

Fair Shares

Strand: Number and Number Sense

Topic: Identifying the parts of a set

Primary SOL: 2.4 The student will

- a) name and write fractions represented by a set, region, or length model for halves, fourths, eighths, thirds, and sixths;
- b) represent fractional parts with models and with symbols.

Related SOL: 2.6 c

Materials

- Circular-shaped counters
- Small paper plates
- Fraction Story Problems (attached)
- Chart paper
- Markers

Vocabulary

denominator, eighths, equal-size parts, equivalent fraction, fair shares, fourths, fraction, fractional parts, halves, numerator, sixths, thirds, unit fraction, whole

Student/Teacher Actions: What should students be doing? What should teachers be doing?

1. Place students into five small groups, and give each group 12 circular-shaped counters and 12 small paper plates. Explain that you will be reading a story problem (attached). As you read, they will use the counters and the plates to predict how the characters will solve the problem.
2. Display and read aloud the first story problem. Allow students to make predictions and then use their manipulatives to see whether their predictions were correct. Discuss what happened to the set. Draw a pictorial representation or display a representation for the first division.
3. Give each group one of the remaining story problems to solve. Direct students in each group to discuss the problem, use the manipulatives to solve it, and then represent their solution on a piece of chart paper.
4. When groups have finished, have each group read their story problem aloud to the class and share their solution. Display each group's chart.
5. After all groups have shared their story problems and solutions, discuss and compare what happened to the set of items being divided in each problem. Discuss the fair shares (equal-size portions) described in each problem. Explain that fractions are fair shares of a whole or a set.
6. Ask, "What do you notice happening to the fair shares as the denominator of the fraction gets larger?" Show students that when the set of 12 items was divided into halves, each share was half of the 12 items, or six items. When the set of 12 items was divided into sixths, each share was one-sixth of the 12 items, or two items. Have

students look for the pattern, using the think-pair-share strategy. Students think about the patterns they see, talk about it with a partner, and then share as a whole class what they have discovered: the larger the denominator, the smaller the fair share.

Assessment

- **Questions**
 - Does a larger denominator mean that the fair share will be larger or smaller? Why?
 - Is it possible for a fraction with a large denominator to be larger than a fraction with a smaller denominator?
 - Compare the set model in the activity to the region/area model (fraction circles) of fractions. How are the models different? What do they have in common?
 - What would have happened if there had been a story problem in which five people had tried to share the 12 cookies? Is it possible to make fair shares? If not, what total number of cookies would have made it possible?
- **Journal/writing prompts**
 - Angie is playing with eight toy cars. She put them into fourths. Draw pictures of what fourths of the cars look like. Explain how you know.
 - Logan has 14 lollipops that he plans to share with four friends. Each friend will receive _____. Draw a picture of each friend's share. Is it possible to make fair shares? Explain why or why not.
- **Other Assessments**
 - Monitor groups while they are working on solving their story problems. Assist groups, as needed. When groups are sharing the solutions, listen for correct vocabulary usage and understanding of the concept.
 - Have student pairs or small groups complete a "3-2-1" by writing three things they learned about fractions, two ways that fractions are used in practical situations, and one thing that might be confusing about fractions.

Extensions and Connections (for all students)

- Have students investigate the relationship between skip counting and possible fair shares for a given number in a set. For example, a set of 10 items can be divided into 1, 2, 5, and 10 fair shares but not into 3, 4, 6, 7, 8, or 9 fair shares. Give students an opportunity to predict numbers of fair shares for a given number in a set, based on skip-counting patterns, and then to use manipulatives to confirm their predictions.
- Read a story about fractional concepts. Have students use manipulatives to model the fractions represented in the story.

Fraction Books:

- Adler, D. (2007). *Working with Fractions*. Holiday House.
- Dodds, D. (2007). *Full House*. Candlewick Press.
- Leedy, L. (1994). *Fraction Action*. Holiday House.
- McGrath, B. (2000). *Skittles Riddles Math*. Charlesbridge.
- Murphy, S. *Give Me Half!* (2001). Harper Trophy. (understanding halves)

- Nagda, A. and Bickel, C. (2007). *Polar Bear Math*. Henry Holt.
 - Napoli, D. (2007). *The Wishing Club*. Henry Holt.
 - Pallotta, J. (1999). *The Hershey’s Milk Chocolate Fractions Book*. Scholastic.
 - Pallotta, J. (2005). *Apple Fraction Book*. Scholastic.
- Redirection and corrective feedback should be given throughout lesson.
 - Have students write their own fraction story problems. Then, have them exchange their problems with partners to solve. Collect all story problems and create a class book.
 - Have students go on a “fraction hunt” for objects in the classroom, school building, or playground that represent or suggest fractions. If a digital camera is available, students can take pictures of the objects found and write the fractions on the pictures.

Strategies for Differentiation

- Have students act out the story problems as they are read aloud to the class.
- Create a set of cards showing the solutions to the fraction story problems, and allow students to match solutions to the problems.
- Modify the fraction story problems to include picture cues for struggling readers.
- Redirection and corrective feedback should be given throughout lesson.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

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Fraction Story Problems

Story Problem 1

Martin has 12 cookies. If he and his best friend Thomas share them equally, what fraction of the cookies does each boy get? How many cookies will be in each fractional share?

Story Problem 2

Devon has 12 cookies. He eats some of them at breakfast, some at lunch, and the rest of them at dinner. If he eats an equal number of cookies each time, what fraction of the cookies does he eat at each meal? How many cookies are in each fractional share?

Story Problem 3

Sarah has 12 cookies. If her family (Sarah, her mom, her dad, and her brother) shares them equally, what fraction of the cookies does each person get? How many cookies will be in each fractional share?

Story Problem 4

Mikah bought a box of 12 cookies for a party. If six friends show up, what fraction of the cookies will each friend get if they share them equally? How many cookies will be in each fractional share?

Story Problem 5

Victor has 12 cookies. He plans to eat one each day for the next 12 days. What fraction of cookies does he eat each day? How many cookies will be in each fractional share?

Story Problem 6

Mitch has 12 cookies. He accidentally drops the plate on the floor and his dog eats all of them. What fraction of cookies did the dog eat? How many cookies are in each fractional share?