

3.15 Random Values

Name: _____ Class: _____ Date: _____

Total: 8 marks**KEY WORDS** random 随机 • variability 变化 • unpredictable 不可预测 • string 字符串

Objective

Build the skills to answer exam questions on **random values**.

You must be able to:

- explain how a program generates a **random** 随机 value within a range
- use a random number to introduce **variability** 变化
- apply random values to model **unpredictable** 不可预测 events
- explain why repeated runs can produce different outputs

1 Worked examples

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

■ Random values

A program can generate a **random** value within a specified range to introduce **variability** into its behaviour.

■ Modelling chance

Random values model **unpredictable** events such as a dice roll or coin flip.

■ Different outputs

Because the value is random, running the same program again can produce a **different output** each time — `random(1, 6)` gives some whole number from 1 to 6.

2 Practice

2.1 State one use of random values in a program. [1]

2.2 State why a program using randomness can give different results each run. [1]

2.3 State one everyday event that can be modelled with random values. [1]

3 Exam-style questions

3.1 A program generates a random number to add [1]

- **A** a syntax error
 - **B** variability
 - **C** a comment
 - **D** a byte
-

3.2 Rolling a die in a program is modelled with a [1]

- **A** fixed value
 - **B** random value
 - **C** string
 - **D** loop
-

3.3 A dice game uses `random(1, 6)`.

(a) State the possible outputs. [1]

(b) State whether two runs must give the same result. [1]

(c) State one reason to use randomness. [1]

Solutions

2.1 any one of: model chance, add variability, shuffle, simulate an event.

2.2 the random value can differ each time the program runs.

2.3 a dice roll, a coin flip, or shuffling cards (any one).

3.1 B.

3.2 B.

3.3 (a) a whole number from 1 to 6. (b) no. (c) to model an unpredictable event (or add variety).