4th Grade Math: Adding Fractions

Lesson Objective:

By the end of this lesson, students will be able to:

- Understand the concept of adding fractions.
- Add fractions with the same denominator.
- Add fractions with different denominators by finding a common denominator.

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1. Introduction to Fractions

Explanation: Fractions represent parts of a whole. Each fraction has a numerator (the top number) and a denominator (the bottom number). To add fractions, we need to understand the following:

- **Same Denominator:** Fractions with the same denominator can be added directly by adding the numerators.
- **Different Denominators:** Fractions with different denominators require a common denominator before adding.

Example:

- Same Denominator: $\frac{1}{4} + \frac{2}{4}$
- Different Denominators: $\frac{1}{3} + \frac{1}{4}$

2. Adding Fractions with the Same Denominator

Step-by-Step Guide:

Example 1:

Problem: Add $\frac{2}{5}$ and $\frac{3}{5}$.

- **Check the Denominators:**
  - Both fractions have the same denominator (5).
- **Add the Numerators:**

- Numerator of the first fraction = 2
- Numerator of the second fraction = 3
- Sum of the numerators = 2 + 3 = 5

- **Write the Result with the Common Denominator:**

  - Result = $\frac{5}{5}$

4. **Simplify if Necessary:**

   - $\frac{5}{5} = 1$

Example 2:

Problem: Add $\frac{4}{8}$ and $\frac{1}{8}$.

- **Check the Denominators:**

  - Both fractions have the same denominator (8).

- **Add the Numerators:**

  - Numerator of the first fraction = 4
  - Numerator of the second fraction = 1
  - Sum of the numerators = 4 + 1 = 5

- **Write the Result with the Common Denominator:**

  - Result = $\frac{5}{8}$

3. Adding Fractions with Different Denominators

Step-by-Step Guide:

Example 1:

Problem: Add $\frac{1}{4}$ and $\frac{1}{6}$.

1. **Find the Least Common Denominator (LCD):**
    - The denominators are 4 and 6. The LCD is 12.
2. **Convert Each Fraction to the Common Denominator:**
    - $\frac{1}{4} = \frac{3}{12}$ (Multiply numerator and denominator by 3)
    - $\frac{1}{6} = \frac{2}{12}$ (Multiply numerator and denominator by 2)
3. **Add the Converted Fractions:**
    - Sum of the numerators = 3 + 2 = 5
    - Result = $\frac{5}{12}$

Example 2:

Problem: Add $\frac{2}{5}$ and $\frac{3}{10}$.

1. **Find the Least Common Denominator (LCD):**
    - The denominators are 5 and 10. The LCD is 10.
2. **Convert Each Fraction to the Common Denominator:**
    - $\frac{2}{5} = \frac{4}{10}$ (Multiply numerator and denominator by 2)
    - $\frac{3}{10}$ is already in the correct form.

3. **Add the Converted Fractions:**
    - Sum of the numerators = 4 + 3 = 7
    - Result = $\frac{7}{10}$

4. Practice Problems

Example 1: Adding Fractions with the Same Denominator

Problem: Add $\frac{3}{7}$ and $\frac{2}{7}$.

1. **Check the Denominators:**
    - Both fractions have the same denominator (7).
2. **Add the Numerators:**
    - Numerator of the first fraction = 3
    - Numerator of the second fraction = 2
    - Sum of the numerators = 3 + 2 = 5
3. **Write the Result with the Common Denominator:**
    - Result = $\frac{5}{7}$

Example 2: Adding Fractions with Different Denominators

Problem: Add $\frac{1}{3}$ and $\frac{2}{5}$.

1. **Find the Least Common Denominator (LCD):**
   - The denominators are 3 and 5. The LCD is 15.
2. **Convert Each Fraction to the Common Denominator:**
   - $\frac{1}{3} = \frac{5}{15}$ (Multiply numerator and denominator by 5)
   - $\frac{2}{5} = \frac{6}{15}$ (Multiply numerator and denominator by 3)
3. **Add the Converted Fractions:**
   - Sum of the numerators = 5 + 6 = 11
   - Result = $\frac{11}{15}$

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5. Review and Wrap-Up

- **Recap Key Concepts:** Review how to add fractions with the same and different denominators.
- **Discuss:** Why is it important to find a common denominator when adding fractions with different denominators?