Isabel Ramos

**High School Algebra**

**Demographics:** This learning progression is made to take place in a high school Algebra classroom of 25 students. This class consists of freshman and sophomores. The desks in the classroom are arranged in groups of four. The lesson is based off the Algebra I textbook. The students have prior knowledge of binomials and what they look like and prior knowledge on the GCF.

**Addressed CCSS for Mathematics**

CCSS.MATH.CONTENT.HSA.SSE.A.1

Interpret the structure of expressions

 Interpret parts of an expression, such as terms, factors, and coefficients.

CCSS.MATH.CONTENT.HSA.SSE.A.2

Seeing structure in expressions

Use structure in expression to identify ways to rewrite it.

CCSS.MATH.CONTENT.HSA.SSE.B.3

Write expressions in equivalent forms to solve problems

**Learning progression Overview:**

I plan to have my students use their conceptual knowledge by having them show and understand how to use the foil method to multiply binomials and showing them how to also use a geometric model to multiply binomials using, mathematical reasoning leading up to them having to justify the steps and explain them and why they used a certain method to get the answer showing their procedural understanding. I will have my students review the GCF and interpreting the structure of expressions like the coefficients, terms and factors so they can relate it and use it to help them with the factoring of finding the product of two binomials. I will also have them review rewriting expressions which multiplying binomials will show them. This will lead them to figuring out how to multiply binomials, and learn to write equivalent expressions so in the future they will be able to use this to solve problems and learn to find zeros in expressions.

**Supports**

Math can be very stressful for all students. In my assessment, I plan have my worksheet be cut into sections and not have so many problems to not overwhelm students. I will also allow the students to work with the people they are sitting in groups with. This will allow for the students who are struggling with the material to get some help from their peers.

**Learning progression:**

I will start off my lesson with the hinge question: What is an expression? Then I will go off on expressions and their structures and review it based on the answers from the class. After this I will ask students if they know anything on multiplying binomials and if they have ever heard of the foil method. Before teaching the foil method I will review to them the structure of expressions(CCSS.MATH.CONTENT.HSA.SSE.A.1) such as factors, terms, and coefficients. Then I will show them how to see structure in expressions(CCSS.MATH.CONTENT.HSA.SSE.A.2) by giving them an expression and having them try and show me a way of rewriting it. Then finally, I will introduce the foil method to them on the board and explain it very slowly and precisely. I will make sure to ask my students questions during my lesson to get them involved and to make sure they are understanding what is being taught. I will show them the example of:

$$Given the problem \left(2x+3\right)\left(x-2\right) find the product using the foil method $$

$$Show the solution using foiling identifying each multiplication step. $$

$$The multiplication of first terms plus the multiplication of the outside $$

$$terms plus the multiplication of the inside terms plus the multiplication of $$

$$the last terms.$$

$$Solution: $$

$2x^{2}-x-6$

After I am done introducing this first example I will ask students questions and make sure they are getting proper understanding. I will go over more examples and have students participate in the lesson by asking them what I should do next. After I will give out a worksheet with a couple of problems and allow the students to work in groups and have the last problem to be done on their own to check for their understanding. This worksheet will be their exit slip and they cannot leave class till they have finished it. This will then show me whether my student learned the math content about foiling and on the math content CCSS.MATH.CONTENT.HSA.SSE.B.3 on whether they learned how to write equivalent expression to be able to solve problems that involve this action in future lessons. I will have students turn in the worksheet and grade how many they got right to check their level or understanding. I will also provide them with feedback on the answers they did not answer correctly as well as positive feedback on the ones they did. This feedback will not only help me but the students with checking their understanding of the problems.