

Lesson Plan/Observation #2

2.5 Complex Fractions

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Goal: Students will be able to simplify complex rational expressions.

Learning Standards:

New York State Learning Standard MST 3:

Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world setting, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability and trigonometry.

Process Strand: *Communication Strand:* Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others.

A2.CM.3 Present organized mathematical ideas with the use of appropriate standard notations, including the use of symbols and other representations when sharing an idea in verbal and written form.

Connections Strand: Students will recognize and use connections among mathematical ideas.

A2.CN.2 Understand corresponding procedures for similar problems or mathematical concepts.

Content Strand:

Algebra Strand: Students will perform algebraic procedures accurately.

Variables and Expressions

A2.A.7 Factor polynomial expressions completely, using any combination of the following techniques: common factor extraction, difference of two perfect squares, quadratic trinomials.

A2.A.16 Perform arithmetic operations with rational expressions and rename to lowest terms

A2.A.17 Simplify complex fractional expressions

Standards of the National Council of Teachers of Mathematics:

Process Strand: *Connection:* instructional programs from kindergarten through grade 12 should enable all students to:

- Recognize and use connections among mathematical ideas.

Communication: instructional programs from kindergarten through grade 12 should enable all students to:

- Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.

Content Strand: *Algebra:* Instructional programs from prekindergarten through grade 12 should enable all students to represent and analyze mathematical situations and structures using algebraic symbols.

In grades 9-12 all students should:

- Understand the meaning of equivalent forms of expressions, equations, inequalities, and relations.

Objective: Given a complex rational expression, students will be able to find a least common denominator, and simplify it to a rational expression in simplest form, for 10 out of 10 examples.

Materials: Chapter 2 notes and homework packet, and SmartBoard.

Use of Technology: I will use a Smartboard to present the notes to the class, and fill them in during class discussion. At the end of the day, I will post the notes to the school website for students to access it if they need.

Introduction:

Once attendance is taken, begin the period by reviewing what we last left off on from Monday and Tuesday's lesson. Call on students and ask if they can tell me one thing we learned from the previous lesson, or any key points that were important to remember. I will use their answers and comments to transition into this lesson, pointing out the connections and similarities between the two.

Development:

Strategy: Direct Instruction

With the copy of the students' notes projected on the Smartboard, I will begin by going over the vocabulary terms from this lesson, show the class specific examples, and ask them if they can come up with their own examples to add to their notes

Once the necessary vocabulary words are gone over, I will begin showing the class the steps and procedure for reducing complex rational expressions by using a problem in the notes. I will think aloud as I complete the work, and explain the reasons I am completing each step. After completing a couple problems, and noticing the class is starting to get the gist of it, I will ask them to complete a problem on their own. During this time, I will circulate the room, checking for understanding as well as common errors. If I notice a pattern of common mistakes, I will take the time to explain it to the whole class, and ask them to check and see if they have made this error as well. Finally, I will ask for a volunteer to come to the Smartboard to write down their answer for the rest of the class to see. I will explain how/why that student took the steps they did, and check to see if anyone has any questions on the topic thus far. Throughout the lesson, I will remind the students that their final answers need to be in simplest form in order to receive full credit.

Once the class begins to show a general understanding of the topic, I will ask them to complete a Do Now assignment requiring them to do the steps we learned in the notes today. They will be allowed to use their notes, as well as ask questions if they have any.

Guided Practice:

The example problems that are in the notes will be used for guided practice. I will allow the students time to complete the problems independently, then go over the process to solving it, and show the correct answer. This way, the students can check that they did the problem correctly, and can ask questions before they get home and are doing the homework.

Independent Practice:

For homework, the students will have to complete handout 3734 #1-11. These problems will require the students to simplify complex rational expressions and determine what makes them undefined.

Closure

To close the lesson, I will tell the students what their homework is, and ask some questions about what we learned during class. I will check that the students have a good understanding of the steps and procedures necessary to be successful on the homework. Finally, I will leave the last 5 minutes of class for the students to complete a Do Now problem, requiring them to simplify complex rational expressions. They will be able to use their notes, and I will collect this as they leave the room. If they complete before the bell rings they are to begin on their homework.

Accommodations and Modifications:

The only modification/accommodation required for some of the students in this class is that they are given a copy of class notes. All of the students will be receiving the notes in the beginning of class so no extra actions are necessary.

Evaluation

Once we are done with the whole chapter, the students will take a unit test to apply their knowledge and understanding of rational expressions.