Date: _____

Lesson 9: Factoring by Grouping

Polynomials with <u>four</u> terms can be factored by removing the greatest common factor from a ***pair*** of terms followed by a binomial common factor.

Steps:

1) Group into pairs of terms (first two and last two).
2) Find common factor of each group ***separately.***
3) Find common factor between each group.

Examples: *Factor.*

1) $(x^2 + 3x) + (6x + 18)$ GCF = $(x+3)$

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

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

2) $(6a^2 - 8ab) + (3ab - 4b^2)$

$2a(3a-4b) + b(3a-4b)$ $(3a-4b)(2a+b)$

3) $(pq + pr) - (sq - sr)$ * be careful about negatives.

$p(q+r) - s(q+r)$ $(q+r)(p-s)$

4) $(2x^2 - 3xz) - (2xy + 3yz)$

$x(2x-3z) - y(2x-3z)$ $(2x-3z)(x-y)$

5) $(a^2x + a^2y) - (36x - 36y)$

$a^2(x+y) - 36(x+y)$

$(x+y)(a^2-36)$ ← factor further!

$(x+y)(a+6)(a-6)$

Worksheet