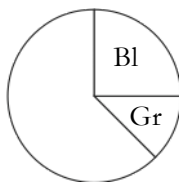


Rational Number Project

Initial Fraction Ideas Lesson 19: Overview	Materials
Students are introduced to fraction addition through familiar contexts and estimating reasonable answers (by comparing sum to $\frac{1}{2}$ and 1).	<ul style="list-style-type: none"> ∞ Fraction Circles for students and teacher ∞ Student Page A

Teaching Actions	Comments
<p>Warm Up</p> <p>List 5 fractions greater than $\frac{1}{2}$. How do you know that they are greater than $\frac{1}{2}$?</p> <p>Large Group Introduction</p> <ol style="list-style-type: none"> Present this story to the students: William ate $\frac{1}{4}$ of a pizza for dinner. The next morning he ate a piece that equaled $\frac{11}{8}$ of the pizza. How much of a pizza did he eat? Explain that you don't want the exact answer, but just an estimate. Ask students to imagine $\frac{1}{4}$ of a pizza and $\frac{1}{8}$ of a pizza. Did William eat more or less than $\frac{1}{2}$ of a pizza? Have students to explain their responses by referring to their mental images for $\frac{1}{4}$ and $\frac{1}{8}$. Show with fraction circles $\frac{1}{4} + \frac{1}{8}$: 	<p>The time spent developing fraction concepts, ordering and equivalence ideas will enable students to approach fraction addition and subtraction in a meaningful way. Initial experience with +, - operations will be through estimation.</p> <p>Estimation skills depend on students' mental images for symbols as well as the context in which the operation is embedded.</p> <p>Students' explanation of estimation may sound like this:</p> <p>(a) He ate less than $\frac{1}{2}$. You need two-fourths to be $\frac{1}{2}$, and $\frac{1}{8}$ is less than $\frac{1}{4}$.</p> <p>(b) $\frac{1}{4}$ of a pizza is like the blue piece. The gray is $\frac{1}{8}$ and it is smaller than the blue. Together they won't make $\frac{1}{2}$.</p>



Teaching Actions	Comments
<p>4. Explain to students that some people would say that $\frac{1}{8} + \frac{1}{4}$ is $\frac{2}{12}$. Ask: Does that make sense? If you ate $\frac{1}{4}$ and then $\frac{1}{8}$ of a pizza would that be the same as $\frac{2}{12}$? Show with circles $\frac{1}{4}$, $\frac{1}{8}$, and $\frac{2}{12}$ of the black circle.</p> <p>5. Repeat estimation process with the following story problems. In each case have students verbalize their reasoning. Point out when students use an ordering or equivalence idea previously learned.</p> <p>Maria received a chocolate chip cookie as big as a birthday cake for a present. She cut it into 6ths and shared the cookie with her friend LeAnna. Maria ate $\frac{3}{6}$ of the cookie. Leanna ate $\frac{1}{3}$. Together, how much did they eat?</p> <p>Martin was making play dough. He added $\frac{3}{4}$ cup of flour to the bowl. Then he added another $\frac{3}{6}$ cup. How much flour did he use? (In this case also ask if the sum is greater or less than one).</p> <p>6. Provide added practice by estimating these sums. In each case, estimate as $>\frac{1}{2}$ or $<\frac{1}{2}$, and >1 or <1.</p> <p>(a) $\frac{1}{8} + \frac{1}{4}$ (b) $\frac{3}{6} + \frac{1}{4}$ (c) $\frac{3}{4} + \frac{2}{4}$ (d) $\frac{4}{6} + \frac{1}{2}$</p>	<p>Familiarity with context helps students to reason about appropriateness of answers.</p>
<p>Small Group/Partner Work</p> <p>7. Student Page A provides practice. Assign in groups so students can share strategies for estimation.</p> <p>Wrap Up</p> <p>8. Have students share their estimation strategies. List the ordering and equivalence ideas mentioned in</p>	<p>Students are asked to write out their explanations for estimating sums.</p>

Teaching Actions	Comments
<p>students' explanations. Discuss how important those order and estimation skills are when operating with fractions.</p>	

Translations

- ∞ Real world to verbal
- ∞ Real world to verbal to manipulative
- ∞ Written symbols to verbal

List 5 fractions greater than $\frac{1}{2}$. How
do you know that they are greater
than $\frac{1}{2}$?

Fraction Addition and Estimation

1. Marty divided a candy bar into 12 equal parts. He ate 1-sixth of the candy bar before lunch. He ate 1-fourth of the candy bar after lunch. Did he eat more or less than 1-half of the candy bar? Did he eat the whole candy bar? **Explain your reasoning.**

2. Terri ate $\frac{5}{6}$ of a small pizza and $\frac{11}{12}$ of another small pizza. Did she eat more than one whole pizza? **Explain your reasoning.**

3. Alex used $\frac{1}{3}$ cup of flour in one recipe and $\frac{1}{4}$ cup of flour in another recipe. Together did he use more than $\frac{1}{2}$ cup of flour? **Explain your reasoning.**

4. Give a reasonable estimate for each sum. On the back of this sheet write out your reasoning for each problem.

$$\frac{1}{3} + \frac{2}{6}$$

$$\frac{1}{8} + \frac{9}{10}$$

$$\frac{7}{8} + \frac{1}{6}$$

$$\frac{1}{5} + \frac{3}{12}$$

$$\frac{1}{3} + \frac{3}{4}$$