Rational Number Project

Initial Fraction Ideas	Materials
Lesson 13: Overview	∞ Chips for students and teacher
	∞ Student Page A
Students continue practicing showing fractions with chips. They determine several units that can be used to model a fraction and what units can't be used to model fractions.	

Teaching Actions	Comments
Warm Up	
Order these fractions from smallest to largest. Be ready to explain your thinking. $\frac{2}{3}$ $\frac{2}{5}$ $\frac{5}{6}$ $\frac{2}{7}$ $\frac{5}{10}$	
Large Group Introduction	Flexibility of unit is emphasized with chips, as was done with the fraction circles. Students should know that to show $\frac{2}{3}$, a number of sets can be used - 3 chips, 6 chips, 9 chips…
1. Present this picture:	
Say: I want to model this fraction using chips as my unit instead of paper. What fraction is shown? If I use 12 chips as my unit, tell me the steps to show $\frac{3}{4}$.	Regardless of the number of chips, the same action to model the fraction is used. (Partition into 3 equal groups and show 2 of the 3 groups tan.
2. Vary the unit by asking students what they'd do if you used 4 chips as a unit and then 20 chips as the unit. Ask how these chip models are alike and how they are different.	
3. Summarize by showing that to show $\frac{3}{4}$ you used 4, 12, and 20 chips. Ask if you could have used other sets of chips as your unit.	
4. Ask students to show the fraction $\frac{2}{3}$ with chips. Allow them to choose the unit. Ask students to tell you what units they used.	

Teaching Actions	Comments
5. Present this chart to students. Ask them to list 3 possible units that they could use as the unit for each fraction.	The possible units are multiples of the denominator.

Fraction	Units you could use
$\frac{4}{5}$	
$\frac{2}{7}$	
$\frac{3}{4}$	
$\frac{1}{2}$	

$\frac{4}{5}$ 5,   10,   15,   20…
are all possible units.

6. Conclude the introduction by asking students to show the fraction $\frac{3}{4}$ with 14 chips. Discuss why this cannot be done. Ask for units that cannot be used to show the fractions in the above chart. [Make another column in the table].

Small Group/Partner Work

7. Assign Student Page A as a way to practice showing fractions with chips.

Look closely at Student Page A. This page provides some problem solving for the students.

This page will need some initial guidance. Do the first 4 or 5 rows together. Students can finish the rest individually, in pairs or small groups.

Wrap Up

8. End this lesson with some problem solving using chips. Present these two problems and ask students to solve them using chips. Then have a few students share how they solved the problems.

Joe ate 4 jellybeans. This was $\frac{1}{5}$ of all the jellybeans in the bag. How many jellybeans were in the bag?

To solve the challenges students have to reconstruct the unit. If 4 jellybeans equals 1-fifth, the there must be 20 jellybeans in the bag as the whole unit is made up of 5-fifths.

Marta ate 18 jellybeans. This was $\frac{3}{5}$ of all the jellybeans in the bag. How many jellybeans in the bag?

If 18 equals 3-fifths, then 1-fifth is 6 jellybeans. Therefore, 5-fifths would be 30 jellybeans.

Translations:
∞ Picture to manipulative to verbal
∞ Written symbols to manipulative

Order these fractions from smallest to largest. Be ready to explain your thinking.

$$\frac{2}{3} \qquad \frac{2}{5} \qquad \frac{5}{6} \qquad \frac{2}{7} \qquad \frac{5}{10}$$

Directions:
Use chips and complete the chart. The first one is done for you.

Number of chips in units	Number of equal-size parts	Number of chips in each equal-size part	Number of parts tan	Fraction of parts tan
15	3	5	2	$\frac{2}{3}$
15				$\frac{2}{5}$
9				$\frac{1}{3}$
21	7		5	
21		7		$\frac{2}{3}$
		2		$\frac{4}{5}$
10	2		1	
18	6		4	
18				$\frac{2}{3}$
18	9		4	
				$\frac{2}{4}$
12	4		2	
12	2		1	