

Rational Number Project

Level 1 / Lesson 12 / Overview

Students are introduced to chips as a fraction model. They learn to represent a given fraction using different sets of chips as a unit.

Materials

- Chips or tiles with a different color on each side.
- Paper strips for folding
- Display chips or overhead chips for teacher
- Student Page A

Teaching Actions

1. You use chips while students use paper folding to show the same fraction.
2. Model the fraction $\frac{2}{3}$ with the display chips you made [see description at end of lesson].

Say: I have 6 chips (show 6 chips with the white side up). I'm going to partition them into 3 equal groups. Can you partition your paper into 3 equal parts?

Ask: How are the displays alike and different?



3. Turn over 2 of the 3 equal groups of chips to show the tan side of the chips. Ask children to model this action on their paper strips by shading 2 of 3 equal parts.

Say: I made 2 of the 3 equal-sized groups tan.

Ask: What fraction of the chips are now tan?

Ask: How are the chips and paper folding models alike? Different?



Comments

1. See the teacher notes regarding using chips or tiles for this lesson.
2. To reinforce important fraction concepts students are introduced to a new model for fractions (chips) by relating this model to a previous one (paper folding). This is a translation from one physical model to another. Seeing similarities between models helps students abstract important concepts.
3. Common error: Students model $\frac{2}{3}$ by making **groups of three** instead of making **three equal groups**.

Teaching Actions

- Summarize what you did by writing on the board.
I started with a unit of _____ white chips.
I divided the unit into _____ equal groups.
I made _____ groups tan.
_____ of _____ equal-sized groups are tan.
What fraction of the groups is tan? ($2/3$)
- Ask students to verbalize what they did with paper in a similar way. Conclude that there are many different models to show fractions.
- Present these two stories to students. Ask them to decide which model, paper folding or chips, would be best to show the fraction in the story.

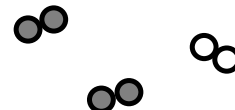
STORY 1: Janet had 15 m&m's. She shared them equally among herself and 2 friends. What fraction of candy did each get?

STORY 2: LeAnna has a Nestle Crunch bar. She plans to share it among herself and 2 friends. What fraction of candy bar will each get?
- Model other fractions using chips. Students should have their own chips. For the sake of consistency use the white side to show the unit and use the tan side to show "amount shaded".

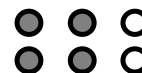
Comments

- Students often need to exaggerate the grouping of the chips to highlight the separate groups.

Ex: $2/3$



Spread out the sets and perhaps even touch the two chips that form one group. At this point don't use the array model.



Some students say that $4/6$ is covered. Informal discussion of equivalence is encouraged but don't rush this idea.

- Student verbalization is important. You might ask them to write a description for showing a fraction with chips.

Teaching Actions

Comments

8. SAY: I have 18 chips. I want to show $\frac{4}{6}$ using these chips as my unit.

ASK: How many equal-sized groups will I need? (6). Now divide the 18 chips into 6 equal groups.

○ ○ ○ ○ ○ ○ ○ ○ ○

○ ○ ○ ○ ○ ○ ○ ○ ○

ASK: To show $\frac{4}{6}$, how many equal groups must I make now? (4)

● ● ● ● ● ● ○ ○ ○

● ● ● ● ● ● ○ ○ ○

9. Repeat for several more fractions.

<u>Fraction</u>	<u>Unit</u>
$\frac{2}{3}$	15
$\frac{2}{3}$	21
$\frac{6}{7}$	7
$\frac{3}{4}$	20

10. Student Page A provides independent practice. Use if time permits.

Modeling Fractions with Chips

- 1) Show $\frac{3}{4}$ with chips. Use 20 chips in all. Draw a picture of your display.

- 2) Show $\frac{3}{4}$ with chips. Use 8 chips in all. Draw a picture of your display.

- 3) Show $\frac{2}{6}$ with chips. Use 12 chips in all. Draw a picture of your display.

- 4) Show $\frac{2}{6}$ with chips. Use 6 chips in all. Draw a picture of your display.

- 5) Show $\frac{4}{5}$ with chips. Use 20 chips in all. Draw a picture of your display.

- 6) On the back of the page, describe steps you would take to show $\frac{3}{7}$ using 21 chips.

Post Lesson Reflection

Lesson _____

1) Number of class periods allocated to this lesson: _____

2) Student pages used: _____

3) Adaptations made in lesson development part:
[For example: added extra problems, eliminated problems, changed fractions used]

4) Adaptations made on Student pages:

5) To improve lesson, next time I should: