

Exercise walk-through

Change in Tandem ■ 1.1

eXercise

You must be able to

- define a **function** 函数 as mapping each input to exactly one output
- identify the **domain** 定义域 and **range** 值域
- distinguish the **independent** and **dependent variable** 自变量与因变量

Method — Functions

A **function** maps each input value to **exactly one** output value. The set of inputs is the **domain**; the set of outputs is the **range**.

Method — Variables and the rule

The **independent variable** (x) is the input; the **dependent variable** (y) is the output. Input and output vary **in tandem** according to the **function rule**, which can be given graphically, numerically, analytically, or verbally.

Practice 2.1 ■ 1 mark

Define a function.

Solution 2.1

Worked steps

a relation that maps each input value to exactly one output value **B1**.

Practice 2.2 ■ 2 marks

State the difference between the domain and the range.

Solution 2.2

Method: Functions

Worked steps

the domain is the set of input values; the range is the set of output values **B1** **B1**.

Practice 2.3 ■ 1 mark

For $f(x) = 2x + 1$, find $f(3)$.

Solution 2.3

Worked steps

$$f(3) = 2(3) + 1 = 7 \quad \text{B1}.$$

Exam-style 3.1 ■ 1 mark

A function maps each input to

- A** many outputs
- B** exactly one output
- C** no output
- D** two outputs

Solution 3.1

Method: Functions

A many outputs

B exactly one output



C no output

D two outputs

Worked steps

B.

Exam-style 3.2 ■ 1 mark

The set of input values of a function is its

A range

B domain

C rule

D graph

Solution 3.2

A range

B domain 

C rule

D graph

Worked steps

B.

Exam-style 3.3 ■ 1 mark

$$f(x) = x^2 \text{ for } x \text{ in } \{1, 2, 3\}.$$

- (a) Find $f(2)$.
- (b) State the range.
- (c) Name the independent variable.

Solution 3.3

Method: Variables and the rule

Worked steps

(a) $f(2) = 4$ B1. (b) $\{1, 4, 9\}$ B1. (c) $\times$ B1.