Factorising (Mixed) - Worksheet

Skill

Group A

Factorise completely:

1) $70 + 10q$

2) $15 - 3d$

3) $8 - 12g$

4) $4x + 12y + 2$

5) $8x - 12 + 16y$

6) $27y - 12x + 18$

7) $2d^2e^2 + de$

8) $3a^3 - 6ab$

9) $7pq^2 - 49p^2q + 56pq$

Group B

Factorise completely:

1) $x^2 + 4x + 3$

2) $x^2 + 5x - 14$

3) $x^2 - 9x + 18$

4) $2x^2 + 7x + 3$

5) $2x^2 - 3x - 2$

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

Group C

Factorise completely:

1) $x^2 - 16$

2) $144 - y^2$

3) $4x^2 - 49$

4) $2y^2 - 72$

5) $x^3 - 16x$

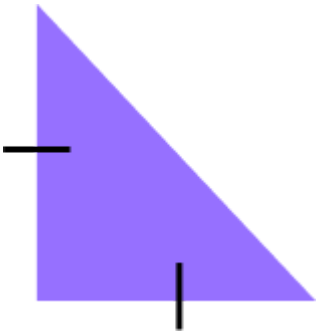
6) $64x^2 - 16y^2$

Factorising (Mixed) - Worksheet

Applied

1. The area of the rectangle is equal to $16y - 12$.
   We know that one of the sides is an integer.
   What could that integer be?

2. The area of the isosceles triangle is equal to $\frac{1}{2}x^2 + 2x + 2$.
   Write an expression for the sum of the length and the width of the triangle in the simplest form.



3. The area of B is double the area of A.
   Find an expression for the length labelled '?'

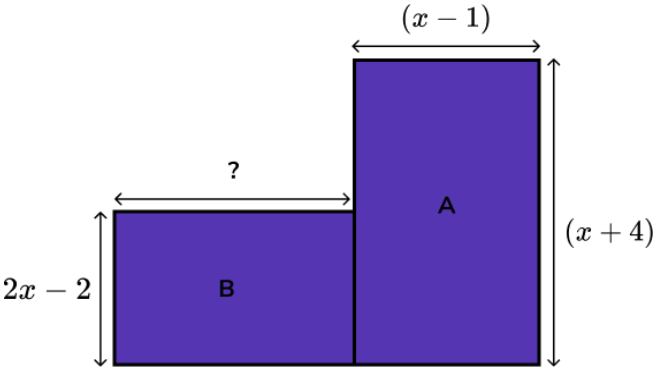


Diagram not to scale

Factorising (Mixed) - Exam Questions

1. (a) Factorise $9x - 18$

.....

(1)

(b) Factorise fully $16x^2 + 20xy$

.....

(2)

(c) Factorise $a^2 - 16$

.....

(2)

(5 marks)

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2. (a) Factorise fully $12a - 16ab$

.....

(1)

(b) Factorise $x^2 - 3x - 10$

.....

(2)

(c) Factorise $2y^2 - 9y - 5$

.....

(2)

(5 marks)

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3. (a) Factorise fully $6y^2 - 24$

.....

(2)

(b) Factorise $x^2 + 3x - 28$

.....

(2)

(c) Factorise $3y^2 - 4y - 4$

.....

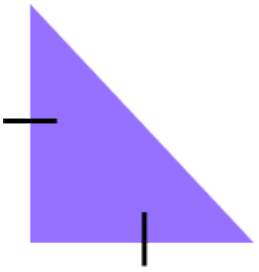
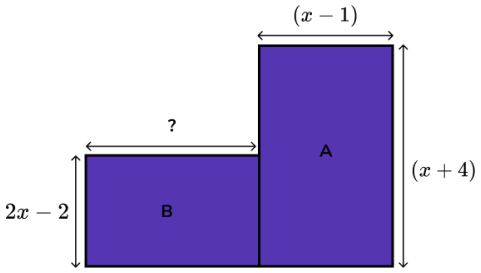
(2)

(6 marks)

Factorising (Mixed) - Answers

	Question	Answer
	Skill Questions	
Group A	Work out: **1)** $70 + 10q$ **2)** $15 - 3d$ **3)** $8 - 12g$ **4)** $4x + 12y + 2$ **5)** $8x - 12 + 16y$ **6)** $27y - 12x + 18$ **7)** $2d^2e^2 + de$ **8)** $3a^3 - 6ab$ **9)** $7pq^2 - 49p^2q + 56pq$	**1)** $10(7 + q)$ **2)** $3(5 - d)$ **3)** $4(2 - 3g)$ **4)** $2(2x + 6y + 1)$ **5)** $4(2x - 3 + 4y)$ **6)** $3(9y - 4x + 6)$ **7)** $de(2de + 1)$ **8)** $3a(a^2 - 2b)$ **9)** $7pq(q - 7p + 8)$
Group B	Work out: **1)** $x^2 + 4x + 3$ **2)** $x^2 + 5x - 14$ **3)** $x^2 - 9x + 18$ **4)** $2x^2 + 7x + 3$ **5)** $2x^2 - 3x - 2$ **6)** $3x^2 - 6x + 3$	**1)** $(x + 3)(x + 1)$ **2)** $(x + 7)(x - 2)$ **3)** $(x - 6)(x - 3)$ **4)** $(2x + 1)(x + 3)$ **5)** $(2x + 1)(x - 2)$ **6)** $3(x - 1)(x - 1)$ **or** $3(x - 1)^2$
Group C	Work out: **1)** $x^2 - 16$ **2)** $144 - y^2$ **3)** $4x^2 - 49$ **4)** $2y^2 - 72$ **5)** $x^3 - 16x$ **6)** $64x^2 - 16y^2$	**1)** $(x + 4)(x - 4)$ **2)** $(12 + y)(12 - y)$ **3)** $(2x + 7)(2x - 7)$ **4)** $2(y + 6)(y - 6)$ **5)** $x(x + 4)(x - 4)$ **6)** $16(2x - y)(2x + y)$

Factorising (Mixed) - Answers

	Question	Answer
	Applied Questions	
1)	The area of the rectangle is equal to $16y - 12$. We know that one of the sides is an integer, what could that integer be?	1 or 2 or 4
2)	The area of the isosceles triangle is equal to $\frac{1}{2}x^2 + 2x + 2$. Write an expression for the sum of the length and the width of the triangle in the simplest form. 	$2(x + 2)$
3)	The area of B is double the area of A. Find an expression for the length labelled '?'  Diagram not to scale	$x + 4$

Factorising (Mixed) - Mark Scheme

	Question	Answer	
	Exam Questions		
1) (a)	Factorise $9x - 18$	**(a)** $9(x - 2)$	**(1)**
(b)	Factorise fully $16x^2 + 20xy$	**(b)** $4x(...)$ $4x(4x + 5y)$	**(1)** **(1)**
(c)	Factorise $a^2 - 16$	**(c)** $(a \pm 4)(a \pm 4)$ $(a + 4)(a - 4)$	**(1)** **(1)**
2) (a)	Factorise fully $12a - 16ab$	**(a)** $4a(3 - 4b)$	**(1)**
(b)	Factorise $x^2 - 3x - 10$	**(b)** $(x \pm 2)(x \pm 5)$ $(x + 2)(x - 5)$	**(1)** **(1)**
(c)	Factorise $2y^2 - 9y - 5$	**(c)** $(2y + 1)(y - 5)$ $(2y \pm 1)(y \pm 5)$	**(1)** **(1)**
3) (a)	Factorise fully $6y^2 - 24$	**(a)** $6(y^2 - 4)$ $= 6(y + 2)(y - 2)$	**(1)** **(1)**
(b)	Factorise $x^2 + 3x - 28$	**(b)** $(x \pm 4)(x \pm 7)$ $(x - 4)(x + 7)$	**(1)** **(1)**
(c)	Factorise $3y^2 - 4y - 4$	**(c)** $(3y \pm 2)(y \pm 2)$ $(3y + 2)(y - 2)$	**(1)** **(1)**