Lesson 26 Dividing a Polynomial by a Monomial

Dividing a polynomial by a monomial:

Steps to follow . . .

1. Separate each term in the numerator into a separate fraction.
2. Use the same denominator for each fraction.
3. Simplify the individual fractions

Examples: Divide.

1. $(18x^5y^4 + 36x^7y^3 - 4x^3y) \div (2x^3y)$

$$\frac{18x^5y^4}{2x^3y} + \frac{36x^7y^3}{2x^3y} + \frac{-14x^3y}{2x^3y}$$

$$9x^2y^3 + 18x^4y^2 + -7$$

2. $(15m^6n^4 + 10m^8n^3 - 25m^5n^2) \div (5mn^2)$

$$\frac{15m^6n^4}{5mn^2} + \frac{10m^8n^3}{5mn^2} - \frac{25m^5n^2}{5mn^2}$$

Find the Greatest Common Factor, GCF:

$$3m^5n^2 + 2m^7n - 5m^4$$

Steps to Follow . . .

1. Look at all of the coefficients. What number can be evenly divided out of each coefficient?
2. Put this number out front.
3. Divide each coefficient by this common factor.
4. How many factors of x does each term have? (Look for the smallest exponent.)
5. Put x to this power out front.
6. Subtract this many powers of x from each term.

Examples: Find the Greatest Common Factor.

3. $4x^3 + 12x^2 - 8x$

$4x(x^2 + 3x - 2)$

4. $5a^5b + 10a^3b^4 - 30a^2b^6$

$5a^2b(a^3 + 2ab^3 - 6b^5)$