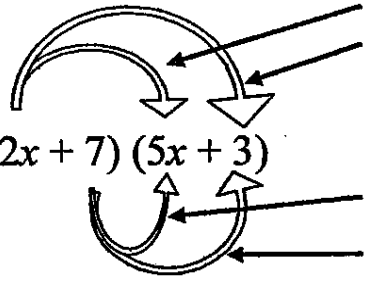
Multiplying Polynomials

Monomial (one term) times Binomial (two terms):

Simplify:		
	$5\,(2x + 7)$	Example
	$5 \cdot 2x + 5 \cdot 7$	Distributive property
	$10x + 35$	Multiplication of factors

Simplify:		
	$(5x - 3)\,(-4y)$	Example
	$(-4y)(5x) - (-4y)(3)$	Distributive property
	$-20xy + 12y$	Multiplication of factors

Binomial (2 terms) times Binomial (2 terms):



Simplify: $(2x + 7)\,(5x + 3)$

$2x \cdot 5x$	+ $2x \cdot 3$	+ $7 \cdot 5x$	+ $7 \cdot 3$	Distributive property
First	**Outside**	**Inside**	**Last**	Spells "FOIL"

Did you notice that the first letter of each word F-O-I-L spells FOIL??? This is a trick to help you remember the steps to multiplying 2 binomials!

$10x^2 + 6x + 35x + 21$	Multiplication of factors
$10x^2 + 41x + 21$	Addition of like terms

Binomial (2 terms) times Binomial (2 terms) continued:

These problems use the same method as on the previous page.
But they **LOOK** different because there is no middle term!

Simplify: $(5x+2)(5x-2)$	Example
$5x\cdot 5x - 5x\cdot 2 + 5x\cdot 2 - 2\cdot 2$	Distributive property
$25x^2 - 10x + 10x - 4$	Multiplication of factors
$25x^2 - 4$	Combine like terms

Note: This answer is called: **Difference of squares**
because it is subtraction and both terms are perfect squares.

Simplify: $(x+4)^2$ **MEANS** $(x+4)(x+4)$

$x^2 + 8x + 16$

	Distribute:	Answers:
1.	$3(2x+5)$	$6x + 15$
2.	$8(3x-2)$	$24x - 16$
3.	$-4(5x+3)$	$-20x - 12$
4.	$-5(2x-5)$	$-10x + 25$
5.	$(3x-2)(-6)$	$-18x + 12$
6.	$3x(5x+2)$	$15x^2 + 6x$
7.	$-2x(7x-4)$	$-14x^2 + 8x$
8.	$5y(2x+3m+6)$	$10xy + 15my + 30y$
9.	$(-x+5r^2-7)(-2)$	$2x - 10r^2 + 14$
10.	$4x + 5(2y+3)$	$4x + 10y + 15$
	The $4x$ is a separate term and not part of the distributive property!	
11.	$(x+5)(x+3)$	$x^2 + 8x + 15$
12.	$(3x+5)(-2x+1)$	$-6x^2 - 7x + 5$
13.	$(2x+3)(4m+5)$	$8mx + 10x + 12m + 15$
14.	$(3x-2)(2x-5)$	$6x^2 - 19x + 10$
15.	$(5x^2+8)(2x-3)$	$10x^3 - 15x^2 + 16x - 24$
16.	$(4x-3)(4x+3)$	$16x^2 - 9$
17.	$(5y+4)(5y-4)$	$25y^2 - 16$
18.	$(2x-5)^2$	$4x^2 - 20x + 25$
19.	$(7m+3)^2$	$49m^2 + 42m + 9$