

Polynomials - Engaging Resources

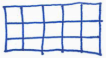
AN SO4 - Connections - Area Model of Multiplication

(Download: [Area Model of Multiplication](#))

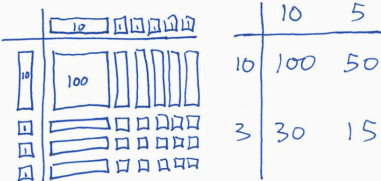
This model may help students become more comfortable with algebra tiles and a grid by connecting these new strategies to numerical multiplication. A nice example of going from concrete to abstract.

Area Model for Multiplication

$3 \times 5 = 15$



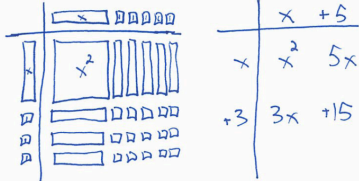
$13 \times 15 = 195$



	10	5
10	100	50
3	30	15

$= 100 + 50 + 30 + 15$
 $= 195$

$(x+3)(x+5) = x^2 + 8x + 15$



	x	+5
x	x^2	5x
+3	3x	+15


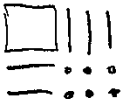
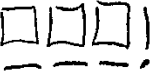
$= x^2 + 5x + 3x + 15$
 $= x^2 + 8x + 15$

This is a nice example of making **Connections** between concepts. Visit the [Connections Process](#) section for more ideas on how to incorporate Connections into your teaching.

AN SO4,5 - Algebra Tiles Practice Charts

(Download: [Rectangles & Algebra Tiles Charts 1-3.pdf](#) [Rectangles & Algebra Tiles Charts 1-3 KEY.pdf](#))

One of the strengths of algebra tiles is the ability to easily see the connection between multiplication and factoring. These three charts help to emphasize that connection as well as provide practice going from pictorial to symbolic and vice-versa.

Polynomial	Sketch of Rectangle	Grid	Dimensions (factors)
$2x^2 + 5x + 3$		$\begin{array}{r l} & 2x + 3 \\ x & 2x^2 + 3x \\ +1 & 2x + 3 \end{array}$	$(x+1)(2x+3)$
$x^2 + 5x + 6$		$\begin{array}{r l} & x + 3 \\ x & x^2 + 3x \\ +2 & 2x + 6 \end{array}$	$(x+2)(x+3)$
$3x^2 + 4x + 1$		$\begin{array}{r l} & 3x + 1 \\ x & 3x^2 + x \\ +1 & 3x + 1 \end{array}$	$(x+1)(3x+1)$

AN SO5 - Difference of Squares - Geometric Proof

(Download: [Difference of Squares Geometric Proof.notebook](#))

This is a cool geometric proof for difference of squares factoring. Students can try to figure it out physically with graph paper and then it can be reviewed using an interactive notebook page where you can drag and rotate the pieces.

Difference of Squares - Geometric Proof

1. Cut out an 8 x 8 square of graph paper. Label the sides x.
2. Cut out a smaller square from the corner of the 8 x 8 square. Label the sides of the smaller square y.
3. Make one cut to the irregular shape that remains, so that you can rearrange it to make a rectangle. What are the dimensions of the rectangle you made?
4. How does this prove that $x^2 - y^2 = (x + y)(x - y)$?

Difference of Squares - Geometric Proof

How does this prove that $x^2 - y^2 = (x + y)(x - y)$?

