Introduction to Factoring Polynomials

Factoring is simply the distributive property in reverse.

Example 1:

a.) \( 4(x + 2) \)
\[ = 4x + 8 \]

b.) Factor: \( 4x + 8 \)
First we ask what the greatest common factor (GCF) is, then we factor out the GCF.
Between \( 4x \) and \( 8 \), the GCF is \( 4 \), since \( 4 \) is the largest value that both terms divide evenly into both terms. So we factor out the \( 4 \).

\[
4( + )
\]

We ask, \( 4 \) times what gives us \( 4x \)? \( 4 \) times what gives us \( 8 \)?

Example 2:

Factor completely:

a.) \( 7x + 14 \)

b.) \( 9a^2 + 6a \)

c.) \( 3x^2y - 12xy^2 \)

d.) \( 8x^2yz^4 + 12x^3y^2z^3 - 16x^2yz^2 \)
Factor Completely:

1. \( 4x - 6 \)

2. \( 9x^2 + 12x \)

3. \( 8ab - 4ab^2 \)

4. \( 12x^2y - 48xy^2 + 144x^2y^2 \)

5. \( a^2b + ab^2 - a^2b^2 \)

6. \( x^3y^2z - x^2y^3z^3 + x^5yz^4 \)