Exercise walk-through

Skills Focus: Selecting, Implementing, and Communicating Inference Procedures ▪ 7.10

eXercise

You must be able to

- decide between a procedure for a **proportion** (categorical) and a **mean** (quantitative)
- decide between a **one-sample** and a **two-sample** procedure
- decide between a **confidence interval** and a **hypothesis test**

Method — Choosing a procedure

- **Proportion vs mean** — categorical data (counts/percentages) → **proportion**; quantitative data (measurements) → **mean**.
- **One vs two sample** — comparing to a fixed value → **one-sample**; comparing two groups → **two-sample**.
- **Interval vs test** — *estimate* a value → **confidence interval**; *test a claim* → **hypothesis test**.

Method — Worked choices

"Estimate the mean weight of a bag of rice" – quantitative, one sample, estimate → **one-sample** t **interval**. "Test whether two brands differ in mean weight" – quantitative, two samples, test a claim → **two-sample** t **test**.

Practice 2.1 ▪ 1 mark

State how to decide between a proportion and a mean procedure.

Solution 2.1

Method: Choosing a procedure

Worked steps

categorical data uses a proportion procedure; quantitative data uses a mean procedure B1.

Practice 2.2 ▪ 1 mark

State how to decide between a one-sample and a two-sample procedure.

Solution 2.2

Method: Choosing a procedure

Worked steps

comparing to a fixed value is one-sample; comparing two groups is two-sample B1.

Practice 2.3 ▪ 2 marks

State the difference between a confidence interval and a hypothesis test.

Solution 2.3

Method: Choosing a procedure

Worked steps

a confidence interval estimates a parameter; a hypothesis test evaluates a specific claim B1 B1.

Exam-style 3.1 ▪ 1 mark

To estimate a categorical variable's population value, use a procedure for a

A mean

B proportion

C slope

D variance

Solution 3.1

Method: Choosing a procedure

A mean

B proportion ✓

C slope

D variance

Worked steps

B.

Exam-style 3.2 ▪ 1 mark

Comparing the average heights of two groups uses a

A one-proportion test

B two-sample t procedure

C chi-square test

D one-mean interval only

Solution 3.2

Method: Choosing a procedure

A one-proportion test

B two-sample t procedure ✓

C chi-square test

D one-mean interval only

Worked steps

B.

Exam-style 3.3 ▪ 1 mark

A study compares the proportion of defective items from two factories.
(a) Name the type of data.
(b) State whether it is a one- or two-sample situation.
(c) Name a suitable procedure.

Solution 3.3

Method: Choosing a procedure

Worked steps

(a) categorical (proportions) B1. (b) two-sample B1. (c) a two-proportion test (or confidence interval) B1.