Expanding Two Brackets

คิดถึงครูอ้น(C9)
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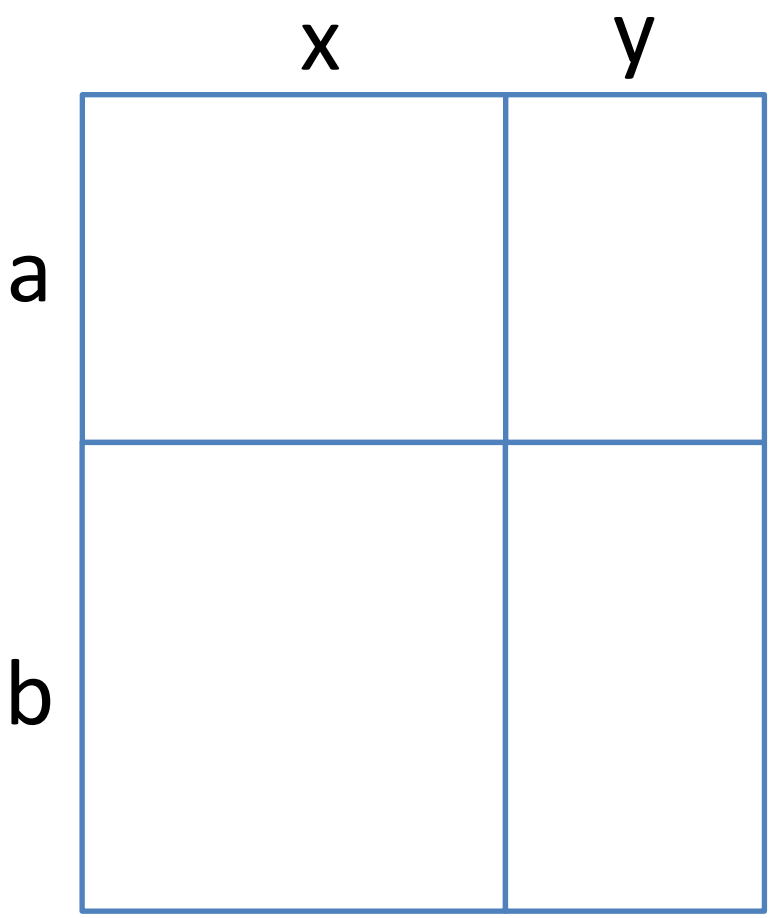
Work out the area of rectangle in two ways…

1) By using the sides of the big rectangle.

$Area =$

2) By combining the area of the four smaller rectangles.

$Area =$



Expanding Brackets in General

To expand out two brackets, multiply each of the things in the first bracket by each of the things in the second bracket.

$$(x + 2)(y + 3)$$

$(x + 2)(x + 3) \quad =$

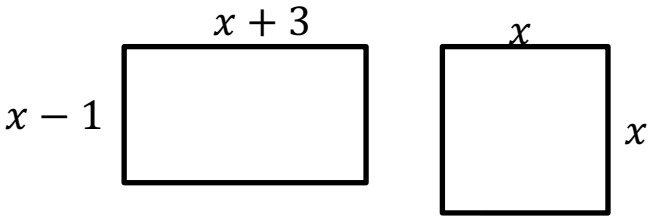
$(2x - 1)(x + 2) \quad =$

$(x + 3)^2 \quad =$

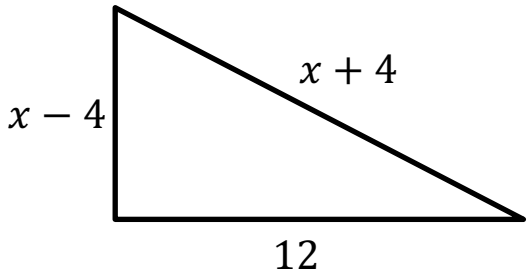
$(x - 2)^2 \quad =$

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

2 The rectangle and the square have the same area. Find x.



3 Determine x using Pythagoras Theorem:



Expanding square brackets quickly

Notice that $(a+b)^2 =$

Therefore, when we have two terms in a bracket, and the bracket is squared, we can expand more quickly without having to collect terms:

	Expression	1st Term Squared	2 x 1st Term x 2nd Term	2nd Term Squared
1	$(x+3)^2 =$	x^2	$+6x$	$+9$
2	$(x-8)^2 =$			
3	$(3x-2)^2 =$			

Being careful with negatives

You need to be really careful when subtracting an expression you are about to expand.

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

$=$

$=$

$=$

Expand the following.

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

$=$

$=$

$=$

2 $x^2 - (2x - 1)^2$

$=$

$=$

$=$

Expanding brackets with more than 2 items

When there's more than two items in each bracket, we still use the same rule to expand: Times each thing in the first bracket by each thing in the second bracket...

$$(x + 3)(x^2 + x - 2)$$

$$=$$

$$=$$

Expand the following.

1 $(x + y)(x + y + 1)$

$=$

$=$

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

$=$

$=$

Exercise

1 Expand the following.

a $(2x + 1)^2 – (2x – 1)^2 =$

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

2 Expand the following

a $(a - 1)(a^2 + a + 1) =$

b $(x^2 + x + 1)^2 =$