

6.5 Interpreting p-Values

Name: _____ Class: _____ Date: _____ Total: 8 marks

KEY WORDS p-value P 值 • null hypothesis 原假设

Objective

Build the skills to answer exam questions on **interpreting p-values**.

You must be able to:

- define a **p-value** as the probability of a result at least as extreme, **assuming H_0 is true**
- explain that a **small** p-value is evidence **against H_0**

1 Worked examples

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

■ What a p-value is

The **p-value** is the probability of getting a sample result **as extreme or more extreme** than the one observed, **assuming the null hypothesis is true**.

■ Interpreting it

- A **small** p-value means the observed data would be unlikely if H_0 were true → **evidence against H_0** .
- A **large** p-value means the data are consistent with H_0 .

2 Practice

2.1 Define a p-value. [1]

2.2 State what a small p-value suggests. [1]

2.3 State the assumption made when computing a p-value. [1]

3 Exam-style questions

3.1 A p-value is computed assuming [1]

- | | |
|---|---|
| A | B |
| C | D |
- A H_a is true
 - B H_0 is true
 - C the sample is biased
 - D nothing

3.2 A small p-value gives evidence [1]

- | | |
|---|---|
| A | B |
| C | D |
- A for H_0
 - B against H_0
 - C of bias
 - D of nothing

3.3 A test gives a p-value of 0.02.

- (a) State what this value measures. [1]
- (b) State whether it is strong or weak evidence against H_0 . [1]
- (c) State the assumption behind it. [1]