

**Day 3 – Multiplying Polynomials**

There are several different ways to multiply polynomials. You will learn the distributive method and area method. Once you have practiced both methods, you can determine which one you like best and works for you.

EXAMPLE 1:

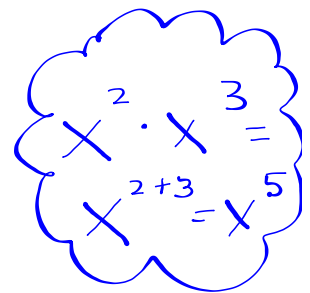
**Distributive Method:**  $2x(x-4)$

$$2x^2 - 8x$$

**Area Method:**  $2x(x-4)$

	$x$	$-4$
$2x$	$2x^2$	$-8x$

$2x^2 - 8x$



EXAMPLE 2:

**Distributive Method:**  $(x+2)(x-9)$

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

$$x^2 - 7x - 18$$

**Area Method:**  $(x+2)(x-9)$

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

$x^2 - 9x + 2x - 18$   
 $x^2 - 7x - 18$

EXAMPLE 3:

**Distributive Method:**  $(2x-4)^2$

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

$$4x^2 - 8x - 8x + 16$$

$$4x^2 - 16x + 16$$



**Area Method:**  $(2x-4)^2 = (2x-4)(2x-4)$

	$2x$	$-4$
$2x$	$4x^2$	$-8x$
$-4$	$-8x$	$+16$

$4x^2 - 8x - 8x + 16$   
 $4x^2 - 16x + 16$

EXAMPLE 4:

**Distributive Method:**  $(x+6)(x-6)$

$$x^2 - 6x + 6x - 36$$

$$x^2 - 36$$

**Area Method:**  $(x+6)(x-6)$

	$x$	$-6$
$x$	$x^2$	$-6x$
$+6$	$6x$	$-36$

$x^2 - 6x + 6x - 36$   
 $x^2 - 36$

## Practice Problems

Simplify these problems with a method of your choosing.

$$1. (x-7)(x+4)$$

$$x^2 + 4x - 7x - 28$$

$$x^2 - 3x - 28$$

$$2. (x-9)^2$$

$$(x-9)(x-9)$$

$$x^2 - 9x - 9x + 81$$

$$x^2 - 18x + 81$$

$$3. (x+10)(x-10)$$

$$x^2 - 10x + 10x - 100$$

$$x^2 - 100$$

4.  $x(x-12)$

$$5. (3x+7)(2x+1)$$

	$2x$	$+1$
$3x$	$6x^2$	$3x$
$+7$	$14x$	$7$

$$6x^2 + 17x + 7$$

6.  $(x+3)^2$

7.  $(2x-1)(3x-4)$

$$8. (4x-5)(x^2+3x-6)$$

$$4x^3 + 12x^2 - 24x - 5x^2 - 15x + 30$$

Remember!!!  
Multiply Coefficients, ADD exponents

$$2x^i \cdot 4x^i = 8x^2$$

$$-3x^4 \cdot 2x^3 = -6x^7 \quad -3x^4 + 2x^{\frac{7}{3}}$$