

Time left 0:19:02

The diameter of the dot produced by a printer is normally distributed with a mean diameter of 0.004 cm and a standard deviation of 0.002 cm. What is the probability that the diameter is between 0.003 and 0.006 cm? (answer to the nearest two decimals).

Answer:

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Question 13

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Samples of emissions from three suppliers are classified for conformance to air-quality specifications. The results from 100 samples are summarized as follows:

Let A denote the event that a sample is from supplier 1, and let B denote the event that a sample does not conform to specifications. Events A and B are:

Supplier	Conforms		Total
	Yes	No	
1	11	4	15
2	20	5	25
3	24	6	30
Total	55	15	70

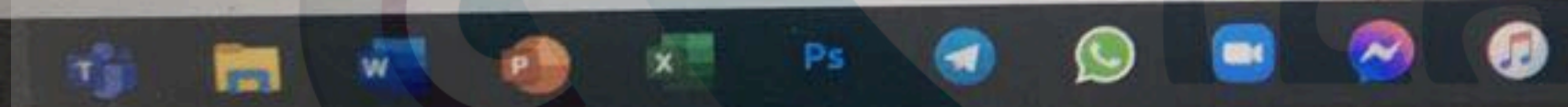
- a. Independent
- b. Dependent
- c. Mutually exclusive
- d. None of the above

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A tensile strength test was performed on 25 specimens of plastic bags. The sample mean is 3.35 and the sample standard deviation is  $s = 0.25$ . Find a 99% upper confidence bound on tensile strength.

- a. 2.47
- b. 3.47
- c. 4.70
- d. 2.23
- e. 4.20

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The time between arrivals of cars at a drive-through restaurant is exponentially distributed with a mean of 20 minutes. What is the probability that a worker waits longer than a half-hour for a car? (Answer to the nearest 4 decimals).

Answer:

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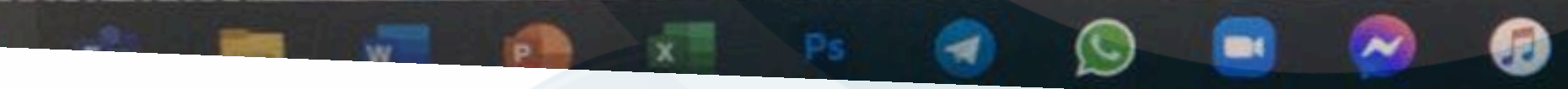
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The time between arrivals of cars at a drive-through restaurant is exponentially distributed with a mean of 8 minutes. Suppose that the worker has already been waiting for one hour for a car. What is the probability that one arrives within the next 9 minutes? (Answer to the nearest 4 decimals).

Answer:

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The copper content in an alloy used in home appliances castings is measured in 10 randomly selected parts. The sample data points are as follows:

20.1, 23.7, 20.9, 25, 27, 24.8, 26.5, 23.8, 25.6, 23.9

Construct a 95% two-sided confidence interval for  $\sigma$  (Std Dev).

- a. [2.07, 5.48]
- b. [19.02, 2.70]
- c. [1.83, 4.87]
- d. [1.53, 4.05]

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The diameter of the dot produced by a printer is normally distributed with a mean diameter of 0.005 cm. What standard deviation of diameters is needed so that the probability that the diameter is between 0.003 and 0.007 cm is 0.99? (Answer to the nearest six decimals).

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The production of a factory is being studied. From the previous history, production is known to be normally distributed, and  $\sigma = 3$ . The past five days of factory operation have resulted in the following production yields: 92.6, 88.75, 91.8, 90.65, and 90.5. Find a 95% two-sided confidence interval on the true mean production.

- a.  $[88.23 \leq \mu \leq 93.49]$
- b.  $[87.51 \leq \mu \leq 92.77]$
- c.  $[85.94 \leq \mu \leq 91.21]$
- d.  $[86.40 \leq \mu \leq 95.16]$

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Question 3  
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Normal distribution was used to produce a random sample, and the following confidence interval constructed using this sample: (44.46, 75.54). What is the value of the sample mean?

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Of 1900 randomly selected cases of lung cancer, 650 resulted in death within 10 years. Using the point estimate of  $p$  obtained from the preliminary sample, what sample size is needed to be 95% confident that the error in estimating the true value of  $p$  is less than 0.03?

- a. 913
- b. 961
- c. 1048
- d. 1008

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A quality engineer working on a production line of Solar Cells should decide how many Solar Cells have to be tested. The wave absorption rate of solar cells is normally distributed with a mean of 112 and a variance of 36. How large must the random sample be if he wants the standard error of the sample average to be 1.4?

Answer:

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The production of solar cells produces 2% of defective cells. Assume the cells are independent and that a lot contains 800 cells. Approximate the probability that less than 20 cells are defective. (Answer to the nearest 3 decimals).

Answer:

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