

# Factoring by Grouping (Section 2-8)

\*\* First rule of factoring  $\rightarrow$  GCF

2 Terms: Is it a difference of squares?

3 Terms: Trinomial factoring / Perfect square trinomials

4 Terms: Factor by grouping.

\* Factor by Grouping: Look for a GCF for two terms in the four terms, pull it out front & see if the results match. Then factor out the result.

ex:  $8t^3 + 14t^2 + 20t + 35$

GCF:  $2t^2$       GCF:  $5$

$2t^2(4t+7) + 5(4t+7)$  same!

$= (4t+7)(2t^2+5)$

ex:  $2r^3 + 12r^2 - 5r - 30$

$2r^2(r+6) - 5(r+6)$

$= (r+6)(2r^2-5)$

ex:  $18h^3 + 45h^2 - 8h - 20$

$9h^2(2h+5) - 4(2h+5)$

$= (2h+5)(9h^2-4)$

\* Don't forget to look for

a GCF!

ex:  $6h^4 + 9h^3 + 12h^2 + 18h$

GCF:  $3h$

$= 3h(2h^3 + 3h^2 + 4h + 6)$

$= 3h[h^2(2h+3) + 2(2h+3)]$

$= 3h(2h+3)(h^2+2)$

ex:  $3w^4 - 2w^3 + 18w^2 - 12w$

GCF:  $w$

$= w(3w^3 - 2w^2 + 18w - 12)$

$= w[w^2(3w-2) + 6(3w-2)]$

$= w(3w-2)(w^2+6)$

\*\* On 2-8 WS: Do #1-32, 38 <sup>only</sup>