

## Completing the Square ( $a > 1$ )

Please write clearly in block capitals

Forename:

Surname:

### Materials

For this paper you must have:

- mathematical instruments



You **can** 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 Write the following in the form  $a(x + b)^2 + c$

1(a)  $2x^2 + 8x + 10$

[2 marks]

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Answer \_\_\_\_\_

1(b)  $2x^2 - 16x - 2$

[2 marks]

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Answer \_\_\_\_\_

1(c)  $3x^2 - 24x + 6$

[2 marks]

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Answer \_\_\_\_\_

Turn over for next question

**2** Write the following in the form  $a(x + b)^2 + c$

**2(a)**  $3x^2 + 18x - 1$

[2 marks]

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Answer \_\_\_\_\_

**2(b)**  $4x^2 - 8x - 8$

[2 marks]

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Answer \_\_\_\_\_

**2(c)**  $6x^2 - 24x - 8$

[2 marks]

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Answer \_\_\_\_\_

Turn over for next question

**3** Write the following in the form  $a(x + b)^2 + c$

**3(a)**  $3x^2 + 6x - 8$

[2 marks]

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Answer \_\_\_\_\_

**3(b)**  $5x^2 - 20x - 12$

[2 marks]

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Answer \_\_\_\_\_

**3(c)**  $8x^2 + 32x - 12$

[2 marks]

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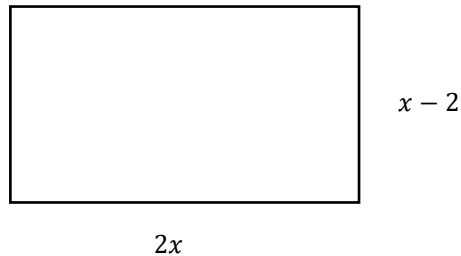
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Answer \_\_\_\_\_

**Turn over for next question**

- 4** A rectangle has sides of  $x$  and  $(x - 2)$  cm.  
The area of the rectangle is  $16 \text{ cm}^2$



Not drawn  
accurately

- 4(a)** Show that  $2(x - 1)^2 - 18 = 0$

**[3 marks]**

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Answer \_\_\_\_\_

- 4(b)** Hence, or otherwise, find the perimeter of the rectangle.

**[3 marks]**

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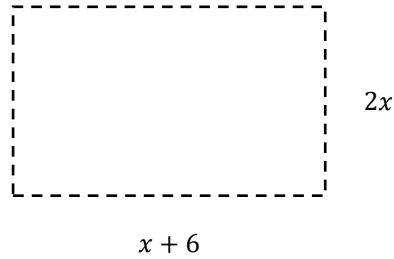


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Answer \_\_\_\_\_

**Turn over for next question**

- 5 A small farmers field is shown below.



Not drawn  
accurately

Given that the area of the field is  $27 \text{ m}^2$

Find the perimeter of the field in meters.

Give your answer in the form  $a\sqrt{10} - b$  where  $a$  and  $b$  are integers.

[6 marks]

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Answer \_\_\_\_\_

**End of Questions**