

Teacher Edition

Revised Edition

Performance

Coach™

Mathematics



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Solving Problems with Addition and Subtraction of Fractions

Student Edition pages 140–147

LESSON OVERVIEW

Objectives

Students will:

- Write an equation needed to solve a word problem
- Solve word problems involving addition and subtraction of fractions with unlike denominators
- Use models to check solutions

Discussion Questions

MP5 How do benchmark fractions and estimation help you determine if your answer is reasonable?

MP6 How can you rewrite benchmark fractions to help you get a closer estimation of the actual answer when adding or subtracting fractions?

Key Term

equation

Materials

- Math Tool: Grid Paper, p. C7
- Math Tool: Fraction Strips, p. C9

Differentiation

Lesson Support Provide each student with copies of Math Tool: Fraction Strips. Have students use those models as needed throughout the lesson. For problems with fractions having common denominators greater than 12, have students draw and shade rectangles on Math Tool: Grid Paper .

Lesson Extension Have students create two word problems, one involving addition and the other involving subtraction, using the fractions $\frac{2}{5}$ and $\frac{3}{8}$. Ask students to show how to write and solve an equation for each of their problems.

1 GETTING THE IDEA

Lesson Opener

Draw three rectangles one under the other. The rectangles should be the same length and width. Ask: *Each of these rectangles represents one. How can I model $\frac{1}{2}$ and $\frac{2}{5}$ in the first two rectangles?* Divide the top rectangle into halves and shade one-half. Divide the middle rectangle into fifths and shade two-fifths. Ask: *What expression can we write to*

show the sum of these two fraction amounts? Discuss finding the common denominator of 2 and 5. Then divide the bottom rectangle into tenths. Have volunteers shade enough tenths to equal $\frac{1}{2}$ and enough tenths to equal $\frac{2}{5}$. Ask: *How many tenths are now shaded? How can we turn our addition expression into an equation?* Student answers will give you an opportunity to assess their readiness

to understand the writing and solving of **equations** involving the addition and subtraction of fractions. Review the vocabulary word *equation* as presented in the lesson.

► **Examples 1 and 2**

These examples focus on writing and solving an equation for a word problem. As a class, use fraction strips to represent the fractions in the situations. Ask: *What clue words did you see in the problems that helped you decide if you should write an addition or a subtraction equation? How do you know how many parts the third bar model should have?*

▲ **Journal Prompt** **MP7** *How do the models help you understand how to solve the equation?*

► **Example 3**

Review with students the meaning of *benchmark* and how to use benchmark fractions to determine if their answer is reasonable. Draw a number line on the

board. Label 0 and 1. Ask: *Which fraction is easiest to locate?* Plot $\frac{1}{2}$ on the number line. Ask: *Would you estimate $\frac{7}{10}$ is closer to 0, $\frac{1}{2}$, or 1?* Repeat for $\frac{2}{5}$ and $\frac{2}{3}$. Then demonstrate using these estimates to determine the reasonableness of the sum $1\frac{23}{30}$.

▲ **ELL Support** *The words close and clothes are homophones. They sound the same, but their meanings are different:*

close: near. The number 3 is close to 4 on the number line.

clothes: garments. The store had a sale on children's summer clothes.

▲ **Common Errors** *Students may simplify the improper fraction incorrectly. Review improper fractions with students. Then step-out how to divide to change an improper fraction to a mixed fraction.*

$$\frac{53}{30} = 30 \overline{)53} = 1\frac{23}{30}$$

2 COACHED EXAMPLE

Monitor students as they work through the Coached Example. Walk students through writing the equation. Point out that the operation symbol is written inside the circle. Ask: *What clue words led you to use the operation you chose?* Monitor students as they complete the set of sentence frames stepping out how to write equivalent fractions with a common

denominator. Suggest students draw a number line to help them use benchmarks to determine if their answer is reasonable.

For answers, see Appendix A.

3 LESSON PRACTICE

As a class, use models to show the sum in problem 5, and then have students draw the model on their papers. As students are working, pay special attention to problem 8. In Part A, students will write each mixed number as an improper fraction and then with a denominator common to all three fractions.

Remind students to change the sum written as an improper fraction to a mixed number in simplest form. For problem 9, suggest that students make a sketch of the garden before they respond to the statements.

For answers, see Appendix A.