Collecting Like Terms - Worksheet

Skill

Group A - One type of like terms

Simplify:

1) $3x + 2x + 2x$ **2)** $3x + 2x + 4x$ **3)** $3x + 2x + 7x$

4) $4a + 5a - 3a$ **5)** $4a + 2a - 3a$ **6)** $4a + 8a - 3a$

7) $6y - 2y + y$ **8)** $9y - 2y + y$ **9)** $8y - 2y + y$

10) $8p - 2p - 3p$ **11)** $8p - 2p - 5p$ **12)** $8p - 2p - p$

Group B - Two types of like terms

Simplify:

1) $3x + 5y + 2x + 2y$ **2)** $3x + 5y + 3x + 4y$ **3)** $3x + 7y + 4x + 2y$

4) $5c + 8d + 2c - 4d$ **5)** $5c + 8d + 4c - 5d$ **6)** $5c + 3d + c - 4d$

7) $8r + 5s - r - 2s$ **8)** $8r + 5s - 4r - 3s$ **9)** $8r + 5s - 6r - 8s$

10) $6t - 4u + 3t - 2u$ **11)** $6t - 4u + 4t - 3u$ **12)** $6t - 4u + 2t - 5u$

Group C - Three types of like terms

Simplify:

1) $3x + 4y + 7 + 2x + y + 3$ **2)** $4x + 5y + 2 + 5x + y + 3$ **3)** $5x + 6y + 8 + 3x + y + 3$

4) $2a + 4b + 3 + 2a - 2b - 1$ **5)** $2a + 4b + 3 + 5a - 2b - 5$ **6)** $2a + 4b + 3 + 2a - 7b - 4$

7) $7g - 3h + 6 - 2g + 4h - 2$ **8)** $8g - 8h + 6 - 2g + 4h - 5$ **9)** $4g - 2h + 6 - 2g + 4h - 8$

10) $5m - 3n - 6 - 2m - 5n + 2$ **11)** $7m - 3n - 8 - 2m - 6n + 2$ **12)** $3m - 3n - 7 - 2m - n + 9$

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Group D - Like terms including powers

Simplify:

1) $3a + 4a^2 + 5a + 2a^2$ **2)** $5a + 4a^2 + 5a + 3a^2$ **3)** $3a + 6a^2 + 7a + 2a^2$

4) $4x + 5x^2 - 3x - 3x^2$ **5)** $5x + 5x^2 - 3x - 4x^2$ **6)** $10x + 8x^2 - 3x - 3x^2$

7) $6y - 3y^2 + 4y - 2y^2$ **8)** $3y - 4y^2 + 4y - 2y^2$ **9)** $y - 3y^2 + 4y - 4y^2$

10) $5p^2 - 3p - 2p^2 - 2p$ **11)** $7p^2 - 3p - 2p^2 - 5p$ **12)** $3p^2 - 3p - 7p^2 - 2p$

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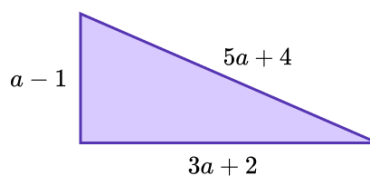## Collecting Like Terms - Worksheet

Applied

1) **(a)** Simplify: $3x + 5y - 3z + 2x - 2y + 5z$

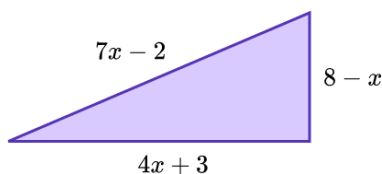**(b)** Simplify: $8a + 2b - 7c - 2a - 2b + 5c$

2) **(a)** Simplify: $5x + 6y - 2xy + 2x - 8y + 7xy$

(b) Simplify: $2a - 4b + 3ab - 2a + 7b - 5ab$
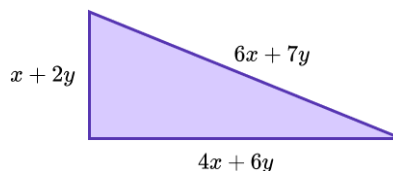
3) **(a)** Write an expression for the perimeter and simplify it.
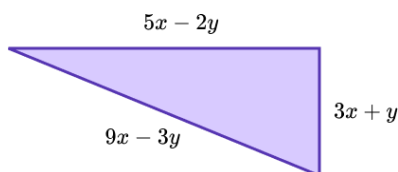

(b) Write an expression for the perimeter and simplify it.

4) **(a)** Write an expression for the perimeter and simplify it.

(b) Write an expression for the perimeter and simplify it.

Collecting Like Terms - Exam Questions
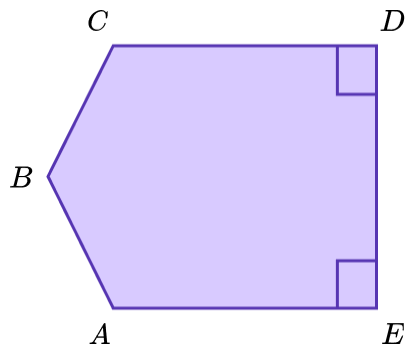
1)   Simplify: $7h - 2h + 4h$

………………

(1 mark)

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2)   Simplify: $4a + 5b - 2a + 3b$

………………

(2 marks)

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3)   The diagram shows a pentagon.
It has one line of symmetry.

………………

(3 marks)

$AE = 3x - 1$
$AB = x + 4$
$DE = 4x$

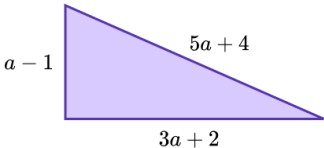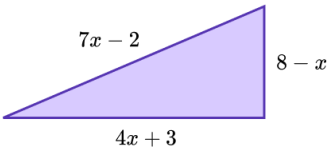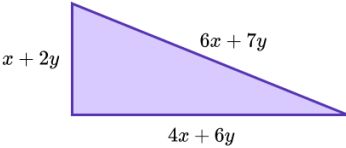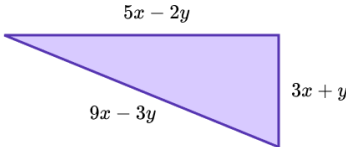Write an expression for the perimeter
in its simplest form.

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Collecting Like Terms - Answers

	Question	Answer
	Skill Questions	
Group A	Simplify: **1)** $3x + 2x + 2x$ **2)** $3x + 2x + 4x$ **3)** $3x + 2x + 7x$ **4)** $4a + 5a - 3a$ **5)** $4a + 2a - 3a$ **6)** $4a + 8a - 3a$ **7)** $6y - 2y + y$ **8)** $9y - 2y + y$ **9)** $8y - 2y + y$ **10)** $8p - 2p - 3p$ **11)** $8p - 2p - 5p$ **12)** $8p - 2p - p$	**1)** $7x$ **2)** $9x$ **3)** $12x$ **4)** $6a$ **5)** $3a$ **6)** $9a$ **7)** $5y$ **8)** $8y$ **9)** $7y$ **10)** $3p$ **11)** p **12)** $5p$
Group B	Simplify: **1)** $3x + 5y + 2x + 2y$ **2)** $3x + 5y + 3x + 4y$ **3)** $3x + 7y + 4x + 2y$ **4)** $5c + 8d + 2c - 4d$ **5)** $5c + 8d + 4c - 5d$ **6)** $5c + 3d + c - 4d$ **7)** $8r + 5s - r - 2s$ **8)** $8r + 5s - 4r - 3s$ **9)** $8r + 5s - 6r - 8s$ **10)** $6t - 4u + 3t - 2u$ **11)** $6t - 4u + 4t - 3u$ **12)** $6t - 4u + 2t - 5u$	**1)** $5x + 7y$ **2)** $6x + 9y$ **3)** $7x + 9y$ **4)** $7c + 4d$ **5)** $9c + 3d$ **6)** $6c - d$ **7)** $7r + 3s$ **8)** $4r + 2s$ **9)** $2r - 3s$ **10)** $9t - 6u$ **11)** $10t - 7u$ **12)** $8t - 9u$

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Group C	Simplify:	
	1) $3x + 4y + 7 + 2x + y + 3$	**1)** $5x + 5y + 10$
	2) $4x + 5y + 2 + 5x + y + 3$	**2)** $9x + 6y + 5$
	3) $5x + 6y + 8 + 3x + y + 3$	**3)** $6x + 7y + 11$
	4) $2a + 4b + 3 + 2a - 2b - 1$	**4)** $4a + 2b + 2$
	5) $2a + 4b + 3 + 5a - 2b - 5$	**5)** $7a + 2b - 2$
	6) $2a + 4b + 3 + 2a - 7b - 4$	**6)** $4a - 3b - 1$
	7) $7g - 3h + 6 - 2g + 4h - 2$	**7)** $5g + h + 4$
	8) $8g - 8h + 6 - 2g + 4h - 5$	**8)** $6g - 4h + 1$
	9) $4g - 2h + 6 - 2g + 4h - 8$	**9)** $2g + 2h - 2$
	10) $5m - 3n - 6 - 2m - 5n + 2$	**10)** $3m - 8n - 4$
	11) $7m - 3n - 8 - 2m - 6n + 2$	**11)** $5m - 9n - 6$
	12) $3m - 3n - 7 - 2m - n + 9$	**12)** $m - 4n + 2$
Group D	Simplify:	
	1) $3a + 4a^2 + 5a + 2a^2$	**1)** $8a + 6a^2$
	2) $5a + 4a^2 + 5a + 3a^2$	**2)** $10a + 7a^2$
	3) $3a + 6a^2 + 7a + 2a^2$	**3)** $10a + 8a^2$
	4) $4x + 5x^2 - 3x - 3x^2$	**4)** $x + 2x^2$
	5) $5x + 5x^2 - 3x - 4x^2$	**5)** $2x + x^2$
	6) $10x + 8x^2 - 3x - 3x^2$	**6)** $7x + 5x^2$
	7) $6y - 3y^2 + 4y - 2y^2$	**7)** $10y - 5y^2$
	8) $3y - 4y^2 + 4y - 2y^2$	**8)** $7y - 6y^2$
	9) $y - 3y^2 + 4y - 4y^2$	**9)** $5y - 7y^2$
	10) $5p^2 - 3p - 2p^2 - 2p$	**10)** $3p^2 - 5p$
	11) $7p^2 - 3p - 2p^2 - 5p$	**11)** $5p^2 - 8p$
	12) $3p^2 - 3p - 7p^2 - 2p$	**12)** $-4p^2 - 5p$

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Collecting Like Terms - Answers

	Question	Answer
	Applied Questions	
1)	(a) Simplify: $3x + 5y - 3z + 2x - 2y + 5z$	(a) $5x + 3y + 2z$
	(b) Simplify: $8a + 2b - 7c - 2a - 2b + 5c$	(b) $6a - 2c$
2)	(a) Simplify: $5x + 6y - 2xy + 2x - 8y + 7xy$	(a) $7x - 2y + 5xy$
	(b) Simplify: $2a - 4b + 3ab - 2a + 7b - 5ab$	(b) $3b - 2ab$
3)	(a) Write an expression for the perimeter and simplify it. $5a + 4$, $a - 1$, $3a + 2$	(a) $9a + 5$
	(b) Write an expression for the perimeter and simplify it. $7x - 2$, $8 - x$, $4x + 3$	(b) $10x + 9$
4)	(a) Write an expression for the perimeter and simplify it. $6x + 7y$, $x + 2y$, $4x + 6y$	(a) $11x + 15y$
	(b) Write an expression for the perimeter and simplify it. $5x - 2y$, $3x + y$, $9x - 3y$	(b) $17x - 4y$

Collecting Like Terms - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	Simplify: $7h - 2h + 4h$	$9h$	**(1)**
2)	Simplify: $4a + 5b - 2a + 3b$	$2a$ or $8b$ $2a + 8b$	**(2)**
3)	The diagram shows a pentagon. It has one line of symmetry. $AE = 3x - 1$ $AB = x + 4$ $DE = 4x$ Write an expression for the perimeter in its simplest form.	$CD = 3x - 1$ $BC = x + 4$ Perimeter = $3x - 1 + x + 4 + 3x - 1 + x + 4 + 4x$ $= 12x + 6$	**(3)**