

Distributive Property!

Unit 3: Polynomials

3.7 The Grouping Method

Always check for a GCF first.

Steps:

- 1) Arrange terms in descending order (ie. $x^2 + 2x - 4x - 8$)
- 2) Cut it in half (ie. draw a dotted line down the middle.)
- 3) GCF both sides of the dotted line separately. $x(x+2) - 4(x+2)$
- 4) Built in CHECK: Are the binomials in the brackets the same?
- 5) Write the answer: (one of the common binomials)(the leftovers)
ie. $(x+2)(x-4)$

Distributive Property!

Ex.) Factor the following by grouping.

a) $x^2 + 3x + 6x + 18$

$(x)(x+3) + 6(x+3)$
 $(x+3)(x+6)$

b) $8a^2 - 4a - 10a + 5$

$(4a)(2a-1) - 5(2a-1)$
 $(2a-1)(4a-5)$

*only GCF a negative when it's on the first term.



$$c) 6a^2 - 9a - 2a + 3$$

$$\underline{3a(2a-3)} - \underline{1(2a-3)}$$

$$\boxed{(2a-3)(3a-1)}$$

$$d) 5x^2 + 18y^2 - 15xy^2 - 6x$$

$$\begin{array}{cccc} \frac{-15xy^2}{-3y^2} & + \frac{18y^2}{-3y^2} & + \frac{5x^2}{x} & - \frac{6x}{x} \\ -3y^2(5x-6) & + x(5x-6) & & \end{array}$$

$$\boxed{(5x-6)(-3y^2+x)}$$