Expanding double brackets

ANSWERS

1 collect the like terms

Expand and simplify $(x + 6)(x + 2)$

×	x	+2
x	x^2	$2x$
+6	$6x$	12

$x^2 + 2x + 6x + 12$

Answer $x^2 + 8x + 12$

2

Expand and simplify $(x + 7)(x - 3)$

×	x	−3
x	x^2	$-3x$
+7	$7x$	-21

$x^2 - 3x + 7x - 21$

Answer $x^2 + 4x - 21$

3

Expand and simplify $(x - 2)(x - 9)$

×	x	-9
x	x^2	$-9x$
-2	$-2x$	18

$x^2 - 9x - 2x + 18$

Answer $x^2 - 11x + 18$

4 *Notice the change!*

Expand and simplify $(2x + 5)(x + 3)$

×	x	+3
$2x$	$2x^2$	$6x$
+5	$5x$	15

$2x^2 + 6x + 5x + 15$

Answer $2x^2 + 11x + 15$

5 write it as two brackets first

Expand and simplify $(x + 9)^2$

$(x + 9)(x + 9)$

×	x	+9
x	x^2	$9x$
+9	$9x$	81

$x^2 + 9x + 9x + 81$

Answer $x^2 + 18x + 81$

6

Expand and simplify $(3x - 4)(x + 2)$

×	x	+2
$3x$	$3x^2$	$6x$
-4	$-4x$	-8

$3x^2 + 6x - 4x - 8$

Answer $3x^2 + 2x - 8$

7

Ama says $(x + 7)^2 = x^2 + 49$. Put $x = 1$ into both sides to show she is wrong.
Then expand $(x + 7)^2$ correctly.

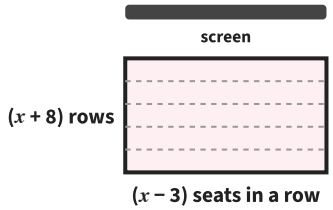
$(1 + 7)^2 = 64$, but $1^2 + 49 = 50$

$(x + 7)(x + 7) = x^2 + 7x + 7x + 49$

Answer $x^2 + 14x + 49$

8

A cinema has $(x + 8)$ rows of seats, with $(x - 3)$ seats in each row.
Write an expression for the number of seats. Expand and simplify.



$(x + 8)(x - 3) = x^2 - 3x + 8x - 24$

Answer $x^2 + 5x - 24$

Expanding double brackets *further practice*

ANSWERS

9

Expand and simplify $(x - 8)(x + 5)$

$x^2 + 5x - 8x - 40$

Answer $x^2 - 3x - 40$

10

Expand and simplify $(x - 6)^2$

$(x - 6)(x - 6)$

$x^2 - 6x - 6x + 36$

Answer $x^2 - 12x + 36$

11

Expand and simplify $(2x - 1)(3x + 4)$

$6x^2 + 8x - 3x - 4$

Answer $6x^2 + 5x - 4$

12

Lena expands $(x + 2)(x - 6)$ and gets $x^2 - 4x - 12$. Put $x = 3$ into both to check her answer.

$(3 + 2)(3 - 6) = 5 \times -3 = -15$

$3^2 - 4 \times 3 - 12 = 9 - 12 - 12 = -15$

Is she right? Yes, both give -15

13

Fill in the two gaps.

$(x + 3)(x + \square) = x^2 + \square x + 15$

$3 \times 5 = 15$

x terms: $5x + 3x = 8x$

Gaps 5 and 8

14

Expand and simplify

$(x + 4)(x + 1) + (x - 2)(x + 3)$

$x^2 + 5x + 4 + x^2 + x - 6$

Answer $2x^2 + 6x - 2$

15

A square lawn has sides of x m.
It is made 5 m longer and 5 m narrower, so it is now a rectangle.
Expand $(x + 5)(x - 5)$ to find its new area. Has the area gone up or down?

$x^2 - 5x + 5x - 25$

the x terms cancel

Answer $x^2 - 25$, down by 25 m^2

16

n is a whole number.
Expand and simplify $(n + 1)^2 - n^2$.
Use your answer to explain why it is always an odd number.

$n^2 + 2n + 1 - n^2 = 2n + 1$

$2n$ is even, so $2n + 1$ is odd

Answer $2n + 1$, always odd