1. **GRADE LEVEL: Grade 7**

Subject Area: Mathematics

Quarter 1 – Week   
Duration: 45 minutes

1. **LEARNING OBJECTIVES**

Learners are expected to:

1. Students will be able to add and subtract fractions with unlike denominators
2. Students will be able to multiply and divide fractions
3. Students will be able to add, subtract, multiply, and divide positive and negative decimals.
4. **CONTENT**

* Title: Rational Number Operations
* Learning Competency: perform operations on rational numbers.
* Particular Focus: Mastering the four basic operations (addition, subtraction, multiplication, division) for both fractions and decimals, including negative numbers.

1. **LEARNING RESOURCES**

1. Teacher's Guide
2. Calculators (for checking)
3. Worksheets
4. Four-function calculator emulator for demonstration
5. PPT: 'Operating with Fractions Decimals'
6. **PROCEDURE**

**Introduction:**

Start with a quick review of integer operations (+, -, \*, /) with positive and negative numbers. Then, pose a simple problem: 'If you have half a pizza and I give you another quarter of a pizza, how much do you have?' Use this to lead into the need for common denominators for adding fractions.

**Presentation:**  
The lesson is split into two parts: Fractions and Decimals. Part 1: Teacher reviews finding the least common denominator (LCD) and models adding/subtracting fractions. Then, they model multiplying (straight across) and dividing (invert and multiply). Part 2: Teacher reviews the rules for adding/subtracting decimals (line up the decimals) and multiplying/dividing decimals, paying close attention to the rules for placing the decimal point in the answer and for handling signs.

**Practice:**  
Students work on a 'Grid Puzzle' worksheet. The worksheet is a grid of problems (e.g., a 4x4 grid with a mix of fraction and decimal operations). When they solve a problem, they find the answer in a key and shade the corresponding square in the grid. If all problems are solved correctly, a picture or a letter will be revealed.

**Integration:**  
Connect to real-world applications: calculating total amounts from a recipe with fractional ingredients (1/2 cup + 3/4 cup), figuring out total costs with decimal prices, splitting a bill among friends. This demonstrates the practical necessity of these skills. Values: Accuracy and perseverance through multi-step problems.

**Assessment:**  
['1. 1/2 + 1/3 = ? (5/6)', ' 2. 2/5 \* 3/4 = ? (6/20 or 3/10)', ' 3. -1.5 - 2.7 = ? (-4.2)', ' 4. 12.4 / 0.2 = ? (62)']

**Enrichment:**  
['Remediation: Break it down. Have separate worksheets for each operation. Allow the use of a fraction calculator to check work. For decimals, use grid paper to help line up the decimal points.', ' Enhancement: Give students complex, multi-step order of operations problems involving both fractions and decimals, e.g., (3/4 + 0.5) \* (2/5).']  
**Asignment:**  
Write a real-world word problem for each of the four operations with rational numbers. For example, for subtraction: 'I had 2.5 meters of ribbon and used 0.75 meters. How much is left?' Bring your four problems to class.

1. **EVALUATION TOOLS**

["The 'Grid Puzzle' worksheet is a self-checking assessment", " if the picture doesn't appear, students know they have an error to find. A short, traditional quiz at the end of the week would serve as a summative assessment of all four operations."]

1. **REMARKS**

This is a very dense topic. It may be better to split it into two separate lessons: one for fractions and one for decimals. The rules for each operation are distinct and can be easily confused. Constant review of integer sign rules is necessary.

1. **REFLECTION**

The 'Grid Puzzle' was a good way to keep students motivated through a lot of repetitive practice. However, trying to cover all eight operations (four for fractions, four for decimals) in one lesson was too ambitious. Students began to confuse the rules by the end. Next time, I will dedicate a full day to fraction operations and a second full day to decimal operations to allow for deeper learning and more practice of each.