

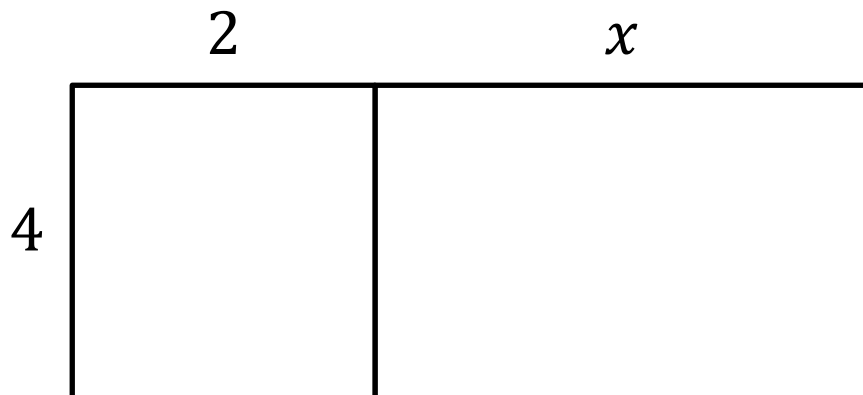
Multiplying Out Brackets



If I want “3 lots of $2x + 4$ ”, what will I have?

What’s another way I can write “3 lots of $2x + 4$ ”?

So we can multiply each thing inside the bracket by the thing outside it.



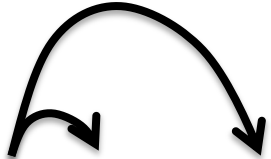
We can also see this using areas.

Area of whole rectangle

=

Total area of small rectangles

=


$$2(5 + x) =$$

$$7(2x - 3y) =$$

$$2x(3x + 5xy) =$$

$$8xy(1 - 3xy) =$$

$$\frac{1}{2}x(x + 4) =$$

$$-1(x - 3)$$

=

=

If we have multiple brackets we can usually collect like terms after.

$$1 + 2(3 + x) =$$

$$=$$

$$7 - 2(3 - 2x) =$$

$$=$$

$$a(a - b) - b(b - a)$$

$$=$$
$$=$$

$$3x(3x - 4) - (5 - 2x)$$

$$=$$
$$=$$

Expand and simplify.

$$11(4x^2 + 3y - 2)$$

$$5(3x - 1) - 4(2 - x)$$

$$5 - 4(2 - x)$$

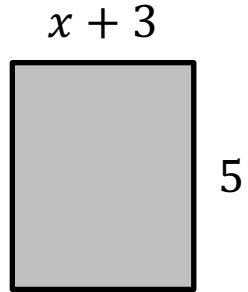
1 Expand and simplify the following:

a $10x^{10}y^{10}(10x - x^{10}y^{10}) =$

b $5(4 - 3(2 - (1 - x))) =$

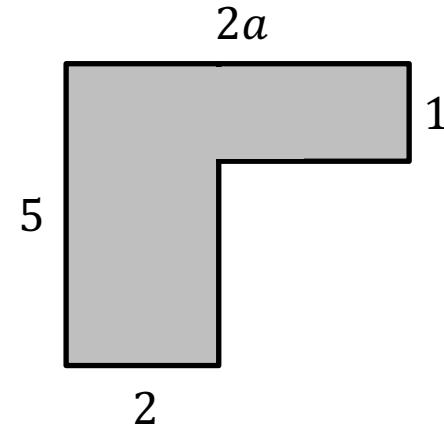
c $x\left(\frac{1}{x} + \frac{1}{x^2}\right) =$

- 2 Find the area and perimeter of the following (expand and simplify your answer)



$$A =$$

$$P =$$



$$A =$$

$$P =$$

3 In a maths exam with N questions, you score m marks for a correct answer to each of the first q questions and $m + 2$ marks for a correct answer to each of the remaining questions. What is the maximum possible score?

- A $(m + 2)N - 2q$ B Nm
C $mq + (m + 2)q$ D $N(m + 1)$
E $Nm + q(m + 2)$