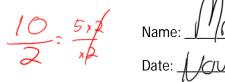
## Math 9 - Unit 2: Algebra One



## **Lesson #5: Dividing Monomials**

**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 
$$\frac{4^5}{4^3} = \frac{4 \times 4 \times 4 \times 4}{4 \times 4 \times 4}$$

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

a) 
$$\frac{x^8}{x^5}$$

(c) 
$$\frac{m^5 n^3}{m^2 n}$$
 3

$$=\chi$$

c) 
$$\frac{m^5 n^3}{m^2 n}$$
  $\stackrel{?}{>}$  d)  $\frac{18p^7 q^9}{3p^2 q^2}$   $\stackrel{?}{>}$   $\frac{18}{4}$   $\stackrel{?}{\times}$   $\stackrel{?}{\times}$ 

The final step is to divide a monomial into a polynomial, such as  $\frac{4x^5 - 2x^3 + 6x^2}{2x^2}$ . However, first let's look back

at adding fractions so we can see an integral step that we will need to use:

$$\frac{1}{2}^{4} + \frac{3}{4} + \frac{5}{8}$$

$$=\frac{4}{8}+\frac{6}{8}+\frac{5}{8}=\frac{4+6+5}{8}=\frac{15}{8}$$

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

a) 
$$\frac{4x^5 - 2x^3 + 6x^2}{2x^2}$$

$$4x^{5} \qquad 2x^{3} \qquad 6x^{2} = 1$$

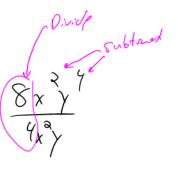
numerator.

a) 
$$\frac{4x^5 - 2x^3 + 6x^2}{2x^2}$$

b)  $\frac{16x^3y^5 + 8x^2y^4}{4x^2y}$ 

$$= \frac{4x^5}{2x^2} - \frac{2x^3}{2x^2} + \frac{6x^2}{2x^2} = 1$$

$$= \frac{16x^3y^5 + 8x^2y^4}{4x^2y}$$



$$= 2x^3 - |x| + 3$$

$$=4\chi\gamma^{4}+2\gamma^{3}$$

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

$$= \frac{40a^{3}b^{6} - 50a^{2}b^{3} + 10ab}{10ab} + \frac{10ab}{10ab} = -3x^{4} - 9x^{2} + 5x$$

$$= 4ab^{5} - 5ab^{2} + 1$$

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

$$= 12r5^{4513} - 9r5^{3232} - 16r5^{652} + 5r5^{5524}$$

## 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.