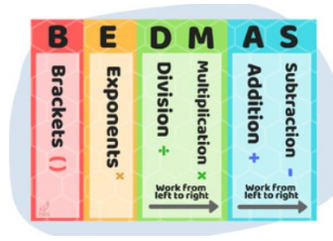
4.8 More Mulitplying



A. Multiplying

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

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

$= -2x-14$

	x	3
2	$2x$	6

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

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

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

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

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

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

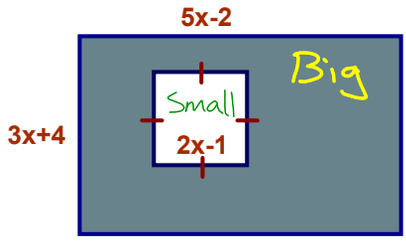
4. $5x^2-3x(2x-1)+(x+1)^2$

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

$= 5x+1$

B. Applications of Multiplying

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



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

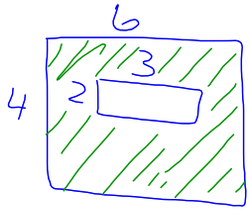
$= (5x-2)(3x+4) - (2x-1)^2$

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

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

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

ex:



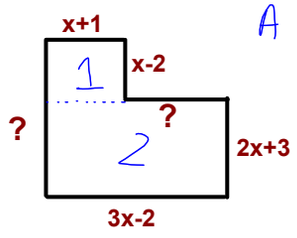
$A = A_{ENTIRE} - A_{CUTOUT}$

$= 6(4) - 3(2)$

$= 24 - 6$

$= 18$

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



$A = A_1 + A_2$

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

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

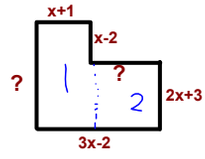
$= 7x^2 + 4x - 8$

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

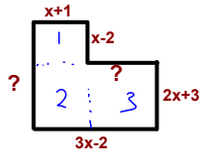
	$3x$	-2
$2x$	$6x^2$	$-4x$
3	$9x$	-6

Is there more than one way to do this one?

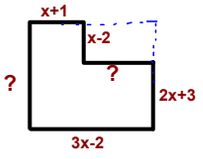
$x-2$
$+$
$2x+3$
$= 3x+1$



$A_1 + A_2$



$A_1 + A_2 + A_3$



$A_{BIG} - A_{SMALL}$