The "ac" Method of Factoring

This method is named for the "a" and the "c" in the general quadratic equation

$$ax^2 + bx + c$$

Example: $6x^2 + 17x + 5$
Notice that in this problem a = 6 and c =5

1. Multiply a x c
   6 x 5 = 30

2. Factor that product:
   30 = 1 x 30
   2 x 15
   3 x 10
   5 x 6

3. Because "c" is positive (in our case c=5), we choose the two factors that add up to the middle term 2 + 15 = 17. If "c" was negative, we'd be looking for the two factors that subtract to make the middle term.

4. Replace the middle term, 17x, with 2x + 15x.
   Notice that the new equation is equivalent to our original equation:

   $$6x^2 + 17x + 5 \quad = \quad 6x^2 + 2x + 15x + 5$$

5. Because we now have four terms, this has become a grouping problem.

   $$6x^2 + 2x \quad + \quad 15x + 5$$

   $$2 \times (3x + 1) \quad + \quad 5(3x + 1)$$

   $$(2x + 5)(3x + 1)$$