8.8 Group Factoring

The **BIG** idea...

When factoring a polynomial with 4 terms we can, at times, use group factoring. For ax³ + bx² + cx + d, if $\dfrac{a}{b} = \dfrac{c}{d}$ this method will work.

The steps... $6x^3 - 9x^2 + 8x - 12$

1. Group first 2 terms and last 2 terms ⟶ $\left(6x^3 - 9x^2\right) + \left(8x - 12\right)$

2. Factor out GCF from each pair ⟶ $3x^2\left(2x - 3\right) + 4\left(2x - 3\right)$

3. IF remaining terms are the same, combine ⟶ $\left(3x^2 + 4\right)\left(2x - 3\right)$

4. Check if either binomial can be factored further

Factor.

1) $20r^3 + 8r^2 + 15r + 6$

2) $7x^3 - 14x^2 + 11x - 22$

Factor.

3) $12a^4 + 16a^3 - 15a^2 - 20a$

4) $x^3 - 6x^2 - 9x + 54$

Factor.

5) $x^3 + x^2y + xy^2 + y^3$