Math 2

- Calculator
- glue sticks
- toolkits

Multiplying Binomials: Box Method

- Fill in the bubbles by writing one of the binomials along the top of the box and the other down the side of the box.
- Multiply rows times columns
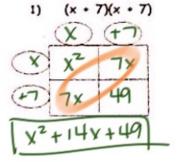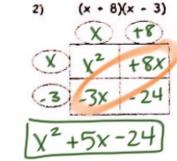- After multiplying, collect like terms (They should be in the diagonal)

Ex 1) (x + 6)(x + 4)

	X	+6
X	x^2	6x
+4	4x	24

$$x^2 + 10x + 24$$

x^2	6x
4x	24

$$4x + 6x = 10x$$

Try using the Box Method for the problems below.

Ex 2) (x + 2)(x - 3)

	X	+2
X	x^2	2x
-3	-3x	-6

→ -x

$$x^2 - x - 6$$

Ex 3) (2x + 4)(x + 5)

	2x	+4
X	$2x^2$	4x
+5	10x	20

→ 14x

$$2x^2 + 14x + 20$$

HW: Multiplying Binomials

For # 1 and 2 use the BOX Method.

1) (x + 7)(x + 7)

	X	+7
X	x^2	7x
+7	7x	49

$$x^2 + 14x + 49$$

2) (x + 8)(x - 3)

	X	+8
X	x^2	+8x
-3	-3x	-24

$$x^2 + 5x - 24$$

3) (x - 9)(x + 4)

	X	-9
X	x^2	-9x
+4	+4x	-36

$$x^2 - 5x - 36$$

4) (x - 2)(x - 5)

	X	-2
X	x^2	-2x
-5	-5x	10

$$x^2 - 7x + 10$$

Factoring Review

$$\star\ ax^2 + \underline{b}x + c$$

$$II + III = b$$

$$I \cdot IV = a \cdot c \quad \leftarrow \text{list chart of all factors.}$$

$\star$ work from inside out $\star$

$\star$ Always look for GCF first $\star$ & take it out

Hints:

$ax^2 + bx + c \rightarrow$ both (+)

$ax^2 + bx - c \rightarrow$ one + $\rightarrow$ larger
                             one − $\rightarrow$ smaller

$ax^2 - bx + c \rightarrow$ both (−)

$ax^2 - bx - c \rightarrow$ one(−) $\rightarrow$ larger
                             one (+) $\rightarrow$ smaller.

1. $\dfrac{2n^2}{2} - \dfrac{12n}{2} + \dfrac{16}{2}$ GCF: 2   ↖ standard form

2 $(n^2 - 6n + 8)$

	n	-4
n	n^2	$-4n$
-2	$-2n$	8

$II + III = -6$
$I \cdot IV = 8 \rightarrow$
$\begin{array}{cc} -4 & -2 \\ 1 & 8 \end{array}$

$2(n-4)(n-2)$ ← factored form

2. $\dfrac{n^3}{n^2} - \dfrac{7n^2}{n^2}$ gcf $\cdot n^2$

$n^3 = n \cdot n \cdot n$
$7n^2 = 7 \cdot n \cdot n$

$n^2(n-7)$

3. $k^4 + 6k^3 - 7k^2$ GCF:

$k^2(k^2 + 6k - 7)$

$k^4 = k \cdot k \cdot k \cdot k$
$k^3 = k \cdot k \cdot k$
$k^2 = k \cdot k$
k^2

	k	-1
k	k^2	$-1k$
7	$7k$	-7

$II + III = 6$
$I \cdot IV = -7$
$\begin{array}{cc} -1 & 7 \end{array}$

$k^2(k+7)(k-1)$

15. $5n^2 + 12n - 9$

$5n \cdot n$

	n	+3
5n	$5n^2$	$15n$
-3	$-3n$	-9

$II + III = 12$
$I \cdot IV = -45$

$9 \cdot 5$
$15 \cdot -3$
$1 \cdot 45$

$(n+3)(5n-3)$