Factorising to a Single Bracket - Worksheet

Skill

Group A

Factorise:

1) $3x + 6$

2) $9y - 6$

3) $21y - 7$

4) $70 + 10q$

5) $15 - 3d$

6) $8 - 12g$

7) $12x + 18$

8) $15y - 20$

9) $36 - 12b$

10) $4x + 12y + 2$

11) $8x - 12 + 16y$

12) $27y - 12x + 18$

Group B

Factorise fully:

1) $4xy + 12y$

2) $8q - 4pq$

3) $5a - 20ab$

4) $20y^2 + 30y$

5) $12x^2 - 6x$

6) $4y^2 - 12xy$

7) $x^2y + 2xy$

8) $2d^2e^2 + de$

9) $3a^3 - 6ab$

10) $3y + 6xy - 18y^2$

11) $6x^2y - 9xy + 3x$

12) $2pq + 20p^3 - 14p$

Group C

Factorise fully:

1) $3x^2y + 6xy - 18xy^2$

2) $8xy^2 + 12xy - 40x^2y^2$

3) $2pq + 20p^3q - 14pq^2$

4) $7pq^2 - 49p^2q + 56pq$

5) $14a^2b^2 - 21a^3b + 56a^2b^4$

6) $45x^3y^2 + 30x^2y^2 + 60x^2y$

7) $8p^2q^3 - 4pq^4 - 12p^3q^2$

8) $9a^4b^3c + 6a^2b^2c^2 + 12a^2bc$

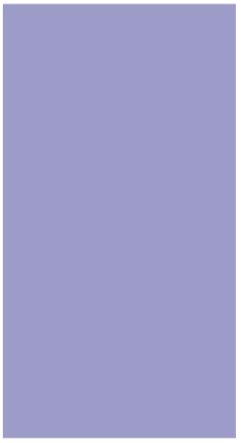
9) $24x^3y^2z - 60x^2yz^2 - 12xy^2z^3$

Factorising to a Single Bracket - Worksheet

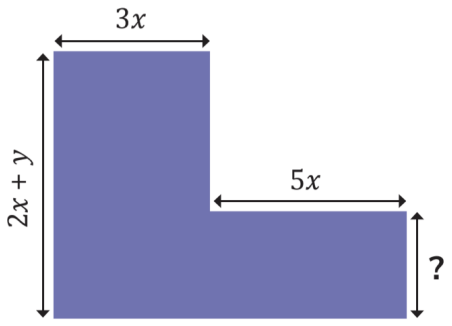
Applied

1) The area of the rectangle is equal to $15x + 20$. We know that one of the sides is an integer. What is that integer?

2) The area of the rectangle is equal to $6y^2 + 12y$. What are all the possible expressions for the sides of the shape?



3) The total area of the compound shape is $11x^2 + 8xy$
Find an expression for the length labelled '?'



Factorising to a Single Bracket - Exam Questions

1. (a) Factorise $5x - 20$

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(1)

(b) Factorise fully $8x^2 + 12xy$

.....

(2)

(3 marks)

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2. (a) Factorise $x^2 + 8x$

.....

(1)

(b) Factorise fully $6y^2 - 24xy$

.....

(2)

(3 marks)

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3. (a) Factorise $p^2 + 2p$

.....

(1)

(b) Factorise fully $x^2y - xy^2$

.....

(2)

(c) Factorise fully $15d^4e^2 + 20d^3e$

.....

(2)

(5 marks)

Factorising to a Single Bracket - Answers

	Question	Answer
	Skill Questions	
Group A	Factorise: **1)** $3x + 6$ **2)** $9y - 6$ **3)** $21y - 7$ **4)** $70 + 10q$ **5)** $15 - 3d$ **6)** $8 - 12g$ **7)** $12x + 18$ **8)** $15y - 20$ **9)** $36 - 12b$ **10)** $4x + 12y + 2$ **11)** $8x - 12 + 16y$ **12)** $27y - 12x + 18$	**1)** $3(x + 2)$ **2)** $3(3y - 2)$ **3)** $7(3y - 1)$ **4)** $10(7 + q)$ **5)** $3(5 - d)$ **6)** $4(2 - 3g)$ **7)** $6(2x + 3)$ **8)** $5(3y - 4)$ **9)** $12(3 - b)$ **10)** $2(2x + 6y + 1)$ **11)** $4(2x - 3 + 4y)$ **12)** $3(9y - 4x + 6)$
Group B	Factorise fully: **1)** $4xy + 12y$ **2)** $8q - 4pq$ **3)** $5a - 20ab$ **4)** $20y^2 + 30y$ **5)** $12x^2 - 6x$ **6)** $4y^2 - 12xy$ **7)** $x^2y + 2xy$ **8)** $2d^2e^2 + de$ **9)** $3a^3 - 6ab$ **10)** $3y + 6xy - 18y^2$ **11)** $6x^2y - 9xy + 3x$ **12)** $2pq + 20p^3 - 14p$	**1)** $4y(2x + 3)$ **2)** $4q(2 - p)$ **3)** $5a(1 - 4b)$ **4)** $10y(2y + 3)$ **5)** $6x(2x - 1)$ **6)** $4y(y - 3x)$ **7)** $xy(x + 2)$ **8)** $de(2de + 1)$ **9)** $3a(a^2 - 2b)$ **10)** $3y(1 + 2x - 6y)$ **11)** $3x(2xy - 3y + 1)$ **12)** $2p(q + 10p^2 - 7)$

Factorising to a Single Bracket - Answers

Group C	Factorise fully:	
	1) $3x^2y + 6xy - 18xy^2$	**1)** $3xy(x + 2 - 6y)$
	2) $8xy^2 + 12xy - 40x^2y^2$	**2)** $4xy(2y + 3 - 10xy)$
	3) $2pq + 20p^3q - 14pq^2$	**3)** $2pq(1 + 10p^2 - 7q)$
	4) $7pq^2 - 49p^2q + 56pq$	**4)** $7pq(q - 7p + 8)$
	5) $14a^2b^2 - 21a^3b + 56a^2b^4$	**5)** $7a^2b(2b - 3a + 8b^3)$
	6) $45x^3y^2 + 30x^2y^2 + 60x^2y$	**6)** $15x^2y(3xy + 2y + 4)$
	7) $8p^2q^3 - 4pq^4 - 12p^3q^2$	**7)** $4pq^2(2pq - q^2 - 3p^2)$
	8) $9a^4b^3c + 6a^2b^2c^2 + 12a^2bc$	**8)** $3a^2bc(3a^2b^2 + 2bc + 4)$
	9) $24x^3y^2z - 60x^2yz^2 - 12xy^2z^3$	**9)** $12xyz(2x^2y - 5xz - yz^2)$

Factorising to a Single Bracket - Answers

	Question	Answer
	Applied Questions	
1)	The area of the rectangle is equal to $15x + 20$. We know that one of the sides is an integer. What is that integer?	5 or 1
2)	The area of the rectangle is equal to $6y^2 + 12y$. What are all the possible expressions for the sides of the shape?	$6(y^2 + 2y), 2(3y^2 + 6y),$ $6y(y + 2), 2y(3y + 6),$ $3(2y^2 + 4y), 3y(2y + 4)$ $1(6y^2 + 12y), y(6y + 12)$
3)	The total area of the compound shape is $11x^2 + 8xy$. Find an expression for the length labelled '?'	$x + y$

Factorising to a Single Bracket - Mark Scheme

	Question	Answer	
	Exam Questions		
1) (a)	Factorise $5x - 20$	(a) $5(x - 4)$	(1)
(b)	Factorise fully $8x^2 + 12xy$	(b) $4x(2x + 3y)$	(2)
2) (a)	Factorise $x^2 + 8x$	(a) $x(x + 8)$	(1)
(b)	Factorise fully $6y^2 - 24xy$	(b) $6y(y - 4x)$	(2)
3) (a)	Factorise $p^2 + 2p$	(a) $p(p + 2)$	(1)
(b)	Factorise fully $x^2y - xy^2$	(b) $xy(x - y)$	(2)
(c)	Factorise fully $15d^4e^2 + 20d^3e$	(c) $5d^3e(3de + 4)$	(2)