

Exercise walk-through

7.2

Constructing a Confidence Interval for a Population Mean

AP Statistics

Two-mean test and paired data

A **two-sample t-test** t of
 $H_0 : \mu_1 = \mu_2$ - **do not pool** (unlike
 proportions):

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{s_1^2/n_1 + s_2^2/n_2}}$$

Same subjects measured twice? Use a
paired t-test t : reduce each
 pair to a difference d , then a one-sample
 t .

Brands

$\bar{x}_1 = 85, \bar{x}_2 = 78; SE = \sqrt{2}$:

$$t = \frac{7}{1.414} \approx 4.95$$

$df = 8, p \approx 0.001$: reject.

Exercises 2.1-2.3

2.1 Write the confidence-interval formula for a mean.

[1]

2.2 State the degrees of freedom for a one-sample t interval with $n = 25$.

[1]

2.3 $\bar{x} = 50$, $s = 10$, $n = 25$, $t^* = 2.06$. Find the margin of error.

[2]

Exercises 2.1-2.3

2.1 Write the confidence-interval formula for a mean.

[1]

2.1

- $\bar{x} \pm t^* \frac{s}{\sqrt{n}}$

2.2 State the degrees of freedom for a one-sample t interval with $n = 25$.

[1]

2.2

- $n - 1 = 24$

2.3 $\bar{x} = 50$, $s = 10$, $n = 25$, $t^* = 2.06$. Find the margin of error.

[2]

2.3

- $ME = 2.06 \times \frac{10}{\sqrt{25}} = 2.06 \times 2 = 4.12$

Exercises 3.1-3.2

3.1 A confidence interval for a mean uses the _____ critical value.

[1]

☐A z^* B t^* C p D χ^2 ☐A n B $n - 1$ C $n + 1$ D $2n$

Exercises 3.1-3.2

3.1 A confidence interval for a mean uses the _____ critical value.

[1]

☐A z^* B t^* C p D χ^2

3.1 B

- t^* .

3.2 The degrees of freedom for a one-sample t interval are

[1]

☐A n B $n - 1$ C $n + 1$ D $2n$

3.2 B

- $n - 1$.

Exercise 3.3 (a)

3.3 $\bar{x} = 80$, $s = 12$, $n = 36$, $t^* = 2.03$.

(a) Find the standard error $\frac{s}{\sqrt{n}}$.

[1]

Exercise 3.3 (a)

3.3 $\bar{x} = 80$, $s = 12$, $n = 36$, $t^* = 2.03$.

(a) Find the standard error $\frac{s}{\sqrt{n}}$.

[1]

(a)

- $\frac{12}{\sqrt{36}} = 2$

Exercise 3.3 (b)

3.3 $\bar{x} = 80$, $s = 12$, $n = 36$, $t^* = 2.03$.

(b) Find the margin of error.

[2]

Exercise 3.3 (b)

3.3 $\bar{x} = 80$, $s = 12$, $n = 36$, $t^* = 2.03$.

(b) Find the margin of error.

[2]

(b)

- $ME = 2.03 \times 2 = 4.06$