

## Functions – The basics

Please write clearly in block capitals

Forename:

Surname:

### Materials

For this paper you must have:

- mathematical instruments



You must **not** use a calculator.

### Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

### Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

### Advice

- In all calculations, show clearly how you work out your answer.

**1** Work out the value of each function.

(Level 5)

**1(a)** If  $f(x) = x - 10$ , find  $f(20)$

[1 mark]

Answer \_\_\_\_\_

**1(b)** If  $g(x) = -\frac{x}{4}$ , find  $g(-40)$

[1 mark]

Answer \_\_\_\_\_

**1(c)** If  $f(x) = \frac{-x^2+10}{5}$ , find  $f(5)$

[1 mark]

Answer \_\_\_\_\_

**1(d)** If  $h(x) = -5(x - 2)^2$ , find  $h(12)$

[1 mark]

Answer \_\_\_\_\_

**1(e)** If  $g(x) = \frac{x-3}{4}$ , find  $g(83)$

[1 mark]

Answer \_\_\_\_\_

Turn over for next question

2 A function is given by  $f(x) = 3x + 3$

(Level 5)

Complete the table below:

[2 marks]

| Input   | Answer |
|---------|--------|
| $f(2)$  | 9      |
| $f(3)$  |        |
| $f(-3)$ |        |
|         | 3      |
| $f(a)$  |        |

3 Considering the function  $f(x) = 2x^2 - 1$

(Level 5)

Complete the table below:

[2 marks]

| Input   | Output |
|---------|--------|
| $f(-1)$ |        |
| $f(4)$  |        |
| $f(2)$  |        |
| $f(-b)$ |        |
| $f(1)$  |        |



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4 Given that  $f(x) = (x - 5)^2$ , find:

(Level 5)

4(a)  $f(3)$

[1 mark]

Answer \_\_\_\_\_

4(b)  $f(0)$

[1 mark]

Answer \_\_\_\_\_

4(c) Solve  $f(x) = 0$

[2 marks]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

$x =$  \_\_\_\_\_



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**5** Work out the value of each function.

(Level 5)

**5(a)**  $f(x) = x - 10$

Solve  $f(x) = 0$

[1 mark]

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$x =$  \_\_\_\_\_

**5(b)**  $g(x) = -\frac{x}{4}$

Solve  $g(x) = 0.25$

[1 mark]

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Answer \_\_\_\_\_

**5(c)**  $f(x) = \frac{x^2 + 11}{5}$

Solve  $f(x) = 12$

[2 marks]

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Answer \_\_\_\_\_

**5(d)**  $h(x) = -5(x - 2)^2$

Solve  $h(x) = -5$

[2 marks]

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Answer \_\_\_\_\_

**End of questions**