

Factorising Quadratics (Double Brackets) - Worksheet

Skill

Group A - Positive coefficients

Factorise into double brackets:

1) $x^2 + 13x + 12$

2) $x^2 + 7x + 12$

3) $x^2 + 8x + 12$

4) $x^2 + 8x + 15$

5) $x^2 + 8x + 7$

6) $x^2 + 8x + 16$

Group B - Positive and negative coefficients

Factorise into double brackets:

1) $x^2 + 5x - 24$

2) $x^2 + 4x - 12$

3) $x^2 - 10x - 24$

4) $x^2 - 10x + 16$

5) $x^2 - 10x - 39$

6) $x^2 - 10x + 25$

Group C - In the form $ax^2 + bx + c$, where $a \neq 1$

Factorise fully:

1) $2x^2 + 3x + 1$

2) $2x^2 + 5x + 2$

3) $3x^2 + 10x + 3$

4) $2x^2 - x - 1$

5) $2x^2 - 5x + 2$

6) $3x^2 + 8x - 3$

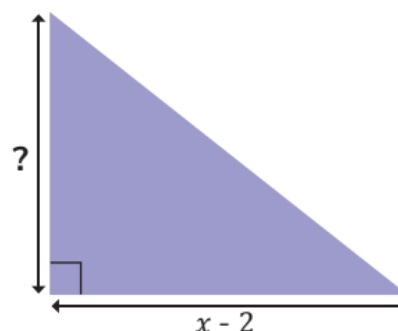
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Applied

- 1) The area of the rectangle is equal to $x^2 + 9x + 14$. Write an expression for the width and length of the shape.



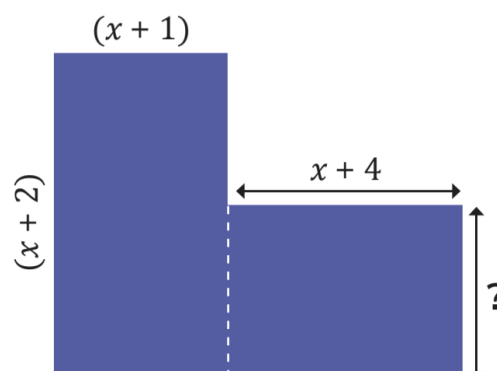
- 2) The area of the triangle is equal to $x^2 + x - 6$. Write an expression for the height of the shape, labelled '?'. The base is $x - 2$.



- 3) The area of the rectangle is equal to $2x^2 - 7x + 6$. Write an expression for the width and length of the shape.



- 4) The total area of the compound shape is $3x^2 + 12x + 6$. Find the length of the side marked '?'. The top-left side is $(x + 1)$, the top-right side is $x + 4$, and the left side is $(x + 2)$.



Factorising Quadratics (Double Brackets) - Exam Questions

1. Factorise

$x^2 + 3x - 10$

.....

(2 marks)

2. Factorise

$x^2 - 12x + 27$

.....

(2 marks)

3. Factorise

$x^2 - 14x + 45$

.....

(2 marks)

4. Factorise

$2y^2 - y - 3$

.....

(2 marks)

5. Factorise

$4x^2 - 2x - 2$

.....

(2 marks)

6. Factorise

$6p^2 - 5p + 1$


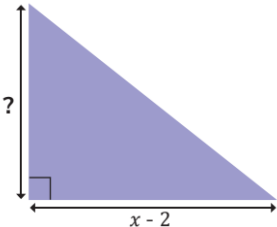

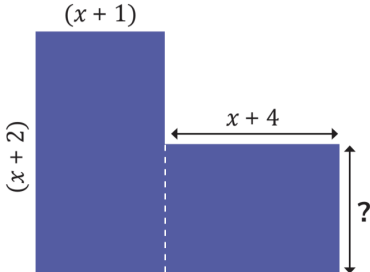
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(2 marks)

Factorising Quadratics (Double Brackets) - Answers

	Question	Answer
	Skill Questions	
Group A	Factorise into double brackets: 1) $x^2 + 13x + 12$ 2) $x^2 + 7x + 12$ 3) $x^2 + 8x + 12$ 4) $x^2 + 8x + 15$ 5) $x^2 + 8x + 7$ 6) $x^2 + 8x + 16$	1) $(x + 1)(x + 12)$ 2) $(x + 3)(x + 4)$ 3) $(x + 2)(x + 6)$ 4) $(x + 3)(x + 5)$ 5) $(x + 1)(x + 7)$ 6) $(x + 4)(x + 4) = (x + 4)^2$
Group B	Factorise into double brackets: 1) $x^2 + 5x - 24$ 2) $x^2 + 4x - 12$ 3) $x^2 - 10x - 24$ 4) $x^2 - 10x + 16$ 5) $x^2 - 10x - 39$ 6) $x^2 - 10x + 25$	1) $(x - 3)(x + 8)$ 2) $(x - 2)(x + 6)$ 3) $(x - 12)(x + 2)$ 4) $(x - 8)(x - 2)$ 5) $(x - 13)(x + 3)$ 6) $(x - 5)(x - 5) = (x - 5)^2$
Group C	Factorise fully: 1) $2x^2 + 3x + 1$ 2) $2x^2 + 5x + 2$ 3) $3x^2 + 10x + 3$ 4) $2x^2 - x - 1$ 5) $2x^2 - 5x + 2$ 6) $3x^2 + 8x - 3$	1) $(2x + 1)(x + 1)$ 2) $(2x + 1)(x + 2)$ 3) $(3x + 1)(x + 3)$ 4) $(2x + 1)(x - 1)$ 5) $(2x - 1)(x - 2)$ 6) $(3x - 1)(x + 3)$

Factorising Quadratics (Double Brackets) - Answers

	Question	Answer
	Applied Questions	
1)	<p>The area of the rectangle is equal to $x^2 + 9x + 14$. Write an expression for the width and length of the shape.</p> 	$(x + 2)$ and $(x + 7)$
2)	<p>The area of the triangle is equal to $x^2 + x - 6$. Write an expression for the height of the shape.</p> 	$2x + 6$ or $2(x + 3)$
3)	<p>The area of the rectangle is equal to $2x^2 - 7x + 6$. Write an expression for the width and length of the shape.</p> 	$2x - 3$ and $x - 2$
4)	<p>The total area of shapes A and B is $3x^2 + 12x + 6$. Find the length of the side marked '?' on B.</p> 	$2x + 1$

Factorising Quadratics (Double Brackets) - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	Factorise $x^2 + 3x - 10$	$(x \pm 2)(x \pm 5)$ $(x - 2)(x + 5)$	(1) (1)
2)	Factorise $x^2 - 12x + 27$	$(x \pm 3)(x \pm 9)$ $(x - 3)(x - 9)$	(1) (1)
3)	Factorise $x^2 - 14x + 45$	$(x \pm 5)(x \pm 9)$ $(x - 5)(x - 9)$	(1) (1)
4)	Factorise $2y^2 - y - 3$	$(2y \pm 3)(y \pm 1)$ $(2y - 3)(y + 1)$	(1) (1)
5)	Factorise $4x^2 - 2x - 2$	$(4x \pm 2)(x \pm 1)$ oe $2(2x + 1)(x - 1)$	(1) (1)
6)	Factorise $6p^2 - 5p + 1$	$(3p \pm 1)(2p \pm 1)$ $(3p - 1)(2p - 1)$	(1) (1)

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