ADDITION AND SUBTRACTION OF PROPER, IMPROPER AND MIXED FRACTIONS.

3.20.2019

Subject

Mathematics

Prepared By

[Instructor Name]

Grade Level

3

Overview

This lesson plan covers teaching content for;

1. Adding and subtracting proper fractions.
2. Adding and subtracting improper fractions and mixed fractions
3. Adding and subtracting Mixed fractions
4. Solving word problems.

Materials Required

- White Board
- Blank sheets
- Pencils
- A4 papers
- Pin/sticker

Additional Resources

- https://za.pearson.com/content/dam/region-growth/south-africa/pearson-south-
- https://www.education.com/lesson-plans/addition/addition+with+place+value/?page=2
-

Additional Notes

Objectives

Students should be able to;

1. Add and subtract two proper fractions
2. Add and subtract improper fractions and mixed fractions
3. Correctly add and subtract proper and improper fractions in everyday life activities.
4. Convert Mixed fractions to improper fractions and add them up.
5. Solve Word problems.
6. Solve quantitative aptitude problems involving addition and subtraction of fractions.

Activity Starter/Instruction

1. Get Blank sheets and write the following fractions on them: $\frac{1}{2}\frac{1}{4}\frac{3}{4}\frac{1}{5}\frac{2}{5}\frac{3}{5}\frac{4}{5}\frac{1}{8}\frac{3}{5}\frac{5}{8}\frac{7}{8}$
2. Prepare same size paper sheets (for example A4) divided into quarters and eighths.
3. Place the Blank sheets in random order on the board.
4. Ask pupils to select the fractions which have the same denominators.
5. Ask them to place them in groups on the board. Revise the terms numerator and denominator with the pupils.
6. Revise comparison and ordering of fractions with the kids.

Teacher Guide

Day 1/ Lesson 1: 15 Mins

1. Pupils learn to add fractions with the same denominators.
2. Hold up the paper sheet that has been divided into quarters. Tear the paper into quarters.
3. Hold up one quarter and then hold up another quarter.
4. Stick the first quarter to the board with a + sign and then place another quarter behind the addition sign.

$$\frac{1}{4} + \frac{1}{4}$$

5. Write on the board: $\frac{1}{4} + \frac{1}{4} = \frac{2}{4}$
6. Point out to the pupils that the denominator stays the same but that the numerators are added.
7. Ask them to try and explain why the numerators are added but that the denominator stays the same.

Guided Practice

Day 2/ Lesson 2: 15 Mins

1. Write $\frac{1}{2}$ and $\frac{1}{4}$ on the board. Ask the pupils what they notice about the two denominators of the two fractions.
2. They should be able to point out that the denominators are different.
3. Ask them how they think the fractions could be added.
4. Explain to the pupils that in order to add fractions with different denominators we have to change one of the fractions so that it has the same denominator as the other fraction.
5. In other words, the fractions must be changed to equivalent fractions. The fractions to be added must all have the same denominator.
6. Show pupils that the same principle applies if we subtract fractions.

Guided Practice

Day 3/ Lesson 3: 15 Mins

1. Revise the concept of mixed fractions and it conversion to improper fractions with the students.
2. Show the class the following expression: 1 ⅖ + 3 ⅘.
3. Explain that there is a three-step sequence that will always work when adding or subtracting mixed numbers:
4. Step one: convert the mixed number to an improper fraction.
5. Step two: perform the operation (addition or subtraction).
6. Step three: convert the improper fraction back to a mixed number.
7. Take your class through the three-step sequence for adding and subtracting mixed numbers for thefollowing: 1 ⅖ + 3 ⅘.
8. Step one: convert the mixed numbers to improper fractions: 7/5 + 19/5.
9. Step two: perform the addition. The sum is 26/5.
10. Step three: convert the improper fraction: 26/5 becomes 5 ⅕.
11. Repeat the three-step sequence for 3 ⅘ − 1 ⅖, calling on various students for each step. Answer clarifying questions students may have.

8. They should be able to identify that the denominator describes the number of parts into which a whole has been divided but the numerator describes how many parts were taken.
9. Repeat the exercise using $\frac{1}{4} + \frac{2}{4}$. Then repeat with eighths fractions previously arranged on the board.
10. Show as many calculations using the paper quarters and paper eighths as possible.

Guided Practice

Day 4/ Lesson 4: 15 Mins

1. Ask pupils to identify instances where they would come across fractions in everyday life.
2. Now we focus on teaching the pupils to calculate addition and subtraction of mixed numbers **within the context of word problems**.
3. This implies that pupils must be able to read and interpret the meaning of the contextualized problems.
4. For example: Linda has $1\frac{1}{4}$ metres of material. She buys another $2\frac{1}{2}$ metres. How many metres does she have altogether? Steps:
   - Amount of material
   - Add the whole numbers
   - Make the fractions equivalent
   - Add the fractions
5. Emphasize the importance of writing a number sentence, like $1\frac{1}{4} + 2\frac{1}{2}$ metres.

6. By adding the whole numbers, we have 1+2=3.
7. The equivalent fractions for both numbers are $\frac{1}{4}$ and $\frac{2}{4}$. The sum of the two equivalent fractions give $\frac{3}{4}$.
8. So, the sum of the mixed fractions is $3\frac{3}{4}$.
9. Remind students that this same method applies to subtraction of mixed fractions.

Assessment Activity

Assessment Activity

1. Tell your students to take out their math journals and list the three-step sequence for adding and subtracting mixed numbers.
2. Post the following expression and perform the three-step sequence with the expression 1 6/8 + 8 2/8.
3. Ensure students label the three steps in their solutions.
4. Answer any clarifying questions and post the following exercise problems:
   3 ⅝ + 1 ⅜
   4 ¼ − 1 ¾
   6 ⅚ + 3 ⅙
   5 ⅕ − 3 ⅘
   7 ⅓ − 2 ⅔

Assessment Activity

Summary

Review and Closing

1. Review the steps on how to add and subtract fractions with the same denominator.
2. Review the steps on how to add and subtract fractions with different denominators.
3. Check for proper understanding by asking examples questions.

4. Ensure pupils can add and subtract mixed numbers.
5. Pupils make their own word problems involving adding and subtracting of mixed numbers.
6. They swap with a partner and solve the problems.