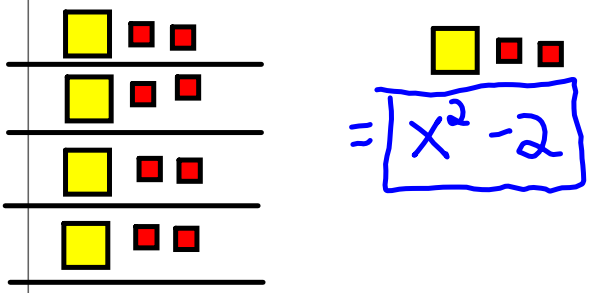
Math 9
Ch. 5 – Polynomials

Name: _____
Block: _____

5.6 – Dividing a Polynomial by a Monomial

When we divide an expression, we split it into equal groups and then see what is in each group – this becomes the answer.

Ex. 1: $\frac{4x^2 - 8}{4}$

Using algebra tiles	Symbolically (algebraically)
	$\frac{4x^2 - 8}{4}$ $= \frac{4x^2}{4} - \frac{8}{4}$ $= x^2 - 2$

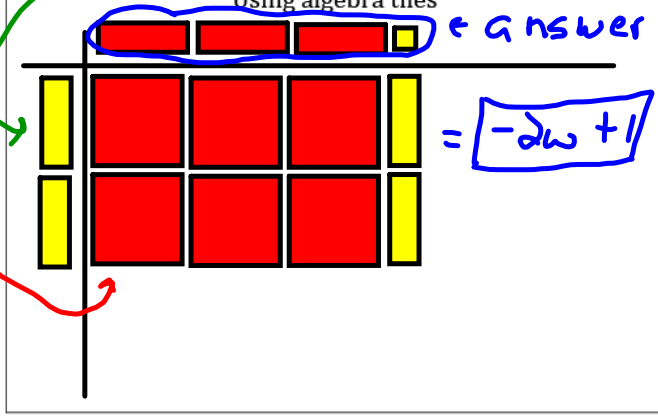
Ex. 2: $\frac{-3m^2 + 15mn - 21n^2}{-3}$

$= \frac{-3m^2}{-3} + \frac{15mn}{-3} + \frac{-21n^2}{-3}$

$= m^2 - 5mn + 7n^2$

What about dividing by a monomial that isn't just a constant? We can still use algebra tiles by placing guiding tiles representing the denominator along one side and filling in the area with the polynomial in the numerator. Determine the other set of guiding tiles to find the answer.

Ex. 3: $\frac{-6w^2 + 3w}{3w}$

Using algebra tiles	Symbolically (algebraically)
	$\frac{-6w^2}{3w} + \frac{3w}{3w} = -2w + 1$

Ex. 4: $(10x^2 + 6x) \div (-2x)$

$= \frac{10x^2 + 6x}{-2x}$

$= \frac{10x^2}{-2x} + \frac{6x}{-2x}$

$= -5x - 3$

Ex. 5: $\frac{20p^2q - 16pq + 8pq^2}{-4p}$

$= \frac{20p^2q}{-4p} \quad \frac{-16pq}{-4p} \quad \frac{+8pq^2}{-4p}$

$= -5pq + 4q - 2q^2$