Factoring Polynomials

1. Factor out any monomial GCF.

Then, if the polynomial has:

2. **Four terms**, then try to factor by grouping.

3. **Three terms**, in the form $ax^2 + bx + c$, use either “trial and error” or the “a·c method.”

4. **Two terms**, then determine if the binomial is a difference of squares, sum of cubes, or difference of cubes.

   a. If given a binomial that is a *difference of squares*, $a^2 - b^2$, then
      the factors are conjugates and the factored form is $(a + b)(a - b)$.
      Note that a *sum of squares* cannot be factored.

   b. If given a binomial that is a *sum of cubes*, $a^3 + b^3$, then the
      factored form is $(a + b)(a^2 - ab + b^2)$.

   c. If given a binomial that is a *difference of cubes*, $a^3 - b^3$, then the
      factored form is $(a - b)(a^2 + ab + b^2)$.

   *Note*: Always look to see if any of the factors can be factored further.