

11.4 EQ: **How DO YOU PERFORM OPERATIONS ON POLYS?**

Factoring out a Greatest Common Factor:

- 1) Find a number or expression that divides evenly into EACH term. (variables)
- 2) Place that GCF on the outside of the parentheses.
- 3) Check that there is still nothing that can divide evenly into the terms still left inside the parentheses. If there is, go back to step 1!

4) **Check answer by multiplying!**

Example 1: Factor out the GCF of each expression.

a) $\frac{18y^2}{3} - \frac{15y^3}{3} + \frac{3y}{3} - \frac{6}{3}$

$3(6y^2 - 5y^3 + 1y - 2)$

$3(-5y^3 + 6y^2 + y - 2)$

b) $\frac{32x^4}{4} - \frac{16x^3}{4} + \frac{8x^2}{4}$

$4(\frac{8x^4}{2} - \frac{4x^3}{2} + \frac{2x^2}{2})$

$4 \cdot 2(\frac{4x^4}{x^2} - \frac{2x^3}{x^2} + \frac{x^2}{x^2})$

$8x^2(4x^2 - 2x + 1)$

c) $45x^3y^2z^3 - xy^2z + 15x^2y^4 - 5xyz^2$

$$xy^2z^2 (45x^2yz^3 - yz + 15xy^3 - 5z^2)$$

d) $82x^4y^2z^3 - 16x^3y^7z^{11} + 8x^2y^9z^2$

$$2x^2y^2z^2 (41x^2z - 8xy^5z^9 + 4y^7)$$

Summary: