COLLECT LIKE TERMS

BUILDING BLOCKS

NAME _____ CLASS _____ DATE _____

KEY IDEA

3 apples + 2 apples = 5 apples

3a + 2a = 5a

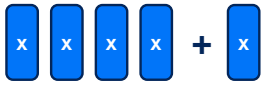
Add the coefficients. The letter stays the same.



1 Use the tiles to simplify.

a) 

2x + 3x = ☐

b) 

4x + x = ☐

c) 

2x² + x² = ☐

2 Simplify.

a) 4m + 3m = ☐

b) 6k + k = ☐

c) 9t – 4t = ☐

d) 8h – h = ☐

3 Write the missing term.

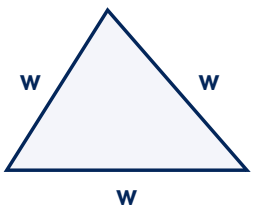
a) 2b + ☐ = 9b

b) 10y – ☐ = 6y

c) ☐ + 5n = 6n

4 Amira buys 4 pens. Then she buys 3 more of the same pens. Each pen costs c pence.

a) Write a simplified expression for the total cost of the pens, in pence. ☐



b) Each side of this triangle is w cm.

Write an expression for its perimeter. ☐

COLLECT LIKE TERMS

SUPPORT

NAME _____ CLASS _____ DATE _____

KEY IDEA

Collect like terms by adding or subtracting their coefficients.

Unlike terms stay separate: 3a + 2b + 4a = 7a + 2b

A letter on its own has a coefficient of 1: c means 1c.

1 Write the expression shown by the tiles in its simplest form.

a) 

2x + 1 + x + 3 = ____

b) 

x² + x + 2x² = ____

2 Simplify by collecting like terms.

a) 5a + 2a + 3 = ____

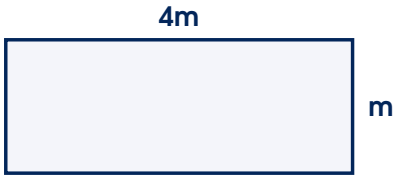
b) 6b + 5 + 2b = ____

c) 7c + 2d + c = ____

d) 9e – 3e + 5 = ____

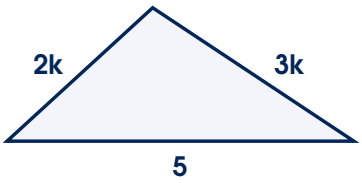
3 Write a simplified expression for the perimeter of each shape.

a)



____

b)



____

4 Can the expression be simplified? Circle yes or no.

a) **4p + 3q** YES NO

b) **5r + r** YES NO

c) **2s + 2** YES NO

d) **3t² + t²** YES NO

COLLECT LIKE TERMS

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

Circle each term with the sign in front of it, then collect like terms: $6a - 3 - 2a \equiv 4a - 3$. x and x^2 are unlike, so they cannot be collected. ab and ba are like terms.

FLUENCY

1 Simplify each expression.

a) $7f + 3g - 2f + g$ ≡ .....

b) $4w^2 + 3w - w^2 + 2w$ ≡ .....

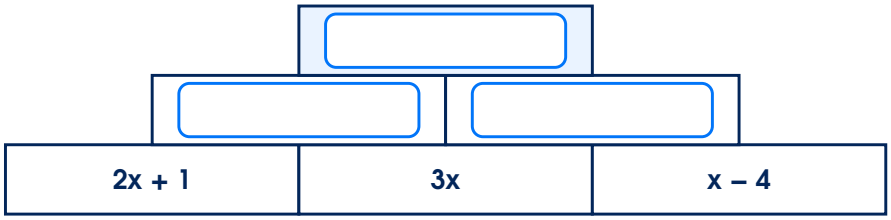
c) $5ab + 2ba - 3ab$ ≡ .....

d) $9 - 2v + 4 - 6v$ ≡ .....

e) $3.5h + 1.5h - h$ ≡ .....

f) $mn + 4nm - 2$ ≡ .....

2 Each brick is the sum of the two bricks below it. Complete the wall.



REASONING

3 Spot the mistakes.

a) Theo simplifies $3x + 5x^2$ and gets $8x^2$. Explain his mistake.

.....

b) Mia says $6y - y = 6$. Is she correct? Explain.

.....

4 Write three different expressions that simplify to $4p + 7q$.

Convince me that $2a + 5b + 3a$ and $5b + 5a$ are equivalent.

.....

COLLECT LIKE TERMS

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

1 Is each statement always, sometimes or never true? Circle your answer.

If it is sometimes true, give an example of when it is true and when it is not.

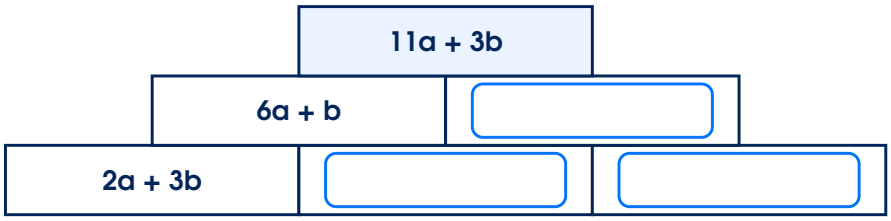
a) Collecting like terms gives fewer terms. ALWAYS SOMETIMES NEVER

b) $x + x$ is equivalent to x^2. ALWAYS SOMETIMES NEVER

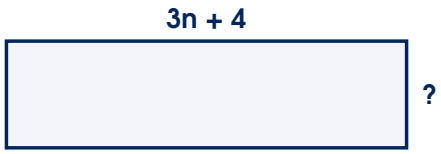
c) $3y - 5y$ simplifies to a term with a negative coefficient. ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 Each brick is the sum of the two bricks below it. Complete the wall.



3 Find an expression for the width of this rectangle.



Perimeter = 10n + 6

Width = _____

★ CHALLENGE FOR ALL

4 Here are eight algebra cards.

$4x$ $-2y$ $3x^2$ $-x$ $5y$ $-x^2$ y $-3x$

a) Find the total of all eight cards. Simplify your answer.

b) Which two cards could you remove to make the total $2x^2 + 4x + 4y$?

c) Which one card could you remove to make the y-terms total $3y$?

COLLECT LIKE TERMS

ANSWERS

BUILDING BLOCKS

1 a) 5x · b) 5x · c) $3x^2$
2 a) 7m · b) 7k · c) 5t · d) 7h
3 a) 7b · b) 4y · c) n
4 a) 7c · b) 3w

SUPPORT

1 a) 3x + 4 · b) $3x^2 + x$
2 a) 7a + 3 · b) 8b + 5 · c) 8c + 2d · d) 6e + 5
3 a) 10m · b) 5k + 5
4 a) no · b) yes (6r) · c) no · d) yes ($4t^2$)

CORE

1 a) 5f + 4g · b) $3w^2 + 5w$ · c) 4ab · d) 13 – 8v · e) 4h · f) 5mn – 2
2 middle: 5x + 1 and 4x – 4 · top: 9x – 3
3 a) 3x and $5x^2$ are unlike terms, so they cannot be collected; $3x + 5x^2$ is already simplest · b) no: 6y – y = 5y (y means 1y)
4 e.g. 2p + 7q + 2p, 5p + 7q – p, 4p + 10q – 3q · both simplify to 5a + 5b (2a + 3a = 5a, the order of terms does not matter)

GREATER DEPTH

1 a) sometimes (a + b cannot be simplified) · b) never (x + x = 2x) · c) always (–2y)
2 bottom: 2a + 3b, 4a – 2b, a + 4b · middle: 6a + b, 5a + 2b · top: 11a + 3b
3 2(3n + 4) + 2w = 10n + 6, so 2w = 4n – 2 and the width is 2n – 1
4 a) $2x^2 + 4y$ (the x-terms total 0) · b) –x and –3x · c) y