Answers: Introduction to confidence intervals

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Summary

Answers to questions on introduction to confidence intervals.

These are the answers to Questions: Introduction to confidence intervals.

Please attempt the questions before reading these answers.

Q1

1.1. 95% or 0.95

1.2. 90% or 0.90

1.3. 99% or 0.99

Q2

2.1. $Z_{\frac{\alpha}{2}} = 1.960$

2.2. $Z_{\frac{\alpha}{2}} = 1.645$

2.3. $Z_{\frac{\alpha}{2}} = 2.576$

Q3

3.1. $n = 178$

3.2. $\bar{x} = 14$

3.3. $\sigma = 0.75$

3.4. $\alpha = 0.1$

3.5. $Z_{\frac{\alpha}{2}} = 2.576$

Q4

4.1.

From **Q3**:

- $\bar{x} = 14$

- $Z_{\frac{\alpha}{2}} = 2.576$

- $\sigma = 0.75$

- $n = 178$

$= [14 - 2.576(\frac{0.75}{\sqrt{178}}), 14 + 2.576(\frac{0.75}{\sqrt{178}})]$

$= [13.855, 14.145]$

4.2 If Cantor's Confectionery were to repeat the study several times, they would expect the true mean of the weights of their chocolate swirls to lie between 13.855 grams and 14.145 grams.

Q5

5.1

- $\bar{x} = 31$

- $\sigma = 4$

- $n = 59$

- $Z_{\frac{\alpha}{2}} = 1.645$

$= [31 - 1.645(\frac{4}{\sqrt{59}}), 31 + 1.645(\frac{4}{\sqrt{59}})]$

$= [30.14, 31.86]$

5.2

- $\bar{x} = 31$

- $\sigma = 4$

- $n = 59$

- $Z_{\frac{\alpha}{2}} = 1.960$

$= [31 - 1.960(\frac{4}{\sqrt{59}}), 31 + 1.960(\frac{4}{\sqrt{59}})]$

$= [29.98, 32.02]$

5.3

- $\bar{x} = 31$

- $\sigma = 4$

- $n = 59$

- $Z_{\frac{\alpha}{2}} = 2.576$

$= [31 - 2.576(\frac{4}{\sqrt{59}}), 31 + 2.576(\frac{4}{\sqrt{59}})]$

$= [29.66, 32.34]$

Version history and licensing

v1.0: initial version created 12/04 by mh392 (as part of a University of St Andrews VIP project)