

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

Name: _____ Class: _____ Date: _____ Total: 9 marks

Objective

Build the skills to answer exam questions on **selecting an inference procedure**.

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**

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ 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**.

■ 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**.

2 Practice

2.1 State how to decide between a proportion and a mean procedure. [1]

2.2 State how to decide between a one-sample and a two-sample procedure. [1]

2.3 State the difference between a confidence interval and a hypothesis test. [2]

3 Exam-style questions

3.1 To estimate a categorical variable's population value, use a procedure for a [1]

- **A** mean
- **B** proportion
- **C** slope
- **D** variance

3.2 Comparing the average heights of two groups uses a [1]

- **A** one-proportion test
- **B** two-sample t procedure
- **C** chi-square test
- **D** one-mean interval only

3.3 A study compares the proportion of defective items from two factories.

(a) Name the type of data. [1]

(b) State whether it is a one- or two-sample situation. [1]

(c) Name a suitable procedure. [1]

Solutions

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

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

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

3.1 B.

3.2 B.

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