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Attempt Score 9 / 9 - 100 %

Overall Grade (Highest Attempt) 9 / 9 - 100 %

Question 1

1 / 1 point

In a nuclear reactor, the time between occurrences of the core overheating is known to have an exponential distribution, with the average time between occurrences being 14.7 weeks.

What is the probability that the next occurrence of the core overheating will be at least 10 weeks in the future?

- ☒ 0.51
- ☐ 0.54
- ☐ 0.46
- ☐ 0.49

Question 2

1 / 1 point

The time until the fire department is called to put out a fire is known to be exponentially distributed, with the average time of 2.1 days.

What is probability that the next time they are called to put out a fire will be at some point between 3 and 5 days from now?

Round your answer to four decimal places.

Answer:

0.1472

Question 3

1 / 1 point

We take a random sample of 7 tablet computers, and measure the time until their screens become scratched or cracked (in months). The following are our observations.

9.2 9.3 9.6 10.1 9.4 9.5 9.4

Assume that the times until being scratched or cracked are approximately normally distributed.

Find the **upper confidence limit** for a 90% confidence interval for μ , the true mean time (in months) until tablet screens become cracked or scratched.

- ☐ 9.73
- ☒ 9.77
- ☐ 9.76
- ☐ 9.70

Question 4

1 / 1 point

We took a random sample of 10 computers without virus protection, and measure the number of infected files. We found the sample mean to be 38.3, and the sample standard deviation to be 4.0.

Using these observations as a pilot study, estimate the sample size needed to create a 93% confidence interval for μ , the true mean number of infected files in unprotected computers, with a margin of error of 0.2.

(Remember that sample size must be an integer.)

Answer:

1,311

Question 5

1 / 1 point

We are interested in p , the population proportion of all people who are currently happy with their cell

phone plans. In a small study done in 2012, it was found that in a sample of 150 people, there were 90 who were happy with their cell phone plans.

Find the upper confidence limit of an 82% confidence interval for p .

- ☐ 0.68
- ☐ 0.64
- ☐ 0.63
- ☐ 0.67
- ☒ 0.65

Question 6

1 / 1 point

From a random sample of 14 people who travel to work, we find the sample mean travel time (in hours) is $\bar{x} = 0.89$, and the sample standard deviation is $s = 0.15$.

Let μ be the true mean travel time. Assume travel time is normally distributed.

We wish to test the hypotheses $H_0 : \mu = 1$, $H_1 : \mu \neq 1$

Find the p-value for this test within the accuracy of your tables

- ☐ p-value = 0.0062
- ☒ $0.015 < \text{p-value} < 0.02$
- ☐ $0.005 < \text{p-value} < 0.0075$
- ☐ p-value = 0.0031
- ☐ $0.0075 < \text{p-value} < 0.01$

Question 7

1 / 1 point

A study investigated hand washing behaviour in public washrooms in two major cities: Gotham and Metropolis. A random sample of 570 people in Gotham found that 77% of them washed their hands before leaving a public washroom, whereas a random sample of 636 people in Metropolis found that 73% of them washed their hands before leaving a public washroom. Calculate the unpooled estimated standard error you would use to test the claim that the proportion of hand washers is greater in Metropolis.

Round your answer in 4 decimal places.

Answer:

0.0249

Question 8

1 / 1 point

Suppose we wish to estimate the true proportion of Victoria residents who have used the new bike lanes on Pandora Avenue, with 98.4% confidence.

What sample size is needed so that the width of this confidence interval will be no more than 0.025?

Your answer for sample size must be a whole number.

Answer:

9,305

Question 9

1 / 1 point

For glass jars of tomato sauce made by a particular company, we are interested in p , the true proportion of tomato sauce jars which are not properly sealed.

We take a random sample of 500 jars and find that 12 of them are not properly sealed.

We wish to investigate the research hypothesis that the true proportion of jars which are not properly sealed is not 0.01. Calculate the p-value for this hypothesis test. Round your answer to 4 decimal places.

Answer:

0.0017

Done