Lesson 27   **Factoring Trinomials of the Type $x^2 + bx + c$**

Factoring $x^2 + bx + c$:

Steps to follow . . .

1. List c on the side (include the sign).
2. Find all factor pairs of c.
3. Look for a factor pair that could add or subtract to equal b.
4. Determine the signs of each number in the pair so that they add up to b and multiply to c.
5. List the factor pairs in the form $(x + \underline{\quad})(x + \underline{\quad})$.

Examples: Factor each trinomial.

1. $x^2 + 7x + 12$

   $(x+3)(x+4)$

   $\dfrac{+12}{\begin{array}{ll} 1 & 12 \\ 2 & 6 \\ +3 & +4 \end{array}}$

2. $x^2 - 11x + 18$

   $(x-2)(x-9)$

   $\dfrac{+18}{\begin{array}{ll} 1 & 18 \\ -2 & -9 \\ 3 & 6 \end{array}}$

3. $p^2 - 3p - 18$

   $(p+3)(p-6)$

   $\dfrac{-18}{\begin{array}{ll} 1 & 18 \\ 2 & 9 \\ +3 & -6 \end{array}}$

4. $m^2 + 6m - 27$

   $(m-3)(m+9)$

   $\dfrac{-27}{\begin{array}{ll} 1 & 27 \\ -3 & +9 \end{array}}$

5. $k^2 - 10k + 25$

   $(k-5)(k-5)$

   $\dfrac{+25}{\begin{array}{ll} 1 & 25 \\ -5 & -5 \end{array}}$

6. $x^2 - 9$

   $x^2 + 0x - 9$

   $(x-3)(x+3)$

   $\dfrac{-9}{\begin{array}{ll} 1 & 9 \\ -3 & +3 \end{array}}$

7. $4y^2 - 9$

   $(2y + 3)(2y - 3)$

8. $25m^2 - 16$

   $(25m + 4)(25m - 4)$