

4.4 Array Traversals

Name: _____ Class: _____ Date: _____

Total: 8 marks

KEY WORDS enhanced for loop 增强 • traverse 遍历 • array 数组

Objective

Build the skills to answer exam questions on **array traversals**.

You must be able to:

- **traverse** 遍历 an array with a **for** loop that visits every index
- use an **enhanced for loop** 增强 for 循环 (for-each) to read each element
- understand that a for-each loop **cannot replace** elements in the array

1 Worked examples

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

■ Standard for traversal

```
for (int i = 0; i < a.length; i++) {  
    System.out.println(a[i]);    // has the index i  
}
```

■ Enhanced for (for-each)

```
for (int x : a) {  
    System.out.println(x);    // reads each element  
}
```

A for-each loop is simpler for **reading**, but it **cannot replace** the elements in the array — for that you need the index.

2 Practice

2.1 State the loop range used to visit every index of an array **a**.

[1]

2.2 State what an enhanced for loop **cannot** do. [1]

2.3 State how many elements a for-each loop over array **a** visits. [1]

3 Exam-style questions

3.1 An enhanced for loop (for-each) is used to [1]

A	B
C	D

- A** replace elements
- B** read each element
- C** create the array
- D** sort the array

3.2 A standard for loop over array **a** runs from 0 to [1]

A	B
C	D

- A** `a.length`
- B** `a.length - 1`
- C** 1
- D** `a.length + 1`

3.3 `int[] a = {3, 6, 9};`.

(a) Write the loop condition for a standard for loop over **a** (using **i**). [1]

(b) State whether a for-each loop can change **a**'s values. [1]

(c) State how many elements a for-each loop visits. [1]