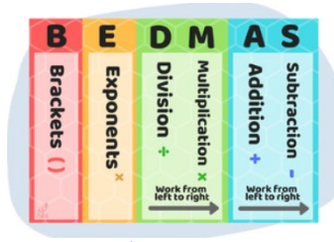
4.8 More Mulitplying



A. Multiplying

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

$= 2x+6-4x-20$

$= 2x-4x+6-20$

$= -2x-14$

	x	3
2	$2x$	6

	x	5
-4	$-4x$	-20

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

$= x^2-2xy+2xy-4y^2+3(x+3y)(x+3y)$

$= x^2-4y^2+3(x^2+6xy+9y^2)$

$= x^2-4y^2+3x^2+18xy+27y^2$

$= 4x^2+18xy+23y^2$

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

$= 3(10x^2+13x-3)-4(3x^2-x-2)$

$= 30x^2+39x-9-12x^2+4x+8$

$= 18x^2+43x-1$

	$5x$	-1
$2x$	$10x^2$	$-2x$
3	$15x$	-3

	x	-1
$3x$	$3x^2$	$-3x$
2	$2x$	-2

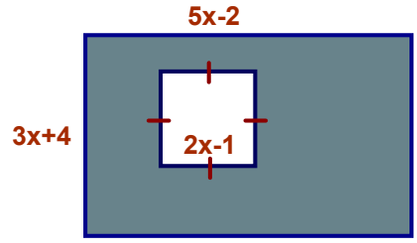
4. $5x^2-3x(2x-1)+(x+1)^2$

$= 5x^2-6x^2+3x+x^2+2x+1$

$= 5x+1$

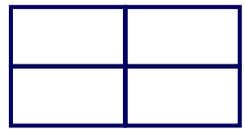
B. Applications of Multiplying

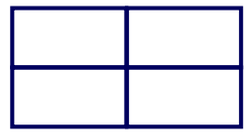
1. Determine a simplified expression for the area of the shaded region.



$A_{BIG} = (3x+4)(5x-2)$

$A_{SMALL} = (2x-1)^2$





$A_{SHADED} = A_{BIG} - A_{SMALL}$

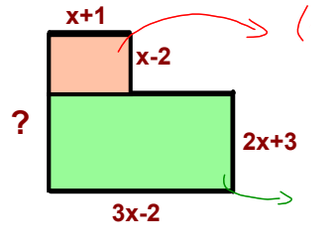
$= (3x+4)(5x-2) - (2x-1)^2$

$= 15x^2 - 6x + 20x - 8 - (4x^2 - 4x + 1)$

$= 15x^2 + 14x - 8 - 4x^2 + 4x - 1$

$= 11x^2 + 18x - 9$

2. Determine a simplified expression for the area of the figure.



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

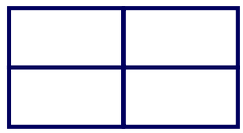
$= x^2 - 2x + x - 2$

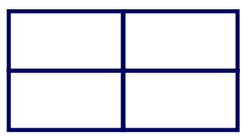
$= x^2 - x - 2$

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

$= 6x^2 - 4x + 9x - 6$

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



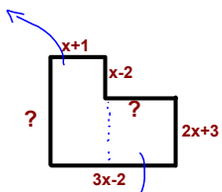


$A = x^2 - x - 2 + 6x^2 + 5x - 6$

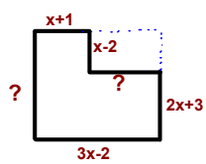
$= 7x^2 + 4x - 8$

Is there more than one way to do this one?

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



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



Big − Small rectangle