

2.1 Introducing Statistics: Are Variables Related?

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

KEY WORDS association 关联 • explanatory variable 解释变量 • response variable 响应变量

Objective

Build the skills to answer exam questions on **whether variables are related**.

You must be able to:

- pose a **statistical question** about a relationship between two variables
- distinguish an **explanatory variable** 解释变量 from a **response variable** 响应变量
- recognise that an **association** 关联 describes how two variables vary together

1 Worked examples

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

■ **Explanatory and response**

The **explanatory variable** is the one we think explains or predicts changes; the **response variable** is the outcome we measure.

■ **Association**

An **association** means the two variables **vary together** — as one changes, the other tends to change too. (An association is not the same as causation.)

2 Practice

2.1 State the difference between an explanatory and a response variable. [2]

2.2 Define an association between two variables. [1]

2.3 In “does study time affect test score?”, name the explanatory variable. [1]

3 Exam-style questions

3.1 The variable we think explains or predicts changes is the [1]

- A

B

C

D
- A response variable

B explanatory variable

C categorical variable

D outlier

3.2 An association means that two variables [1]

- A

B

C

D
- A are unrelated

B vary together

C are identical

D are both categorical

3.3 A study examines hours of sleep and reaction time.

- (a) Name the explanatory variable. [1]

(b) Name the response variable. [1]

(c) State what an association between them would show. [1]