Question Completion Status:

Take Test: HW #5 on Chapter 8

Test Information

Description	
Instructions	
Multiple Attempts	Not allowed. This test can only be taken once.
Force Completion	This test can be saved and resumed later.
	Your answers are saved automatically.

QUESTION 1

5 points Saved

For a normal population with known variance σ^2, What is the value of $z_{\frac{\alpha}{2}}$ gives

1. 98% confidence? 2.326348
2. 80% confidence? 1.439531
3. 75% confidence? 1.036433

QUESTION 2

5 points Saved

Determine the t-percentile that is required to construct each of the following two-sided confidence intervals:

Confidence level = 95%, n = 12 2.179

Confidence level = 98%, n = 24 2.064

Confidence level = 99%, n = 13 3.012

QUESTION 3

10 points Saved

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cost of this kind of damage, with what confidence can one assert that the sampling error does not exceed $10?

84.7 %

QUESTION 4 10 points Saved

A random sample has been taken from a normal distribution and the following two confidence intervals were constructed using the same data:

(38.02, 61.98) and (39.95, 60.05)

1. What is the value of the sample mean?

   50

2. One of these intervals is a 95% confidence interval and the other is a 90% confidence interval . Which one is the 95% confidence interval, the first or the second ?

   first

QUESTION 5 10 points Saved

The yield of a chemical process is being studied. From previous experience, yield is known to be normally distributed and $\sigma = 3$. The past five days of plant operation have resulted in the following percent yields:

91.6 88.75 90.8 89.95 91.3

Find a 95% two-sided confidence interval on the true mean yield.

Lower limit 87.85

Upper limit 93.11

QUESTION 6 10 points Saved

The dean of a college wants to use the mean of a random sample to estimate the average amount of time students take to get from one class to the next, and he wants to be

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209

QUESTION 7 10 points Saved

The life in hours of a 75-watt light bulb is known to be normally distributed with standard deviation of 25 hours. A random sample of 20 bulbs was selected and gave a mean life time of 1014 hours.

1. Construct a 95% confidence interval on the mean life time 1002.2996 ...
   1025.7004
2. Suppose that we wanted the error in estimating the mean life time from the confidence interval to be five hours at the 95% level of confidence. What minimum sample size should be used? 96.04
3. Suppose that you wanted the total width of the confidence interval, on the mean life time, to be six hours at the 95% level of confidence, then what is the minimum sample size should be used?
   266
4. If the length of the CI in part 3 is to be halved, then by how much must the sample size n be multiplied?
   1064

QUESTION 8 10 points Saved

The compressive strength of concrete is being tested by a civil engineer who tested 12 specimens and obtained the following data:

2216 2237 2225 2301 2318 2255 2249 2204 2281 2263 2275 2295

Construct a 95% confidence interval on the mean strength.

Lower limit 2237.3169

Upper Limit 2282.5165

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and a standard deviation of 1.5 psi. Assuming the data may be treated as a random sample from a normal population, determine a 90% confidence interval for the actual mean pressure of the thermostat.

Lower Limit 8.3179

Upper Limit 9.682

QUESTION 10 **10 points** Saved

A study measured the weights of a sample of 30 rats under experiment controls. Suppose that 12 rats were underweight.

1. Calculate a 95% confidence interval on the true proportion of underweight rats from this experiment. 0.2247 ...
   0.5753
2. Using the point estimate of p obtained from the preliminary sample, what is the minimum sample size needed to be 95% confident that the error in estimating the true value of p is less than 0.02?
   2305
3. How large must the sample be if you wish to be 95% confident that the error in estimating p is less than 0.02, regardless of the true value of p?
   2401

QUESTION 11 **10 points** Save Answer

A study is to be conducted of the percentage of homeowners who own at least two television sets. How large a sample is required if we wish to be 99% confident that the error in estimating this quantity is less than 0.017? [a]

8490.30

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