- **illuminations.nctm.org/lessonplans/3-5/funwithfractions/index.html**
  The National Council of Teachers of Mathematics presents this unit plan entitled "Fun with Fractions: A Unit on Developing the Set Model." Through these seven lessons, students learn to make sense of basic fraction concepts.
- **math.rice.edu/~lanius/fractions/index.html**
  This Web site, entitled "Who Wants Pizza? A Fun Way to Learn About Fractions," offers clear explanations and diagrams for students learning about fractions, in addition to providing summary quizzes.

Suggested Print Resources

- Adler, David A. *Fraction Fun.* Holiday House, New York, NY; 1996.
- Long, Lynette. *Fabulous Fractions: Games and Activities that Make Math Easy and Fun.* Wiley, New York, NY; 2001.
- Murphy, Stuart J. *Jump, Kangaroo, Jump.* HarperCollins Publishers, New York, NY; 1999. This fictional story teaches about fractions as Kangaroo and his group of friends divide into halves, thirds and fourths to form teams for field day.
- Penner, Lucille Recht. *Clean Sweep Campers.* Kane Press, New York, NY; 2000. Learn more about fractions as campers form equal groups to clean their bunks!

TEACHER'S GUIDE
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TITLES

- Addition
- Decimals & Percents
- Division
- Fractions
- Gathering & Graphing Data
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- Measurement
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TEACHER'S GUIDE

Math for Children™

Fractions

Grades K–4

We use math in everything we do, from catching a movie at the local theater to shopping at the grocery store! Because math is an important aspect of our everyday lives, it's crucial that students are fluent in mathematical thinking and communicating. In our ever-changing world, it's not enough for students to be able to perform calculations. Students need to be challenged to solve problems in creative ways, using various approaches. Enhancing students' mathematical understanding can help to unlock the secrets of the world around them.

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Introduction

If you have ever divided a batch of cookies into fair shares for your friends, then you've worked with fractions! Fractions name equal parts and are written as numerators over denominators. Students can gain fraction sense by learning more about equivalent fractions, mixed numbers and improper fractions. Developing knowledge about fractions helps students put the parts together to form a whole!

Vocabulary

fraction — A way to compare equal parts to a whole. 3/4 is an example of a fraction, naming three out of four equal parts.

denominator — The bottom number in a fraction, telling how many equal parts something has. In 3/4, the denominator is 4.

numerator — The top number in a fraction, telling how many equal parts of the whole are being talked about. In 3/4, the numerator is 3.

equivalent fractions — Fractions that name the same amount. 1/2 and 2/4 are equivalent fractions.

mixed number — A number that has a whole number and a fractional part. 1 1/2 is an example of a mixed number.

improper fraction — A fraction in which the numerator is equal to or more than the denominator. 5/4 is an example of an improper fraction.

Pre-viewing Discussion

- Have a discussion about making fair shares with your students. With one granola bar in front of you, ask how two students could share it. How about three friends? Four friends? Name how many equal parts the granola bar would have in each scenario.
- Discuss students' understanding and familiarity with fractions. When in everyday life do we use fractions? Why are fractions useful? What do they help us to do?
- Using manipulatives, identify 1/2 and 2/4 (point to 1 of 2 counters, or 2 of 4 counters). How are these groups the same? How are they different?

Follow-up Discussion

- Discuss with students what the top number or numerator of a fraction tells you. How about the bottom number or denominator? If you were to flip these numbers, would you have the same amount? Why or why not?
- Some figures may be cut into four parts, but not into fourths. Show on a diagram how this is possible (e.g., rectangle with four unequal parts). Why are these not fourths? How could you make them fourths?
- Students know that four is bigger than two. Encourage them to use words and fraction manipulatives to explain why 1/4 is smaller than 1/2.

Follow-up Activities

- Share *Eating Fractions* by Bruce McMillan (Scholastic, 1991) with your students, and discuss the fractional parts that are displayed in the photographs. Using disposable cameras, students can take pictures of fractional parts in the classroom, school and community. These photos can be compiled and labeled in class fraction books.
- Students can show as many ways as possible to divide a geoboard into two, four and eight equal parts. They can then transfer their designs to dot paper and shade in several of the parts, finally challenging a partner to name and label these fractions.
- Your students can play Fraction Go Fish, expanding their knowledge of equivalent fractions. Create the game cards by writing a fraction and an equivalent fraction on separate index cards (e.g., 1/2 on one card, 2/4 on another to make a single pair). You need at least 15 pairs for a set of game cards. In groups of four, one student can deal out five cards to each student. The remainder of the cards is left in a pile. On their turns, students ask for a specific fraction equivalent (e.g., "Does anyone have a fraction equivalent for 1/2?"). If no one does, then the student "goes fish" in the pile. If someone does have a match, the student receives that card and places it in front of him. The game continues until the pile is empty. The student with the most matches wins!
- Share *Gator Pie* by Louise Mathews (Dodd, Mead, 1979) with your students. Discuss how the pie was divided into fractional parts by the alligators. Why were the alligators upset when more alligators joined them? Students can make their own manipulatives to demonstrate the fractions that were illustrated in the story. Using two different colored paper plates, make a cut on each of the plates to the center. Slide the plates together using the cuts. The plates can now be rotated to show the different fractions in the story. See the following Web site for more information about this activity: mathforum.org/varnelle/knum2.html
- Your students can play a fraction memory game! Write improper fractions and mixed numbers that are equivalent on separate index cards (e.g., 5/2 and 2 1/2). With partners, students can flip these cards over and try to make matches. Students can use fraction strips to help them.

Suggested Internet Resources

Periodically, Internet Resources are updated on our Web site at www.LibraryVideo.com

- **mathforum.org/**
  "Math Forum," sponsored by Drexel University, contains a wealth of information about math for students and teachers. Students can tackle the "Problem of the Week," or send a question to Dr. Math. Teachers can find lots of helpful resources for teaching math, including lesson plans.
- **www.harcourtschool.com/glossary/math_advantage/index.html**
  This multimedia math glossary offers illustrations and definitions for many mathematical concepts, individualized for grades 1 through 8.

(Continued)