

Questions: Introduction to confidence intervals

Millie Harris

Summary

A selection of questions to test your understanding of confidence intervals using the normal distribution.

Before attempting these questions it is highly recommended that you read [Guide: Introduction to confidence intervals](#).

Q1

Identify the confidence level from these α values.

- 1.1. $\alpha = 0.05$
- 1.2. $\alpha = 0.1$
- 1.3. $\alpha = 0.07$

Q2

Using the normal distribution, what are the Z -values for these alpha values? You may find [Calculator: Z-score](#) helpful.

- 2.1. $\alpha = 0.05$
- 2.2. $\alpha = 0.1$
- 2.3. $\alpha = 0.07$

Q3

Cantor's Confectionery want to calculate a 99% confidence interval for the weight of 178 chocolate swirls. The average weight of this sample is 14g and the standard deviation is 0.75g.

- 3.1. Identify the following:

- sample size n
- sample mean $\bar{x}$
- sample standard deviation s
- alpha value α
- Z-value $Z_{\alpha/2}$

3.2. Use the information in 3.1 to construct a 99% confidence interval for the weight of Cantor's Confectionery's chocolate swirls. Give your answers to 3 decimal places.

3.3. Explain what the confidence interval tells you.

Q4

You are given the following data.

Quantity	Value
s	4
$\bar{x}$	31
n	59

Use the summary table below to construct the following:

- 4.1. a 90% CI.
- 4.2. a 95% CI.
- 4.3. a 99% CI.

You should give you answers to 2 decimal places.

Q5

You are given a 90% CI as $[98.1, 102.5]$ with a sample size of 121. Work out an estimate of the sample mean $\bar{x}$ and sample standard deviation s associated to this confidence interval. Explain why this can only be an estimate.

After attempting the questions above, please click [this link](#) to find the answers.

Version history and licensing

v1.0: initial version created 12/25 by Millie Harris as part of a University of St Andrews VIP project.

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