Notes: 3.3 Algebra Tiles

Monomials & Binomials

* Each large square has a length of x units and a width of x units
* Each rectangle has a length of x units and a width of 1 unit
* Each small square has a length of 1 unit and a width of 1 unit

x 1 1 -x -1 -1

1 -1

x x -x -x

To Factor a binomial (ex. 4m2 + 12), shape your tiles into a perfect rectangle.

2m+6

2

READ along the TOP side: *length* \_\_\_\_\_\_ (2m + 6)\_\_\_\_\_\_\_\_\_\_

READ along the LEFT side: *width* \_\_\_\_\_2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SOLVE: 2 x (2m + 6) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The dimensions of each rectangle represent the factors [(2m+6)(2)], of the polynomial.

Ex. #1 Find the factors of the polynomial below.

*Length*: 2m +6

*Width*: 2 2 x (2m+6) = 4m +12

Ex. #2 Factor the binomial 6c + 4c2 using algebra tiles.

*Length*: 2x + 3

(2x + 3)(2x) = 4x2 +6x

*Width*: 2x

You can also arrange your tiles using a grid to solve for the factors.

Ex. #3. Solve 3(2x + 1) using algebra tiles

*(2x + 1)*

1st: set up the dimensions of the rectangle

2nd: complete the rectangle using the tiles

3rd: solve (check your answer using distributive property)

*3*

When completed, this rectangle has a width 3 and a length (2x +1).

*\*Note* that *area* = (*length* x *width*)

3(2x +1)

= 6x + 3

Ex. #4 Find the value of x(x+3)

x(x+3)

= x2 + 3x

Ex. #5

*(3x + 1)*

x*(3x + 1)*

*x = 3x2 +x*

\*ALWAYS check your answer using DISTRIBUTIVE PROPERTY\*

Complete the following table:

|  |  |  |
| --- | --- | --- |
| **FACTORS** | **TILE MODEL** | **SOLVE**  **Check your answer!** |
| (2x)(x+1) |  | \*use distributive property  (2x)(x+1)  = 2x2 + 2x |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **FACTORS** | **TILE MODEL** | **SOLVE**  **Check your answer!** |
| -6(2x-3) |  |  |
| 2x(2x+4) |  |  |
| -x(-2x - 4) |  |  |
| -3x(x-3) |  |  |