AP COMPUTER SCIENCE A • EXERCISE SHEET

4.11 2D Array Creation and Access

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

Objective

Build the skills to answer exam questions on **2D array creation and access**.

You must be able to:

- create a **two-dimensional array** 二维数组 arranged in rows and columns
- access an element using two indices, `grid[row][col]`, both from 0
- find the number of rows and columns

1 Worked examples

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

Creating and accessing

```
int[][] grid = new int[3][4];   // 3 rows, 4 columns
grid[1][2] = 9;                 // row 1, column 2
```

Both indices start at 0.

Dimensions

- `grid.length` —the number of **rows**.
- `grid[0].length` —the number of **columns**.

2 Practice

2.1 State how to access the element in row 1, column 2 of `grid`. [1]

2.2 For `int[][] g = new int[3][5];`, state the number of rows and columns. [2]

2.3 State how to find the number of rows of a 2D array `g`. [1]

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3 Exam-style questions

3.1 A 2D array element is accessed with [1]

- **A** `grid[row]`
- **B** `grid[row][col]`
- **C** `grid(row, col)`
- **D** `grid.get(row)`

3.2 `grid.length` gives the number of [1]

- **A** columns
- **B** rows
- **C** total elements
- **D** bytes

3.3 `int[][] g = new int[4][6];`.

(a) State the number of rows. [1]

(b) State the number of columns. [1]

(c) State how to access the element in row 0, column 0. [1]

4 Go further

- work through the **4.11 2D Array Creation and Access** lesson on the **Learn** page;
- read the **2D Array** section of the AP Computer Science A handout on the **Know** page.

Solutions

2.1 `grid[1][2]`.

2.2 3 rows and 5 columns.

2.3 `g.length`.

3.1 **B**.

3.2 **B**.

3.3 (a) `4`. (b) `6`. (c) `g[0][0]`.