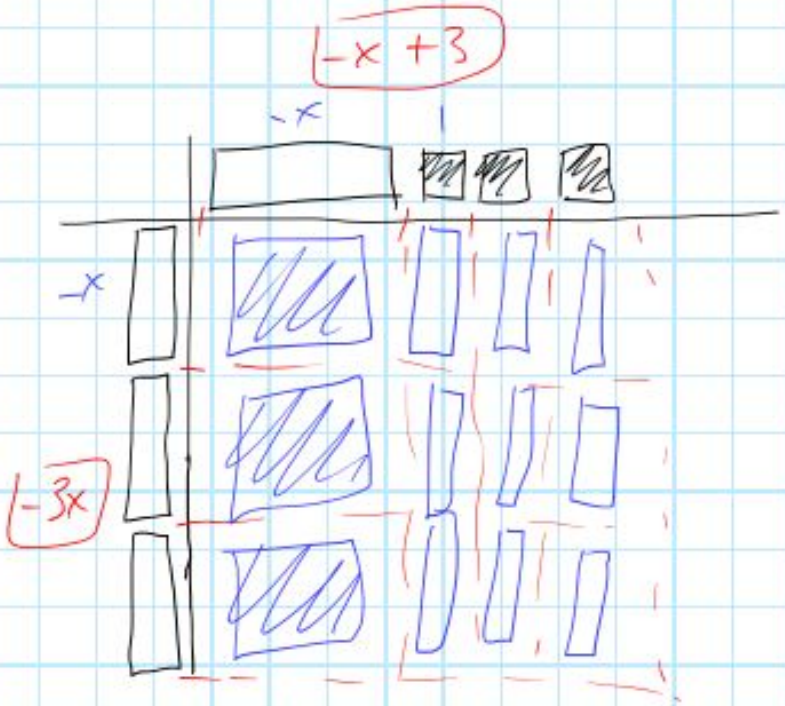
Dividing Polynomials

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

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

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

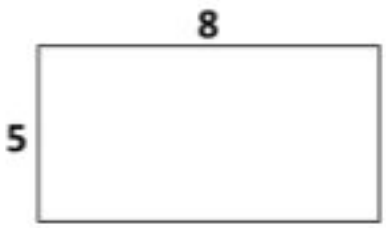
$$= -18x^3y + 12x^3y^3 - 3x^6y^7$$

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 = $8 \cdot 5$
$= 40$

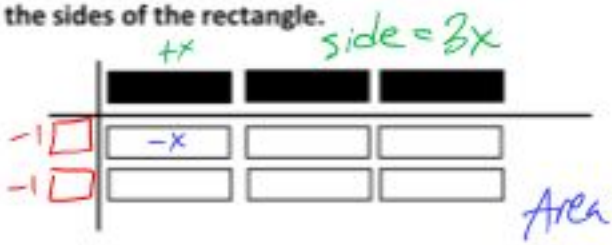


But what if I told you the area and wanted you to find one of the sides…?

Area = 72

$\frac{\text{Area}}{\text{other side}} = \frac{72}{12} = 6$

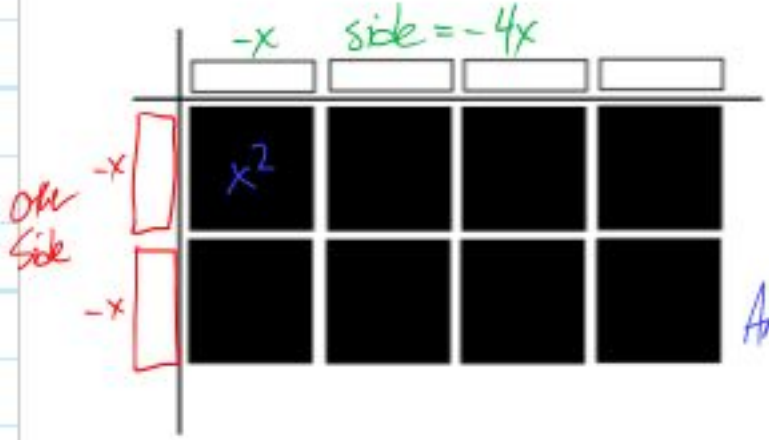
Now we can use rectangles for division too! This time, dividing is the same as finding one of the sides of the rectangle.



Area = $-6x$

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

Dividing variables
Dividing numbers

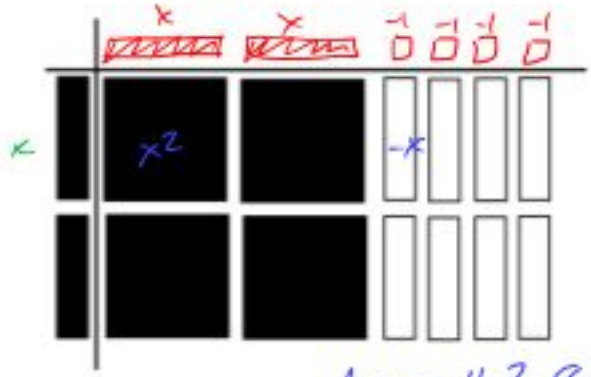


Area = $8x^2$

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

$\frac{x^2}{x} = x^{2-1} = x$

other side =



side = $2x$

Area = $4x^2 - 8x$

* write out question/answer using variables

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

2 or more terms on top, we divide each separately

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

1. divide variables (letters)
2. divide coefficients (numbers)
3. If there are 2 or more terms on top, we divide each term by the denominator

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

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

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

BEDMAS

$= 6x^2 - 10x - [4x - 2]$

$6x^2 - 10x$

$= + \quad -4x + 2$

$6x^2 - 14x + 2$