AQA Computer Science A-Level

4.5.1 Number systems

Past Paper Questions

Additional Specimen AS Paper 2

0 1 $\mathbb{R}$ denotes the set of real numbers. A real number can either be rational or irrational.

0 1 . 1   Describe the set of rational numbers.

[2 marks]

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0 1 . 2   Explain why all integers are rational numbers.

[1 mark]

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| 0 | 1 | . | 1 | Four numbers are listed in the rows of **Table 1**.

For each row in **Table 1**, shade **one or more** lozenges, in the appropriate column(s), to indicate which set(s) of numbers the number on the row is a member of.

As an example, the first row has been completed for you, to indicate that $\sqrt{2}$ is a member of the set of irrational numbers **and** the set of real numbers, but is **not** a member of the sets of natural, integer or rational numbers.

[3 marks]

Table 1

	Natural	Integer	Rational	Irrational	Real
$\sqrt{2}$	○	○	○	●	●
-64	○	○	○	○	○
10	○	○	○	○	○
5/128	○	○	○	○	○

| 0 | 1 | . | 2 | Explain the purpose of ordinal numbers.

[1 mark]

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0 1   **Table 1** shows four values.

Table 1

A	$\sqrt{2}$
B	$(-9)^2$
C	-4
D	0.5

0 1 . 1   Shade in **one** lozenge to indicate which of the values represented by the letters **A–D** in **Table 1** is a natural number.

A ○   B ○   C ○   D ○

[1 mark]

0 1 . 2   Shade in **one** lozenge to indicate which of the values represented by the letters **A–D** in **Table 1** is an irrational number.

A ○   B ○   C ○   D ○

[1 mark]

0 1 . 3   Shade in **one** lozenge to indicate which of the values represented by the letters **A–D** in **Table 1** is an integer but **not** a natural number.

A ○   B ○   C ○   D ○

[1 mark]

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0 1

0 1 . 1 Shade in **one** lozenge to indicate which of the symbols represents the set of rational numbers.

[1 mark]

$\mathbb{Q}$ ○　$\mathbb{R}$ ○　$\mathbb{Z}$ ○　$\mathbb{N}$ ○

0 1 . 2 Shade in **one** lozenge to indicate which of the symbols represents the set of numbers that does **not** include **all** of the numbers -3, 4 and 9.

[1 mark]

$\mathbb{Q}$ ○　$\mathbb{R}$ ○　$\mathbb{Z}$ ○　$\mathbb{N}$ ○

0 1 . 3 Shade in **one** lozenge to indicate which of the symbols represents the set of numbers that is most suitable for measuring the circumference of a ball.

[1 mark]

$\mathbb{Q}$ ○　$\mathbb{R}$ ○　$\mathbb{Z}$ ○　$\mathbb{N}$ ○

Specimen AS Paper 2

0 1 . 1 Give **one** example of a natural number.

[1 mark]

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0 1 . 2 Give **one** example of an irrational number.

[1 mark]

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