

**Worksheet 4-8: Dividing Polynomials****Dividing a monomial by a monomial:**

Step 1 - **DIVIDE the signs** of the coefficients (the number before the variable).

Step 2 - **DIVIDE the coefficients** (the number before the variable).

Step 3 - **DIVIDE the variables**.

**Note:** If the variables are the same, **SUBTRACT** the exponents.

Why do we subtract? We reduce.

$$\text{e.g. } \frac{y^3}{y^2} = \frac{y \times y \times y}{y \times y} = y = y^{3-2}$$

**Example 1: Dividing a monomial by a monomial**

(a)  $4x^2 \div 2$

$$= \left(\frac{4}{2}\right)x^2$$

$$= 2x^2$$

(b)  $10u \div 2$

(c)  $\frac{-24x^3}{2}$

(d)  $48y^3 \div y$

$$= 48\left(\frac{y^3}{y}\right)$$

$$= 48y^2$$

(e)  $54x^3 \div x^2$

(f)  $\frac{-72b^2}{b}$

(g)  $45x^3 \div 5x^2$

$$= \left(\frac{45}{5}\right)\left(\frac{x^3}{x^2}\right)$$

$$= 9x$$

(h)  $108l^3 \div -12l$

(i)  $\frac{-32m^3}{-m^2}$

**Example 2: Dividing a product of monomial by a monomial** (*Hint: Follow BEDMAS!*)

(a)  $(4x)(6x^2) \div 12x$

(b)  $144y^3 \div (6y^2)(-2y)$

(c)  $\frac{(5a)(6a)(-a)}{-15a^2}$

**Practice:****1. Simplify.**

(a)  $72x^3 \div 12$

(b)  $-121y^2 \div 11y$

(c)  $-36m^3 \div -12m$

(d)  $\frac{-100b^3}{25b^2}$

(e)  $\frac{28x^2}{-2x}$

(f)  $\frac{-81m^3}{-9m^3}$

**2. Simplify.**

(a)  $\frac{(5x)(10x^2)}{-2x}$

(b)  $\frac{(15y^2)(-8y)}{(20y)}$

(c)  $\frac{(-20x)(x)(3x)}{5x}$

(d)  $\frac{-84z^3}{(-z)(7z^2)}$

(e)  $\frac{(24n)(3n^3)}{(2n)(6n)}$

(f)  $\frac{(-k)(-125k)(k)}{(k^2)(-5k)}$

**Dividing Polynomial Bingo**

**Instructions:** (1) For the following bingo grid, write numbers 1-9 randomly in the small boxes.  
 (2) Following the question numbers in sequence, simplify each expression inside the corresponding bingo grid box.

1.  $45x^3 \div 9$

2.  $42y^3 \div 7y$

3.  $\frac{-88m^3}{11m}$

4.  $\frac{102p^2}{-3p}$

5.  $\frac{-16x^3}{-x^3}$

6.  $\frac{(7y)(-8y^2)}{4y}$

7.  $\frac{72k^3}{(2k)(3k)}$

8.  $\frac{-128a^3}{(2a)(16a^2)}$

9.  $\frac{(4x)(12x)(2x)}{(2x)(8x)}$

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