



Expanding brackets

Year 7 About 60 minutes No calculator 49 marks

Date _____

A Do Now

Quick questions to start.

- A1** Needed today [1 mark] **A2** Last lesson [1 mark]
Work out -6×-7 . Simplify $7p + 3q - 2p - 5q$.

Answer

Answer

- A3** From chapter 8 [1 mark] **A4** From chapter 4 [1 mark]
Write 6.2×10^3 as an ordinary number. Increase 40 by 25%.

Answer

Answer

B Example, then your turn

Year 7

Your teacher works through each example with you. Then try the one beside it.

EXAMPLE 1

Expand the brackets.

- (a) $5(x + 3)$ (b) $4(2y - 7)$
(c) $6(3a + 2b)$

Hint Multiply every term inside the bracket by the number outside.

- B1**
- Expand the brackets. [3 marks]

- (a) $3(k + 8)$ (b) $7(2m - 3)$
(c) $4(5p + 3q)$

Answer (a) (b) (c)

EXAMPLE 2

Expand the brackets.

- (a) $-2(x + 6)$ (b) $-4(3y - 5)$

Hint The -2 multiplies both terms. A negative times a negative is positive: $-4 \times -5 = +20$.

- B2**
- Expand the brackets. [3 marks]

- (a) $-5(t + 4)$
(b) $-3(2w - 9)$
(c) $-(6 - n)$

Answer (a) (b) (c)

EXAMPLE 3

Expand the brackets.

(a) $x(x + 9)$ (b) $3y(2y - 5)$

Hint $x \times x = x^2$, and $3y \times 2y = 6y^2$.**B3** Expand the brackets. [3 marks]

(a) $a(a - 6)$ (b) $4t(3t + 2)$

(c) $2k(7 - 3k)$

Answer (a) (b) (c)

EXAMPLE 4Expand and simplify $3(2x + 5) + 4(x - 2)$.**Hint** Expand each bracket first. Then collect the x terms and the numbers.**B4** Expand and simplify. [2 marks]

(a) $5(y + 3) + 2(3y - 4)$

(b) $2(4a - b) + 3(a + 2b)$

Answer (a) (b)

EXAMPLE 5Expand and simplify $6(x + 2) - 3(x - 4)$.**Hint** The -3 multiplies both terms in the second bracket: $-3 \times -4 = +12$.**B5** Expand and simplify. [2 marks]

(a) $4(2m + 5) - 3(m + 2)$

(b) $7(n - 1) - 2(3n - 5)$

Answer (a) (b)

C Practice

Year 7

- C1**
- Write 98 as
- $100 - 2$
- . Use a bracket to work out
- 6×98
- without a calculator. Show your method. [2 marks]

Answer

- C2**
- Write down the missing numbers. [2 marks]

(a) $4(x + \boxed{}) = 4x + 28$

(b) $\boxed{}(3y - 2) = 15y - 10$

Answer (a) ... (b) ...

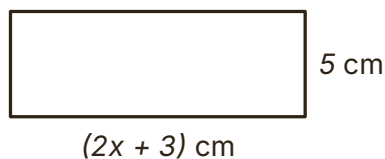
- C3**
- Expand
- $\frac{1}{2}(6x - 10)$
- . [1 mark]

Answer

- C4**
- Expand
- $3(2a - 4b + 5)$
- . [1 mark]

Answer

- C5** Write an expression for the area [2 marks]
of this rectangle. Do not use
brackets in your answer.



Not drawn accurately

- C6** Expand and simplify [2 marks]
 $x(x + 4) + 3x(x - 2)$.

Answer

Answer cm^2

D Exam-style questions

GCSE Foundation

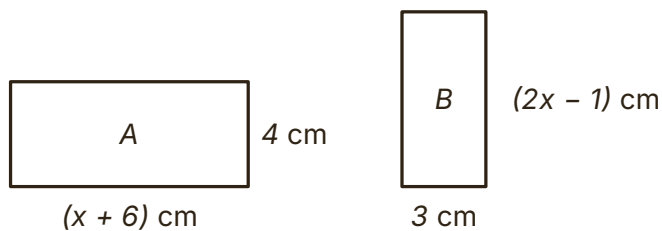
- D1** Mia says, " $2(x + 5) = 2x + 5$." [2 marks]

Mia is wrong. Explain why, and write down the correct expansion.

- D2** Show that $3(2x + 4) - 2(x - 3)$ simplifies to $2(2x + 9)$. [3 marks]

- D3** The diagram shows two rectangles, *A* and *B*.

- (a) Show that the total area [3 marks]
of the two rectangles is
 $(10x + 21) \text{ cm}^2$.



Not drawn accurately

- (b) The total area is 71 cm^2 . Work out the value of x . [2 marks]

Answer $x = \dots$

Total for D3: 5 marks

D4 An adult ticket costs $\pounds(x + 4)$ and a child ticket costs $\pounds x$. The Lee family buys 2 adult tickets and 3 child tickets. The Shah family buys 3 adult tickets and 1 child ticket.

(a) Write an expression, in pounds, for what the Lee family pays. Simplify it. [2 marks]

Answer $\pounds \dots\dots$

(b) Show that the Lee family pays $\pounds(x - 4)$ more than the Shah family. [2 marks]

Total for D4: 4 marks

D5 Expand and simplify

(a) $5(2p - 3) - (p - 7)$ [2 marks]

Answer

(b) $2y(y + 3) - y(y - 4)$ [2 marks]

Answer

Total for D5: 4 marks

E Extension

Stretch

No route is given. The hints are at the end of the sheet. Use one at a time.

E1 a and b are whole numbers, and [4 marks]

$$a(x + 3) + b(x - 1) = 7x + 9$$

for every value of x . Work out a and b .

Answer $a = \dots\dots$ $b = \dots\dots$

Extension hints

Cover these with paper. Uncover one at a time.

- E1** **Hint 1** Expand the left side: $ax + 3a + bx - b$.
- Hint 2** The x terms give $a + b = 7$. The numbers give $3a - b = 9$.
- Hint 3** Add the two: $4a = 16$, so $a = 4$. Then $b = 7 - 4 = 3$.

How did it go?

Colour one circle on each line: not yet, nearly, yes.

I can expand a bracket with a number or a negative number outside. ☐ ☐ ☐

I can expand a bracket with a letter outside, such as $x(x + 9)$. ☐ ☐ ☐

I can expand two brackets and collect like terms. ☐ ☐ ☐

I can use brackets in areas and costs. ☐ ☐ ☐