1. **GRADE LEVEL: Grade 7**

Subject Area: Mathematics

Quarter 1 – Week   
Duration: 45 minutes

1. **LEARNING OBJECTIVES**

Learners are expected to:

- Students will be able to add and subtract fractions with unlike denominators - Students will be able to multiply and divide fractions - Students will be able to add, subtract, multiply, and divide positive and negative decimals.

1. **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**

* Teacher's Guide
* Calculators (for checking)
* Worksheets
* Four-function calculator emulator for demonstration
* PPT: 'Operating with Fractions Decimals'

1. 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