Multiplying & Dividing Factors: Student Results

Lesson TEKS:

Algebra II

7. Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on expressions and to solve equations. The student is expected to:

> **F.** Determine the sum, difference, product, and quotient of rational expressions with integral exponents of degree one and of degree two;

Lesson Overview:

This lesson focused on finding the Product and Quotient of rational expressions. At the end of my lesson, I handed out index cards to each of my students and wrote this equation on the board for them to solve: $\frac{x+7}{7x+35} * \frac{x^2-3x-40}{x-8}$

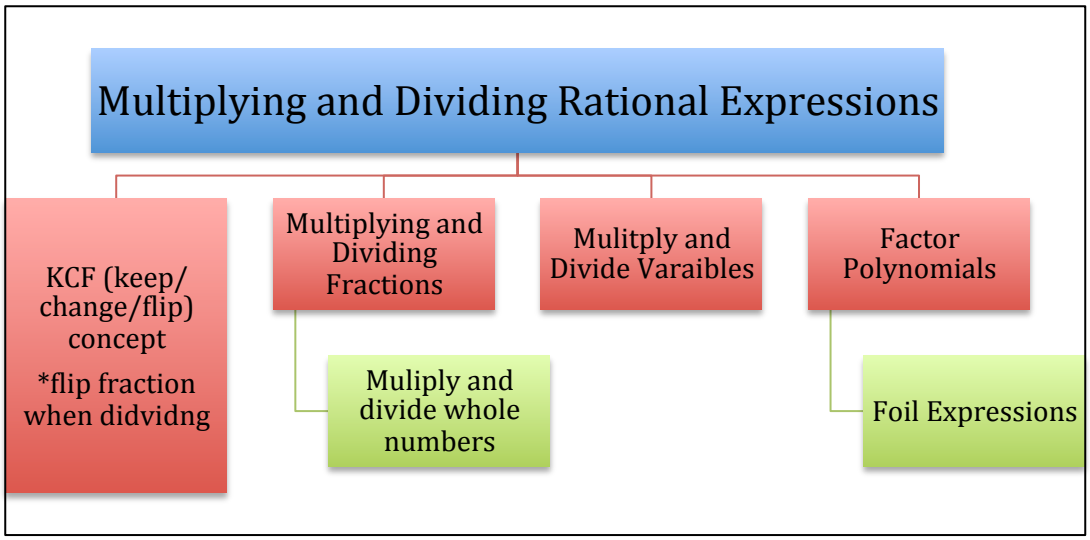
Rubric:

My rubric consisted of 5 points for a perfect score.

1. The student attempted to factor one or both expressions
2. The student factored 7x + 35 to 7(x+5)
3. The student factored x^2 – 3x - 40 to (x-8)(x+5)
4. The student simplified similar factors
5. The student obtained the correct answer: (x+7)/7

In order to determine a student's mastery of the subject, the rubric was constructed on a partial-credit basis. In order for students to solve the above problem, **prior knowledge of factoring and simplification needed to be utilized.**

Knowledge Map & Key Previous TEKS:



Algebra I

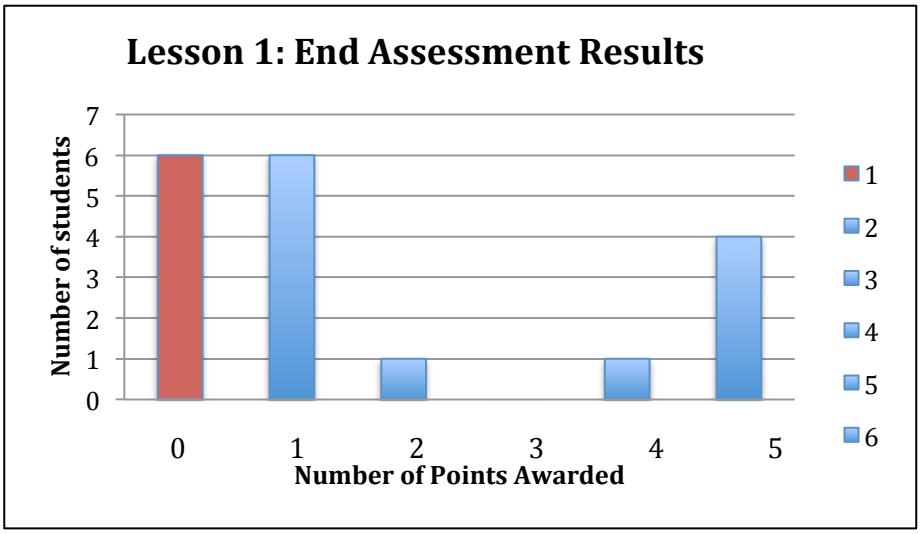
10. Number and algebraic methods. The student applies the mathematical process standards and algebraic methods to rewrite in equivalent forms and perform operations on polynomial expressions. The student is expected to:

> **E**. factor, if possible, trinomials with real factors in the form ax2 + bx + c, including perfect square trinomials of degree two;

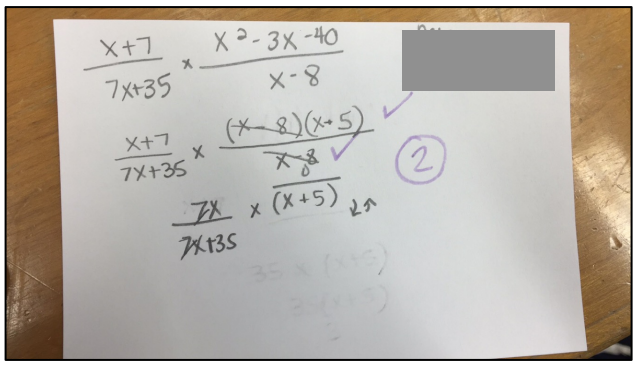
Student Work Analysis

After grading the students' work, it appeared that the students lacked the prior knowledge of factoring, original taught in Algebra I. Most received the score of a 1, meaning they attempted to factor but did not do so successfully.

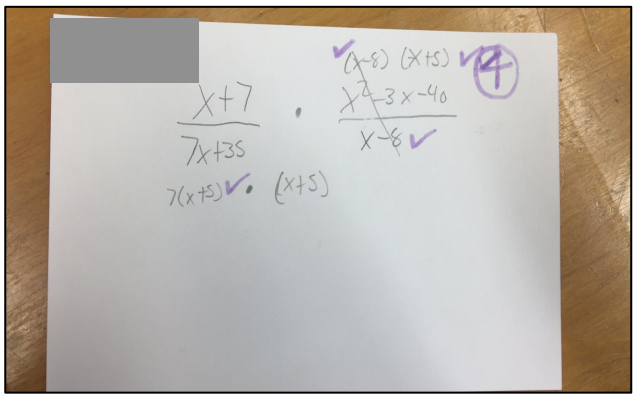
Moving forward, a review on Algebra I's factoring unit would be very beneficial before starting multiplying and dividing fractions. It is imperative that the groundwork is in place before trying to build further concepts. Creating a pre-test before lessons can gauge what previous knowledge the class has on key building block concepts and alleviate trying to build new concepts on shaky understanding of previous knowledge concepts.



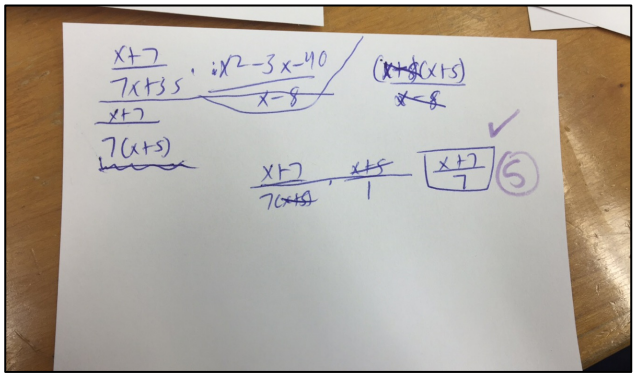
Student Artifacts:



This is an example of a student's paper that received a 2. They showed knowledge of factoring and also crossed out similar factors, which was the first objective in my lesson. The student still had some misconceptions as they crossed out the 7 in 7x with the 7 in 7x+35, which is incorrect but a very common mistake amongst most papers.



This student received a 4. The student showed knowledge of factoring correctly and also simplifying common factors. The student has successfully conquered objective 1 and showed that they know how to factor and simplify rational expressions.



This is an example of a 5, which shows the student can successfully simplify and multiply rational expressions.