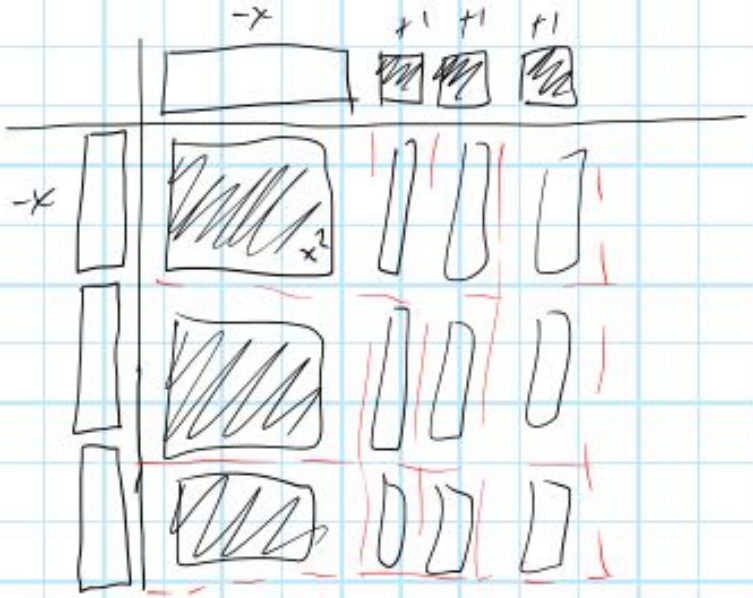
Dividing Polynomials

Monday, February 24, 2020 12:14 PM

Warm-up

① a) Complete the algebra tile calculation on the right.



b) write the question and answer using variables

$(-3x)\cdot(-x+3) = 3x^2 - 9x$

② Multiply

$(-3x^2y)(6x - 4xy^2 + x^4y^6)$

$= (-3x^2y)(6x) + (-3x^2y)(-4xy^2) + (-3x^2y)(x^4y^6)$

$= -18x^3y + 12x^3y^3 - 3x^6y^7$

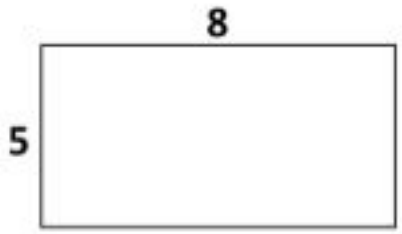
Math 9 Section 5.4 – Dividing Polynomials

Homework: Section 5.4 on Pg. 189; #1-3half, 4-5all, 6, 8, 10half

Last time, we used rectangles to solve multiplication problems because finding the area is the same as multiplying the sides together.

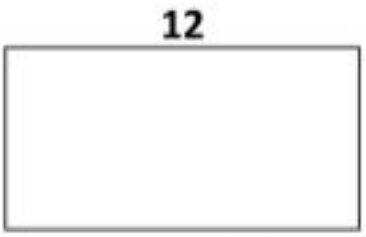
Area = $5 \cdot 8$

$= 40$



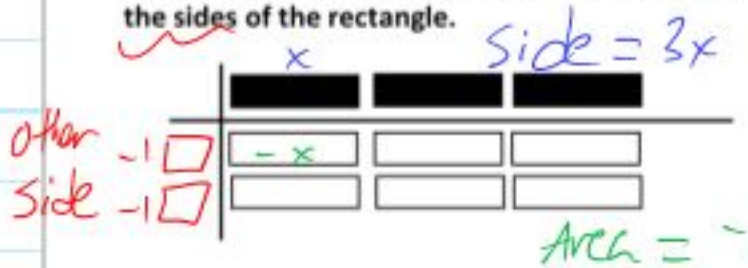
But what if I told you the area and wanted you to find one of the sides…?

Area = 72



$\frac{\text{Area}}{\text{Side}} = \frac{72}{12} = 6$

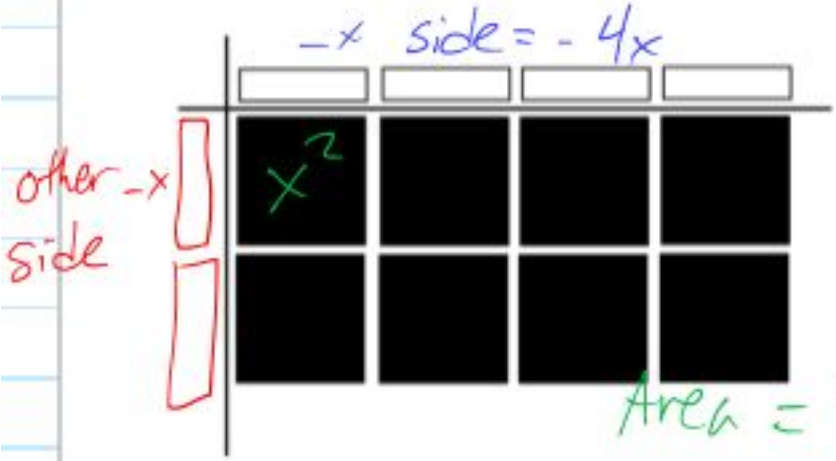
Now we can use rectangles for division too! This time, dividing is the same as finding one of the sides of the rectangle.



$\frac{-6x}{3x} = -2$

$\frac{-6}{3} = -2$

$\frac{x}{x} = 1$

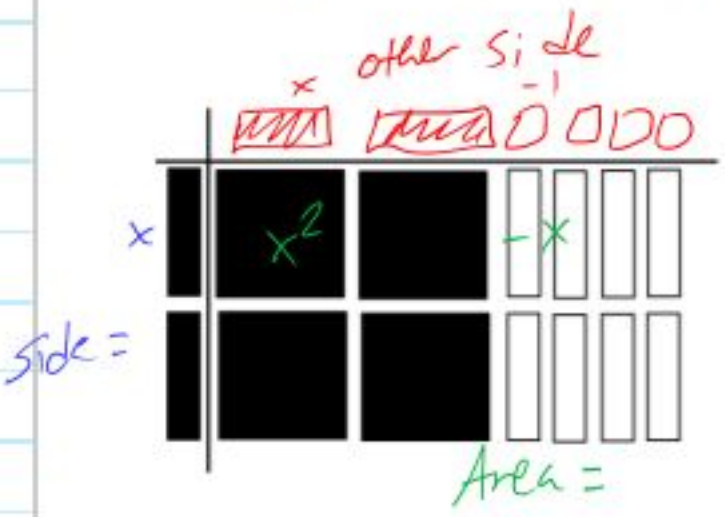


$\frac{8x^2}{-4x} = -2x$

$\frac{8}{-4} = -2$

$\frac{x^2}{x} = x$

Area = Side



Write Q and A using variables

$= 2x - 4$

Distribute division

From our algebra tile pictures, we can see the pattern for dividing polynomials:

1. divide coefficients (numbers)
2. divide variables (letters)
3. If we have 2 or more terms on top, we divide each term separately

$\frac{10x^4 - 8x^2 - 2x}{-2x} = \left(\frac{10x^4}{-2x}\right) + \left(\frac{-8x^2}{-2x}\right) + \left(\frac{-2x}{-2x}\right)$ $\frac{x}{x} = 1 \neq 0$

$= -5x^3 + 4x + 1$

$2x(3x-5) - (12x^2 - 6x) \div 3x = 6x^2 - 10x - \left(\frac{12x^2 - 6x}{3x}\right)$

BEDMAS

$= 6x^2 - 10x - (4x - 2)$

$= 6x^2 - 10x - 4x + 2$

$= 6x^2 - 14x + 2$