160 hours (90 days). As an experiment, Holdlonger was added to the chlorine to find whether it would increase the shelf life. A sample of nine jugs of chlorine has these shelf lives (in hours):

2159, 2170, 2180, 2179, 2160, 2167, 2171, 2181, 2185

At the .025 level, has Holdlonger increased the shelf life of chlorine? Estimate the p-value.

5.

The manufacture of the Ososki motorcycle advertises that the cycle will average 87 miles per gallon of gasoline. A sample of eight bikes revealed the following mileage.

88, 82, 81, 87, 80, 78, 79, 89

At the .05 level, is the mean mileage less than the advertised 87 miles per gallon?