

Exercise walk-through

Skills Focus: Selecting an Appropriate Inference Procedure ■ 9.6

eXercise

You must be able to

- choose the right procedure across proportions, means, chi-square, and slopes
- match the procedure to the data type and the question asked

Method — Matching procedure to question

- **One/two proportions** — a categorical variable's proportion, or comparing two.
- **One/two means (t)** — a quantitative variable's mean, or comparing two.
- **Chi-square** — goodness of fit, homogeneity, or independence for categorical counts.
- **Slope (t)** — the relationship between **two quantitative** variables.

Then decide: **estimate** (confidence interval) or **test a claim** (hypothesis test).

Method — Worked choices

“Confidence interval for the mean height” – quantitative, one sample, estimate → **one-sample t interval**. “Test whether exam score depends on hours studied (both numeric)” – a relationship between two quantitative variables → **slope t test**.

Practice 2.1 ■ 1 mark

State which procedure to use for a single population mean.

Solution 2.1

Method: Matching procedure to question

Worked steps

a one-sample t procedure for a mean **B1**.

Practice 2.2 ■ 1 mark

State which procedure to use for the relationship between two quantitative variables.

Solution 2.2

Method: Matching procedure to question

Worked steps

a t procedure for the slope of the regression line **B1**.

Practice 2.3 ■ 1 mark

State how to decide between a confidence interval and a hypothesis test.

Solution 2.3

Method: Matching procedure to question

Worked steps

use a confidence interval to estimate a parameter; use a hypothesis test to evaluate a claim **B1**.

Exam-style 3.1 ■ 1 mark

Inference about the relationship between two quantitative variables uses a test for the

- A** proportion
- B** mean
- C** slope
- D** chi-square statistic

Solution 3.1

A proportion

B mean

C slope



D chi-square statistic

Worked steps

C.

Exam-style 3.2 ■ 1 mark

To test whether one categorical variable matches a claimed distribution, use a

- A** t-test
- B** chi-square goodness-of-fit test
- C** slope test
- D** z-interval

Solution 3.2

Method: Matching procedure to question

A t-test

B chi-square goodness-of-fit test



C slope test

D z-interval

Worked steps

B.

Exam-style 3.3 ■ 1 mark

A study asks whether hours studied predicts exam score.

- (a) Name the type of variables.
- (b) Name the inference procedure.
- (c) State the null hypothesis.

Solution 3.3

Method: Worked choices

Worked steps

(a) two quantitative variables **B1**. (b) a test for the slope of a regression model **B1**. (c) $H_0 : \beta = 0$ **B1**.