Factoring

Factor by Grouping

Example: The expressions below are not ones we will typically see. (They are half factored and half expanded.) But, as a warm up to factoring by grouping, factor out the expression of the form (a+b) in each.

$$x^2(x+7)+9(x+7)$$

$$y(y+2)+(y+2)$$

$$t(t-4)-2(t-4)$$

Factoring by Grouping

When factoring a four term polynomial we will use a technique called **factoring by grouping:**

1) Factor the GCF from all terms (if there is one).
2) Group the four terms into **two** groups, each containing two terms.
3) Factor the GCF from each group.
4) Factor the common binomial from each group, if one exists.

Example: Factor the following polynomial by grouping:

$$x^3 + 6x^2 + 4x + 24$$

Example: Factor the polynomials by grouping.

$y^3 - 7y^2 + 3y - 21$

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

$t^3 + 4t^2 + t + 4$

$6xy - 15x - 14y + 35$

$2x^2 + 10xy + 3xy + 15y^2$