7.6 Notes: Factoring $ax^2 + bx + c$ by SPLIT THE MIDDLE TERM

First, let's review *factoring by grouping*.

Remember, we do factoring by grouping if there are _____ terms!

Ex: $5y + 15 + x^2y + 3x^2$ 　　　　　　　　　　Ex: $2x^2 + 3x + 2xy + 3y$

More recently, we have factored trinomials of the form $ax^2 + bx + c$ by Guess and Check:

Ex: $2x^2 + 13x + 21$

But there are times that you just can't seem to get the right solution, or maybe you have one that would be really tedious (think about $6x^2 + 25x + 24$)

<u>Splitting the middle term</u> means that you will be very strategic in splitting your middle term into two terms, turning it into a factor by grouping problem!

Before we start, let's review one other skill that we practiced at the beginning of the chapter:

Find two number that multiply to be 16 and add to be 8

Find two numbers that multiply to be 25 and add to be 0

Find two numbers that multiply to be 24 and subtract to be 5

Factor by splitting the middle term:

Ex: $2x^2 + 15x + 7$ 　　　　　　HINT:

　　　　　　　　　　　　　　　　We need to find two numbers that multiply to be _____

　　　　　　　　　　　　　　　　and add to be _____

Ex: $18x^2 - 9x - 2$

Ex: $2x^2 + 13x + 21$

Ex: $4x^2 - 17x - 42$

Ex: $9x^2 + 11x + 2$

Ex: $10x^2 - x - 3$

Ex: $8x^2 + 13x - 6$