Name: Period: Date:

Math Lab: BOX Method Factoring

Example 1

Build a rectangular model of the quadratic trinomial using algebra tiles and sketch it below. Then write its area as a product. $$x^2 + 7x + 6$$	Box Method	Criss-cross

Example 2

Build a rectangular model of the quadratic trinomial using algebra tiles and sketch it below. Then write its area as a product. $$2x^2 + 7x + 3$$	Box Method	Criss-cross

Example 3

Build a rectangular model of the quadratic trinomial using algebra tiles and sketch it below. Then write its area as a product. $$3x^2 + 8x + 4$$	Box Method	Criss-cross

Example 4

| Build a rectangular model of the quadratic trinomial using algebra tiles and sketch it below. Then write its area as a product. $$4x^2 - 8x + 3$$	Box Method	Criss-cross

BONUS

| Build a rectangular model of the quadratic trinomial using algebra tiles and sketch it below. Then write its area as a product. $$2x^2 + 3x - 5$$	Box Method	Criss-cross

Use the Factor Box Method for factoring with a leading coefficient greater than one. After the box is set up, pull out the greatest common factors from each row and column. What's on the outside of the box forms the factors.

$$\frac{ac}{?\times?}$$
$$b$$

ax^2	$?x$
$?x$	c

$ax^2 + bx + c$

+	+
+	+

$+$

$+$

$ax^2 - bx + c$

+	−
−	+

$-$

$ax^2 + bx - c$
$ax^2 - bx - c$

+	+
−	−

$-$

$+$

+	−
+	−

$+$

$-$

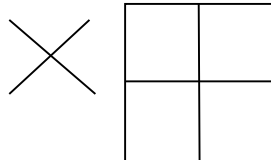Factor each quadratic equation WITHOUT using the algebra tiles.
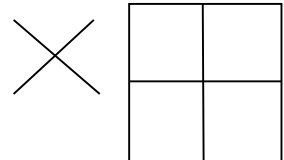
5] $8x^2 + 14x + 3$
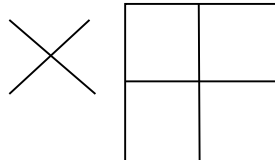
6] $4x^2 - 4x - 15$
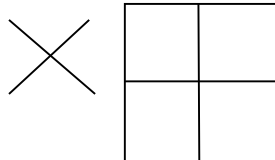
7] $3x^2 + 17x - 28$

8] $5x^2 - 27x + 10$

Practice factoring

Step 1. Make sure the equation is in standard form $ax^2 + bx + c$; <u>a must be positive</u>.
Step 2. Divide out any common factors.
Step 3. If $a = 1$, use the 'criss-cross method'. If $a > 1$, use the 'box method'.
Step 4. Check the signs.
Note: If the quadratic does not factor, write "DNF".

9] $3x^2 - 19x + 6$	10] $12x^2 - 2(4x - 2)$	11] $4(x^2 + x) - 4x - 9$
12] $10x^2 - 9 - 4x^2 - 15x$	13] $2x^2 + 3x - 1 + 2x$	14] $3(x^2 + x + 1) - 2(x^2 + 1) - x$