

1.1 Change in Tandem

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

KEY WORDS function 函数 • domain 定义域 • range 值域 • dependent variable 自变量与因变量
• independent variable 自变量

Objective

Build the skills to answer exam questions on **functions and change in tandem**.

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

1 Worked examples

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

■ 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**.

■ 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.

2 Practice

2.1 Define a function. [1]

2.2 State the difference between the domain and the range. [2]

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

3 Exam-style questions

3.1 A function maps each input to [1]

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

3.2 The set of input values of a function is its [1]

- **A** range
- **B** domain
- **C** rule
- **D** graph

3.3 $f(x) = x^2$ for x in $\{1, 2, 3\}$.

(a) Find $f(2)$. [1]

(b) State the range. [1]

(c) Name the independent variable. [1]

Solutions

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

2.2 the domain is the set of input values; the range is the set of output values.

2.3 $f(3) = 2(3) + 1 = 7$.

3.1 B.

3.2 B.

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