Name:.....

Total Marks:.....

GCSE (9-1) Grade 6 Expanding Triple Brackets

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name.
- Answer **all** questions.
- Answer the questions in the spaces provided
  - there may be more space than you need.
- **Show all your working out**

Information

- The total mark for this paper is 60.
- The marks for **each** question are shown in brackets.
  - use this as a guide as to how much time to spend on each question.
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed

Advice

- Read each question carefully before you start to answer it
- Attempt every question
- Check your answers if you have time at the end

1. Expand and Simplify $(x+1)(x+3)(x+4)$

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(Total 3 marks)

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2. Expand and Simplify $(2x+5)(3x+7)(x+5)$

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(Total 3 marks)

3. Expand and Simplify $(x-3)(x-1)(2x-3)$

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(Total 4 marks)

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4. Expand and Simplify $(2x+3)(x-2)(3x-1)$

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(Total 4 marks)

5. Expand and Simplify $(x+4)^2(3x-7)$

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(Total 4 marks)

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6. Expand and Simplify $(5x+3)(2x-1)^2$

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(Total 4 marks)

7. Show that $(2x + 3)^3 = 8x^3 + 36x^2 + 54x + 27$ for all values of x.

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(Total 4 marks)

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8. Show that $(x - 4)^2(x + 3)$ simplifies to $x^3 + ax^2 + bx + c$ where a, b and c are integers.

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(Total 4 marks)

9. Express $(3x - 1)^3$ in the form $ax^3 + bx^2 + cx + d$ where a, b, c, d are integers.

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(Total 4 marks)

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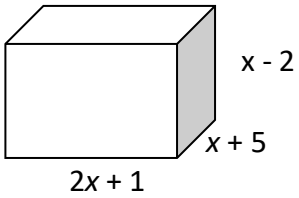
10. $(3x + 5)(x - 4)(3x - 2) = 9x^3 + Ax^2 + Bx + 40$

Work out the value of A and the value of B.

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(Total 4 marks)

11. Here is a cuboid.



All measurements are in centimetres.

Show that the volume of the cuboid is $(2x^3 + 7x^2 - 17x - 10)$ cm^3

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(Total 4 marks)

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12. A cuboid has dimensions $x + 2$ cm, $2x - 1$ cm and $2x + 3$ cm.
Show that the volume of the cuboid is $4x^3 + 12x^2 + 5x - 6$ cm^3

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(Total 4 marks)

13. (a) Given that $x^3 - x^2 - 17x - 15 = (x + 3)(x^2 + bx + c)$, where b and c are constants, work out the values of b and c

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(Total 4 marks)

(b) Hence fully factorise $x^3 - x^2 - 17x - 15$

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(Total 2 marks)

14. Given that $(2x + 5y)(3x - y)(2x + y) = ax^3 + bx^2y + cx^2y + dy^3$ where a, b, c, d are constants, find the values of a, b, c and d.

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(Total 4 marks)

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15. The smallest of three consecutive positive odd numbers is $(2x - 1)$.

Work out the product of the three numbers.
Give your answer in the form $ax^3 + bx^2 + cx + d$.

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(Total 4 marks)

TOTAL FOR PAPER IS 60 MARKS