EXPAND AND SIMPLIFY SINGLE BRACKETS

BUILDING BLOCKS

NAME _____ CLASS _____ DATE _____

KEY IDEA

Expand the bracket first, then collect like terms.



2(x + 2) + 4

2(x + 2) + 4
= 2x + 4 + 4
= 2x + 8

4 + 4 = 8 one tiles

1 Collect like terms.

a) x x x 1 1 1 1 1 + x x 1 = _____

b) 4y + 7 – y – 2 = _____

c) 6 + 2a + 3 = _____

2 Expand.

a) **2(x + 4)** _____ **b)** **3(y + 1)** _____ **c)** **5(a – 2)** _____

3 These tiles show 3(x + 2) + 2(x + 1).



3(x + 2) 2(x + 1)

a) How many x tiles? _____

b) How many 1 tiles? _____

c) So the total is _____

4 Expand, then simplify.

a) **2(x + 3) + 5**

Expand: _____ **+ 5**

Simplify: _____

b) **4(y + 2) – 3**

Expand: _____ **– 3**

Simplify: _____

EXPAND AND SIMPLIFY SINGLE BRACKETS

SUPPORT

NAME _____ CLASS _____ DATE _____

KEY IDEA

$4(x + 3) + 2(x + 5)$
$= 4x + 12 + 2x + 10$
$= 6x + 22$

Take care when the bracket is subtracted:
$-3(x + 2) = -3x - 6$
Multiply both terms by -3.

1 Expand the bracket, then simplify.

a) $3(x + 2) + 5$

Expand: ☐ + 5

Simplify: ☐

b) $4(y + 1) + 2y$

Expand: ☐ + 2y

Simplify: ☐

2 Expand and simplify.

a) $5 + 2(x + 4)$ ☐

b) $3(a + 2) + 4a$ ☐

c) $2(y + 5) - 3$ ☐

d) $4(b + 1) + 2b$ ☐

3 Expand both brackets, then simplify.

a) $2(x + 1) + 4(x + 3)$ ☐

b) $4(m + 2) + 2(m + 3)$ ☐

c) $3(p + 1) + 5(p + 2)$ ☐

d) $2(n + 4) + 2(n + 1)$ ☐

4 Expand and simplify. Take care: the second bracket is subtracted.

Hint: $-2(x + 1) = -2x - 2$

a) $4(x + 3) - 2(x + 1)$ ☐

b) $5(y + 2) - 3(y + 1)$ ☐

EXPAND AND SIMPLIFY SINGLE BRACKETS

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

Expand each bracket, watching the sign in front of it, then collect like terms.

$3(2a + 5) - 4(a - 2) \equiv 6a + 15 - 4a + 8 \equiv 2a + 23$

FLUENCY

1 Expand and simplify.

a) $7 - 2(x - 3)$ ☐

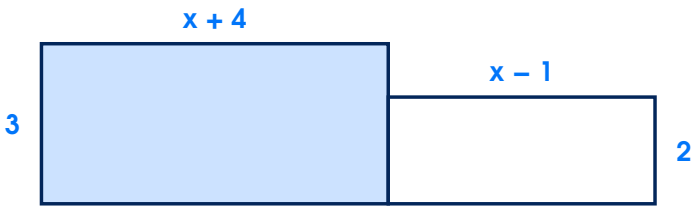
b) $3(2a + 5) - 4(a - 2)$ ☐

c) $5(2p - 1) - (3p + 4)$ ☐

d) $x(x + 4) + 3(x - 2)$ ☐

e) $2y(y - 3) - y(y + 1)$ ☐

2 Write a simplified expression for the total area of this shape.



Total area = ☐

REASONING

3 Explain why $-(4y - 9)$ is the same as $9 - 4y$.

.....

.....

4 Find the missing numbers.

☐ $(x + 2) + 3(x +$ ☐ $) \equiv 7x + 23$

Explain how you found them. .....

EXPAND AND SIMPLIFY SINGLE BRACKETS

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) Expanding and simplifying two brackets gives two terms. ALWAYS SOMETIMES NEVER

b) $a(x + 1) - a(x - 1) \equiv 2a$ ALWAYS SOMETIMES NEVER

c) $4(x + 3) + 2(x - 6)$ has a number term. ALWAYS SOMETIMES NEVER

d) $-2(x - 4)$ has a positive number term. ALWAYS SOMETIMES NEVER

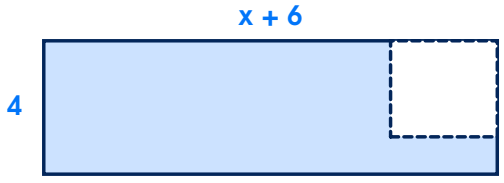
PROBLEM SOLVING

2 Brackets that simplify to a number.

a) Show that $3(2x + 5) - 2(3x + 1)$ always has the value 13.

b) Write two brackets that simplify to 20. ( ) ( )

3 A square of side 3 is cut from a 4 by $(x + 6)$ rectangle.



Shaded area = _____

★ CHALLENGE FOR ALL

4 Start with a number n. Write an expression after each step.

a) Add 4. _____

Multiply by 3. _____

Subtract 2(n + 6). _____

b) Simplify your final expression. _____

c) What do you notice? _____

STEP 8 · EXPAND AND SIMPLIFY SINGLE BRACKETS

ANSWERS

BUILDING BLOCKS

1 a) $5x + 6$ · b) $3y + 5$ · c) $2a + 9$
2 a) $2x + 8$ · b) $3y + 3$ · c) $5a - 10$
3 a) 5 · b) 8 · c) $5x + 8$
4 a) $2x + 6 + 5 = 2x + 11$ · b) $4y + 8 - 3 = 4y + 5$

SUPPORT

1 a) $3x + 6 + 5 = 3x + 11$ · b) $4y + 4 + 2y = 6y + 4$
2 a) $2x + 13$ · b) $7a + 6$ · c) $2y + 7$ · d) $6b + 4$
3 a) $6x + 14$ · b) $6m + 14$ · c) $8p + 13$ · d) $4n + 10$
4 a) $4x + 12 - 2x - 2 = 2x + 10$ · b) $5y + 10 - 3y - 3 = 2y + 7$

CORE

1 a) $13 - 2x$ · b) $2a + 23$ · c) $7p - 9$ · d) $x^2 + 7x - 6$ · e) $y^2 - 7y$
2 $3(x + 4) + 2(x - 1) = 5x + 10$
3 $-(4y - 9)$ means $-1 \times (4y - 9) = -4y + 9$, which is $9 - 4y$ written in a different order
4 4 and 5: $4(x + 2) + 3(x + 5) \equiv 7x + 8 + 15 \equiv 7x + 23$

GREATER DEPTH

1 a) Sometimes: $2(x + 1) + 3(x + 2) \equiv 5x + 8$, but $2(x + 1) - 2(x + 3) \equiv -4$ · b) Always · c) Never ($12 - 12 = 0$) · d) Always ($-2 \times -4 = +8$)
2 a) $6x + 15 - 6x - 2 = 13$, the x terms cancel · b) e.g. $2(x + 12) - 2(x + 2)$
3 $4(x + 6) - 9 = 4x + 15$
4 a) $n + 4$, $3(n + 4)$, $3(n + 4) - 2(n + 6)$ · b) n · c) You always end with the number you started with