

## Examrace

### Statistics MCQs – Estimation Part 5

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81. Sand is packed into bags which are then weighed on scales. It is known that if full bags of sand are intended to weigh  $\mu$  kg, then the weight recorded by the scales will be normally distributed with a mean  $\mu$  kg and a standard deviation of 0.36kg. A particular bag of sand was weighed ten times and the weight recorded each time was different. The sample mean weight was recorded as 34.7kg. What is the total width of a 95 % confidence interval for the true weight of the full bag of sand?

- a. 0.71kg
- b. 0.36kg
- c. 0.98kg
- d. 0.45kg
- e. 0.90kg

Answer: D

82. Sand is packed into bags which are then weighed on scales. It is known that if full bags of sand are intended to weigh  $\mu$  kg, then the weight recorded by the scales will be normally distributed with a mean  $\mu$  kg and a standard deviation of 0.36kg. A particular bag of sand was weighed four times and the weight recorded each time was different. The sample mean weight was recorded as 38.1kg. What is the total width of a 95 % confidence interval for the true weight of the full bag of sand?

- a. 0.71kg
- b. 0.36kg
- c. 0.98kg
- d. 0.45kg
- e. 0.90kg

Answer: A

83. An analyst is conducting a hypothesis test to determine if the mean time spent on investment research by portfolio managers is different from 3 hours per day. The test uses a random sample of 64 portfolio managers, where the sample mean time spent on

research is found to be 2.5 hours. The population standard deviation is 1.5 hours. What is the half-width (from the middle of the confidence interval to either of the confidence limits) of the 99 % confidence interval for the population mean time spent on investment research by portfolio managers?

- a. 0.48
- b. 0.96
- c. 0.64
- d. 0.39
- e. 0.78

Answer: A

84. An analyst is conducting a hypothesis test to determine if the mean time spent on investment research by portfolio managers is different from 3 hours per day. The test uses a random sample of 64 portfolio managers, where the sample mean time spent on research is found to be 2.7 hours. The population standard deviation is 1.5 hours. What is the half-width (from the middle of the confidence interval to either of the confidence limits) of the 99 % confidence interval for the population mean time spent on investment research by portfolio managers?

- a. 0.48
- b. 0.96
- c. 0.64
- d. 0.39
- e. 0.78

Answer: A

85. An analyst is conducting a hypothesis test to determine if the mean time spent on investment research by portfolio managers is different from 3 hours per day. The test uses a random sample of 64 portfolio managers, where the sample mean time spent on research is found to be 2.5 hours. The population standard deviation is 2 hours. What is the half-width (from the middle of the confidence interval to either of the confidence limits) of the 99 % confidence interval for the population mean time spent on investment research by portfolio managers?

- a. 0.48
- b. 0.96
- c. 0.64
- d. 0.39

e. 0.78

Answer: C

86. An analyst is conducting a hypothesis test to determine if the mean time spent on investment research by portfolio managers is different from 3 hours per day. The test uses a random sample of 100 portfolio managers, where the sample mean time spent on research is found to be 2.5 hours. The population standard deviation is 1.5 hours. What is the half-width (from the middle of the confidence interval to either of the confidence limits) of the 99 % confidence interval for the population mean time spent on investment research by portfolio managers?

a. 0.48

b. 0.96

c. 0.64

d. 0.39

e. 0.78

Answer: D

87. An analyst is conducting a hypothesis test to determine if the mean time spent on investment research by portfolio managers is different from 3 hours per day. The test uses a random sample of 64 portfolio managers, where the sample mean time spent on research is found to be 2.3 hours. The population standard deviation is 1.5 hours. What is the half-width (from the middle of the confidence interval to either of the confidence limits) of the 99 % confidence interval for the population mean time spent on investment research by portfolio managers?

a. 0.48

b. 0.96

c. 0.64

d. 0.39

e. 0.78

Answer: A

88. A random variable,  $X$ , follows a normal distribution with a population standard deviation of 12. A sample of size 64 is selected from this population and the sample mean calculated as 45.23. What is the total width of a 90 % confidence interval for the true population mean in this case?

a. 4.9

b. 6.6

- c. 3.9
- d. 3.3
- e. 5.6

Answer: A

89. A random variable,  $X$ , follows a normal distribution with a population standard deviation of 16. A sample of size 64 is selected from this population and the sample mean calculated as 45.23. What is the total width of a 90 % confidence interval for the true population mean in this case?

- a. 4.9
- b. 6.6
- c. 3.9
- d. 3.3
- e. 5.6

Answer: B

90. A random variable,  $X$ , follows a normal distribution with a population standard deviation of 12. A sample of size 100 is selected from this population and the sample mean calculated as 45.23. What is the total width of a 90 % confidence interval for the true population mean in this case?

- a. 4.9
- b. 6.6
- c. 3.9
- d. 3.3
- e. 5.6

Answer: C

91. A random variable,  $X$ , follows a normal distribution with a population standard deviation of 8. A sample of size 64 is selected from this population and the sample mean calculated as 45.23. What is the total width of a 90 % confidence interval for the true population mean in this case?

- a. 4.9
- b. 6.6
- c. 3.9
- d. 3.3

e. 5.6

Answer: D

92. A random variable,  $X$ , follows a normal distribution with a population standard deviation of 12. A sample of size 49 is selected from this population and the sample mean calculated as 45.23. What is the total width of a 90 % confidence interval for the true population mean in this case?

a. 4.9

b. 6.6

c. 3.9

d. 3.3

e. 5.6

Answer: E

93. An economist is interested in studying the monthly incomes of consumers in a particular region. The population standard deviation of monthly income is known to be R1000. A random sample of 50 individuals resulted in an average monthly income of R15000. What is the total width of the 90 % confidence interval?

a. 465

b. 419

c. 444

d. 489

e. 425

Answer: A

94. An economist is interested in studying the monthly incomes of consumers in a particular region. The population standard deviation of monthly income is known to be R900. A random sample of 50 individuals resulted in an average monthly income of R15000. What is the total width of the 90 % confidence interval?

a. 465

b. 419

c. 444

d. 489

e. 425

Answer: B

95. An economist is interested in studying the monthly incomes of consumers in a particular region. The population standard deviation of monthly income is known to be R1000. A random sample of 55 individuals resulted in an average monthly income of R15000. What is the total width of the 90 % confidence interval?

- a. 465
- b. 419
- c. 444
- d. 489
- e. 425

Answer: C

96. An economist is interested in studying the monthly incomes of consumers in a particular region. The population standard deviation of monthly income is known to be R1050. A random sample of 50 individuals resulted in an average monthly income of R15000. What is the total width of the 90 % confidence interval?

- a. 465
- b. 419
- c. 444
- d. 489
- e. 425

Answer: D

97. An economist is interested in studying the monthly incomes of consumers in a particular region. The population standard deviation of monthly income is known to be R1000. A random sample of 60 individuals resulted in an average monthly income of R15000. What is the total width of the 90 % confidence interval?

- a. 465
- b. 419
- c. 444
- d. 489
- e. 42

Answer: E

98. Sand is packed into bags which are then weighed on scales. It is known that if full bags of sand are intended to weigh  $\mu$  kg, then the weight recorded by the scales will be normally

distributed with a mean  $\mu$  kg and a standard deviation of 0.36kg. How many times would a full sack have to be weighed so that the estimate of the weight would be within 0.15 kg of the true weight with 95 % confidence?

- a. 23
- b. 43
- c. 13
- d. 28
- e. 18

Answer: A

99. Sand is packed into bags which are then weighed on scales. It is known that if full bags of sand are intended to weigh  $\mu$  kg, then the weight recorded by the scales will be normally distributed with a mean  $\mu$  kg and a standard deviation of 0.5kg. How many times would a full sack have to be weighed so that the estimate of the weight would be within 0.15 kg of the true weight with 95 % confidence?

- a. 23
- b. 43
- c. 13
- d. 28
- e. 18

Answer: B

100. Sand is packed into bags which are then weighed on scales. It is known that if full bags of sand are intended to weigh  $\mu$  kg, then the weight recorded by the scales will be normally distributed with a mean  $\mu$  kg and a standard deviation of 0.36kg. How many times would a full sack have to be weighed so that the estimate of the weight would be within 0.2 kg of the true weight with 95 % confidence?

- a. 23
- b. 43
- c. 13
- d. 28
- e. 18

Answer: C

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