Math 9 – Unit 2: Algebra One   Name: _____

Lesson #5: Dividing Monomials   Date: _____

Learning Goal: We are learning to divide by monomials.

We've added, subtracted, multiplied, and even raised monomials to powers. All that is left is dividing by monomials. First, let's develop a rule with numbers.

Simplify $\dfrac{4^5}{4^3}$

This leads to our 4th exponent law. When dividing, _____ the exponents. Time to put it into practice!

a) $\dfrac{x^8}{x^5}$ b) $\dfrac{y^{72}}{y^{46}}$ c) $\dfrac{m^5 n^3}{m^2 n}$ d) $\dfrac{18 p^7 q^9}{3 p^2 q^2}$

The final step is to divide a monomial into a polynomial, such as $\dfrac{4x^5 - 2x^3 + 6x^2}{2x^2}$. However, first let's look back at adding fractions so we can see an integral step that we will need to use:

$\dfrac{1}{2} + \dfrac{3}{4} + \dfrac{5}{8}$

Keep in mind when doing the following questions that the denominator gets applied to all the terms in the numerator.

a) $\dfrac{4x^5 - 2x^3 + 6x^2}{2x^2}$ b) $\dfrac{16x^3 y^5 + 8x^2 y^4}{4x^2 y}$

c) $\dfrac{40a^3b^6 - 50a^2b^3 + 10ab}{10ab}$

d) $\dfrac{9x^7 + 27x^5 - 15x^4}{-3x^3}$

e) $\dfrac{192r^{78}s^{34} - 144r^{65}s^{53} - 256r^{98}s^{23} + 80r^{88}s^{45}}{16r^{33}s^{21}}$

Success Criteria:
- I can divide like variables by subtracting their exponents
- I can understand the difference between dividing coefficients and dividing variables
- I can divide the monomial into each term of a polynomial separately
- I can recognize that when you divide two identical monomials, the result is one.