Factoring Quadratics a≠1 KEY

1. Create <u>at least</u> 5 examples of binomials using the same variable with coefficient but no exponent, and a constant (such as 2x+3). Use constants and coefficients that only have one digit and use a variety of positive and negative numbers. Avoid using a pattern of coefficients and constants.
2. Multiply pairs of your binomials to create a few trinomials. Do you see any pattern emerging? Compare the constants and coefficients in your binomial factors with your coefficients and constants in your trinomials. Describe any relationship you see.
3. Investigate and try to find a method to work backwards from your trinomial that results in the two factors.
4. Explain the process you used, whether it worked for one trinomial or multiple trinomials. If you found more than one way, describe it.
5. Test it against other trinomials created by multiplying other pairs of your binomials. Does your process work in all cases? Describe the cases where it does work and the cases where it does not work.

<u>Limited</u>:
- noticed that the trinomial's variable was squared with a coefficient that is the product of the two binomial coefficients
- noticed that the trinomial's constant was the product of the two constants of the binomial

<u>Adequate</u>:
- noticed that the trinomial's variable was squared with a coefficient that is the product of the two binomial coefficients
- noticed that the trinomial's constant was the product of the two constants of the binomial
- noticed that the coefficient of the trinomial's middle term was the result of adding the product of the coefficient of one binomial and the constant of the other binomial

<u>Substantial</u>:
- noticed that the trinomial's variable was squared with a coefficient that is the product of the two binomial coefficients
- noticed that the trinomial's constant was the product of the two constants of the binomial
- noticed that the coefficient of the trinomial's middle term was the result of adding the product of the coefficient of one binomial and the constant of the other binomial
- realized that finding the factors of the trinomial's constant and coefficient was important, but couldn't figure out how to make it work

<u>Excellent</u>:
- noticed that the trinomial's variable was squared with a coefficient that is the product of the two binomial coefficients
- noticed that the trinomial's constant was the product of the two constants of the binomial
- noticed that the coefficient of the trinomial's middle term was the result of adding the product of the coefficient of one binomial and the constant of the other binomial

- realized that finding the factors of the trinomial's constant and coefficient was important.
- found a valid method
  - two numbers whose product equals the product of the trinomial's constant and leading coefficient, but that add up the middle term's coefficient. In a trinomial $ax^2 + bx + c$, two factors of ac add up to create b. Use this information to factor by grouping.
  - [box method](https://www.chilimath.com/lessons/intermediate-algebra/factoring-trinomial-box-method/) (https://www.chilimath.com/lessons/intermediate-algebra/factoring-trinomial-box-method/)