

Rational Number Project

Initial Fraction Ideas Lesson 22: Overview	Materials
Students explore fraction subtraction within difference and how many more contexts. Students estimate and solve story problems with fraction circles.	∞ Fraction Circles for students and teacher

Teaching Actions	Comments
<p>Warm Up Which fraction is larger? How much larger?</p> $\frac{3}{4} \quad \frac{2}{3}$ <p>Large Group Introduction</p> <ol style="list-style-type: none"> Continue with the difference story problems. Students act out the problem in a group with fraction circles. <p><i>Joe and Renata each receive the same allowance. Joe spent $\frac{1}{2}$ on records. Renata spent $\frac{1}{8}$ on repairing her bicycle. How much more did Joe spend?</i></p> Ask for estimates. Is it reasonable to expect the answer to be less than $\frac{1}{2}$? Greater or less than $\frac{1}{4}$? As you monitor their group work consider these hints: <ul style="list-style-type: none"> ∞ How can you show Joe and Renata's amounts with the fraction circles? ∞ Is $\frac{1}{8}$ greater or less than $\frac{1}{2}$? ∞ How many 8ths equal $\frac{1}{2}$? Have student share solutions again, emphasizing the group's thinking rather than the exact answer. 	<p>You may want to spend more than one day on this lesson.</p>

Teaching Actions

5. Present these two problems. Ask students to act out both problems and explain how they are different.

∞ José ate $\frac{3}{4}$ of a pizza. Mara ate $\frac{5}{8}$. Who ate more and how much more?

∞ A movie costs Josie $\frac{1}{2}$ of her allowance. If she only had $\frac{3}{4}$ of her allowance left before the movie, how much of her allowance did she have left after the movie?

6. Present this “how many more” problem and ask students to act it out.

Hamdi agreed to mow about $\frac{1}{2}$ of the lawn before dinner. At 3:00 she finished about $\frac{3}{8}$ of the lawn. How much of the job does she have left?

7. As you monitor group work, consider these questions:

- Can you show how much she completed by 3:00?
- Even if you can reason the answer in your head, can you show how to do it with circles?
- If she has completed $\frac{3}{8}$, how much more to $\frac{1}{2}$?

8. Share responses and actions on circles. Discuss how this problem is different from previous ones.
9. Talk about how all 3 problem-types (take away, difference, missing addend) are a form of subtraction. Pick any 3 examples and substitute whole numbers less than 19 in for fractions. Ask students to solve with whole numbers. Note that in each case students use their subtraction facts.

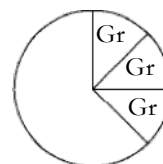
Small Group/Partner Work

10. In groups ask students to create a story problem for addition and one for each subtraction category. Ask them to solve the problems using their fraction

Comments

The pizza problem models subtraction as “finding a difference”. The movie problem is a “take away” problem.

Expect students to act out this story differently from the others. Students may start with $\frac{3}{8}$ (amount completed).



They will try to fill in the space left to make $\frac{1}{2}$ ($\frac{1}{8}$ more).

Even though actions in story problems are different, they are all subtraction problems. Symbolically, all will use “-” (minus sign). It’s important for students to see that these are subtraction contexts.

Teaching Actions	Comments
<p>circles, recording steps symbolically if you think they are ready to do so.</p>	<p>You decide whether students are ready to record their work symbolically.</p>
<p>Wrap Up</p>	
<p>11. Spend the time in large group for sharing these stories and the strategies for solving them.</p>	<p>Their symbol records may not look like “standard algorithm,” but reflect each step they act out with the fraction symbols.</p>
<p>12. Provide symbolic problems for students to act out with the fraction circles. They can use any of the three ways shown. Many might choose the take-away model.</p>	<p>For example, for the lawn problem, the students might record as follows:</p>
<p>Examples:</p>	
$\frac{2}{3} - \frac{1}{3}$	$\frac{3}{8}$
$\frac{4}{5} - \frac{1}{10}$	$\frac{1}{2} = \frac{4}{8}$
$\frac{1}{2} - \frac{3}{8}$	$\frac{4}{8} - \frac{3}{8} = \frac{1}{8}$
$\frac{7}{12} - \frac{1}{2}$	
$\frac{6}{9} - \frac{1}{3}$	

Translations

- ∞ Real life to manipulative to verbal
- ∞ Written symbols to manipulative to written symbols

Which fraction is larger? How much larger?

$$\frac{3}{4} \quad \frac{2}{3}$$