

Name: KEY

Date: _____

Day 11- Dividing Polynomials by Monomials

Do Now:

1. $\frac{6c^4d^6}{2c^2d^3}$

$3c^2d^3$

2. $\frac{16t^3}{-4t}$

$-4t^2$

3. $\frac{25x^{10}y}{5x^8}$

$5x^2y$

- divide coefficients
- keep base, subtract exponents

When we divide polynomials by monomials, we want to divide each TERM in the numerator by the denominator in fraction form.

Example:

$$\frac{2x^3 - 5x^2}{x}$$

$$\frac{2x^3}{x} - \frac{5x^2}{x}$$

$$2x^2 - 5x$$

Let's try some examples: Write all answers with positive exponents.

1. $4n + 8 \div 2$

$$\frac{4n+8}{2} = \frac{4n}{2} + \frac{8}{2} = 2n+4$$

2. $\frac{25s^3+12s}{5s}$

$$\frac{25s^3+12s}{5s} = 5s^2 + \frac{12}{5}$$

$$\frac{25s^3+12}{5}$$

3. $14y^2 - 2 \div 7y$

$$\frac{14y^2 - 2}{7y} = 2y - \frac{2}{7y}$$

4. $\frac{16x^2 + 24x}{8x^2}$

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

5. $\frac{36x^3 + 60x^2 - 6x}{3x}$

$$\frac{36x^3}{3x} + \frac{60x^2}{3x} - \frac{6x}{3x} = 12x^2 + 20x - 2$$

6. $3a^2 + 4a - 16 \div 2$

$$\frac{3a^2 + 4a - 16}{2} = \frac{3a^2}{2} + 2a - 8$$

7. Find the quotient of $15x^2 + 10x - 5$ and $5x$.

$$\frac{15x^2 + 10x - 5}{5x} = 3x + 2 - x^{-1}$$

$$= 3x + 2 - \frac{1}{x}$$

8. The area of a rectangle is $6x^3 - 3x^2 + 18x$ and the width is $3x$. Find the expression that represents the length of the rectangle.

$$A = l \cdot w$$

$$l = \frac{A}{w}$$

$$\frac{6x^3 - 3x^2 + 18x}{3x} = 2x^2 - x + 6$$