

Multiplying Polynomials:

Ex. 1 $5(2x + 5)$
 $10x + 25$

Ex. 2 $2x(4x + 6)$
 $8x^2 + 12x$

Ex. 3 $-4(2x^2 - 6x - 3)$
 $-8x^2 + 24x + 12$

Ex. 4 $3x(-x^2 + 8x - 2)$
 $-3x^3 + 24x^2 - 6x$

$x' \cdot x'$

Multiplying Polynomials:

Methods:

1. Horizontal multiplication (FOIL)
2. Box Method

Ex. 5 $(x + 2)(x + 3)$

FOIL [First, Outer, Inner, Last]	Box Method									
$(x + 2)(x + 3)$ $x^2 + 3x + 2x + 6$ $x^2 + 5x + 6$	<table border="1"> <tr> <td></td> <td colspan="2">x + 2</td> </tr> <tr> <td>x</td> <td>x^2</td> <td>$2x$</td> </tr> <tr> <td>+ 3</td> <td>$3x$</td> <td>6</td> </tr> </table> <ol style="list-style-type: none"> 1. Multiply to fill boxes 2. (Add Terms in Box) $x^2 + 3x + 2x + 6$ 3. (Combine like terms) $x^2 + 5x + 6$ 		x + 2		x	x^2	$2x$	+ 3	$3x$	6
	x + 2									
x	x^2	$2x$								
+ 3	$3x$	6								

Ex. 6 $(x - 3)(x^2 + 3x + 2)$

FOIL [First, Outer, Inner, Last]	Box Method																		
$(x - 3)(x^2 + 3x + 2)$ $x^3 + 3x^2 + 2x$ $- 3x^2 - 9x - 6$ $x^3 - 7x - 6$	<table border="1"> <tr> <td></td> <td colspan="2">x - 3</td> </tr> <tr> <td>x^2</td> <td>x^3</td> <td>$-3x^2$</td> </tr> <tr> <td>+</td> <td>$3x^2$</td> <td>$-9x$</td> </tr> <tr> <td>$3x$</td> <td>$2x$</td> <td>-6</td> </tr> <tr> <td>+</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> </tr> </table> $x^3 - 7x - 6$		x - 3		x^2	x^3	$-3x^2$	+	$3x^2$	$-9x$	$3x$	$2x$	-6	+			2		
	x - 3																		
x^2	x^3	$-3x^2$																	
+	$3x^2$	$-9x$																	
$3x$	$2x$	-6																	
+																			
2																			

Multiplying Polynomials:

Ex. 7 $(6t - 5)(7t - 5)$

$6t$	-5	
$7t$	$42t^2$	$-35t$
-5	$-30t$	25

 $42t^2 - 65t + 25$

Ex. 8 $(x + 3)(x^2 - 1)$

$$x^3 - x + 3x^2 - 3$$

st. form $x^3 + 3x^2 - x - 3$

Ex. 9 $(x - 4)(-x^2 + 7x - 3)$

$$\begin{array}{r} -x^3 + 7x^2 - 3x \\ 4x^2 - 28x + 12 \end{array}$$

$$-x^3 + 11x^2 - 31x + 12$$

or use
box
method

x^1	$-x^2$	$7x^1$	-3
x^1	$-x^3$	$7x^2$	$-3x$
-4	$4x^2$	$-28x$	12

$$-x^3 + 11x^2 - 31x + 12$$

Ex. 10 $(x + 2)(x^2 + 6x - 1)$

$$\begin{array}{r} x^3 + 6x^2 - x \\ 2x^2 + 12x - 2 \end{array}$$

$$x^3 + 8x^2 + 11x - 2$$