AP COMPUTER SCIENCE A • EXERCISE SHEET

1.3 Expressions and Output

Name: _____ Class: _____ Date: _____ **Total: 8 marks**

Objective

Build the skills to answer exam questions on **expressions and output**.

You must be able to:

- evaluate arithmetic **expressions** 表达式 using `+`, `-`, `*`, `/`, and `%`
- understand **integer division** 整数除法 and the remainder operator `%`
- apply **operator precedence** 运算符优先级
- use `System.out.print` and `System.out.println`

1 Worked examples

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

■ Arithmetic and integer division

With two `int` operands, `/` is **integer division** (the fraction is dropped) and `%` gives the remainder: `7 / 2` is `3` and `7 % 2` is `1`.

■ Precedence and mixing types

`*`, `/`, `%` are done before `+`, `-`; use parentheses to change the order. Mixing an `int` and a `double` gives a `double`: `5 / 2.0` is `2.5`.

■ Output

`System.out.print` writes without a newline; `System.out.println` adds a newline at the end.

2 Practice

2.1 Evaluate `7 / 2` in Java (integer division). [1]

2.2 Evaluate `7 % 2`. [1]

2.3 State the difference between `print` and `println`. [1]

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3 Exam-style questions

3.1 In Java, `9 / 4` evaluates to [1]

- **A** `2.25`
- **B** `2`
- **C** `3`
- **D** `1`

3.2 `System.out.println` differs from `print` by [1]

- **A** printing nothing
- **B** adding a newline at the end
- **C** rounding the value
- **D** casting the value

3.3 Evaluate the following.

(a) `10 % 3`. [1]

(b) `10 / 3`. [1]

(c) State the value **and type** of `10 / 3.0`. [1]

4 Go further

- work through the **1.3 Expressions and Output** lesson on the **Learn** page;
- read the **Primitive Types** section of the AP Computer Science A handout on the **Know** page.

Solutions

2.1 `3`.

2.2 `1`.

2.3 `println` moves to a new line after printing; `print` does not.

3.1 B.

3.2 B.

3.3 (a) `1`. (b) `3`. (c) about `3.33`, a `double`.