

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.
- www.aaamath.com/div.html
This site contains explanations, interactive practices and challenge games for teaching division skills.

Suggested Print Resources

- Cato, Sheila. *Division*. Carolrhoda Books, Minneapolis, MN; 1999.
- Long, Lynette. *Dazzling Division: Games and Activities that Make Math Easy and Fun*. Wiley, New York, NY; 2000.
- Murphy, Stuart J. *Divide and Ride*. HarperCollins, New York, NY; 1997.
This fictional story teaches about division as students divide themselves into groups to go on amusement park rides.
- Rocklin, Joanne. *One Hungry Cat*. Scholastic, New York, NY; 1997. Learn more about division as Tom the cat tries to divide the snacks that he's baking evenly with his friends.

TEACHER'S GUIDE

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TITLES

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|-----------------------|-----------------------------|------------------|
| • Addition | • Gathering & Graphing Data | • Multiplication |
| • Decimals & Percents | • Geometry | • Number Sense |
| • Division | • Measurement | • Subtraction |
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Division

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

Have you ever shared a plate of cookies with some friends? Then you've used division! Division separates into equal groups, and can be represented in division number sentences that contain dividends, divisors and quotients. Students can even use their knowledge of multiplication facts to help them solve division problems. So, when the next snack time rolls around, display your division skills with confidence!

Vocabulary

division — An operation that separates into equal groups.

number sentence — Also known as an equation, a way to record a relationship between numbers. $8 \div 2 = 4$ is a number sentence.

dividend — The number being divided in a division number sentence. In $8 \div 2 = 4$, 8 is the dividend.

divisor — The number by which the dividend is divided in a division number sentence. In $8 \div 2 = 4$, 2 is the divisor.

quotient — The result of dividing. In $8 \div 2 = 4$, 4 is the quotient.

division sign — The symbol in a number sentence that tells you that you are supposed to divide. When you read $8 \div 2$, you say, "eight divided by two."

equals sign — The symbol in a number sentence that tells you that the numbers on either side have the same value. In $8 \div 2 = 4$, $8 \div 2$ has the same value as 4.

fact family — A group of related math facts. For example, 2, 6 and 12 are members of a fact family because $2 \times 6 = 12$, $6 \times 2 = 12$, $12 \div 6 = 2$, and $12 \div 2 = 6$.

remainder — The number left over after dividing.

estimation — Finding a number that is reasonable for a situation.

Pre-viewing Discussion

- Discuss with students why they think division is important. Help them to identify everyday situations in which they would need to use division. What do students imagine would happen if they couldn't use division to find a quotient?
- Encourage students to discuss how division is like sharing. They can explain their ideas using words and manipulatives.
- Division tells about separating into equal groups. Have a class discussion about two friends sharing five cookies. Can the friends make two equal groups with five cookies? Why or why not? What suggestions do students have for this problem?

Follow-up Discussion

- Students can discuss why estimating quotients is useful. When do they think estimating the answer of a division problem is okay? When do they need an exact answer?
- Discuss with students how division and subtraction are similar. How can students use subtraction to help them figure out division problems?
- Division tells about separating into equal groups (e.g., 2 groups of 5). Discuss with students why division can't be used for separating into unequal groups (e.g., a group of 4 and a group of 6). Students can explain their ideas using words and manipulatives.

Follow-up Activities

- Share *The Doorbell Rang* by Pat Hutchins (Greenwillow Books, 1986) with your students. Discuss with students how division plays a role in this story. Encourage students to write division number sentences that represent how the cookies are divided. Students can extend this activity by writing their own division stories.
- Play Tic-Tac-Toe Division with your class! Make tic-tac-toe game cards with division problems written in each of the cells. Students can work in pairs, and each pair should get a game card. Students can take turns solving problems. On a given turn, if a student solves the problem in the cell correctly, he can mark it with a counter. If he solves it incorrectly, his partner gets a chance. The first student in the pair to get tic-tac-toe wins! Then pairs can rotate cards to play again.
- Encourage students to discover the members of a multiplication/division fact family (e.g., 4, 5, 20). They can make triangles that have one member of the fact family in each corner. They can exchange their triangles with partners, who then must write out the number sentences that represent that fact family (e.g., $4 \times 5 = 20$, $5 \times 4 = 20$, $20 \div 4 = 5$, $20 \div 5 = 4$).
- Share Elinor J. Pinczes' *A Remainder of One* (Houghton Mifflin, 1995) with your students. Students can use counters to recreate the ways in which the 25 beetles try to divide themselves into equal groups. Discuss the problems encountered by the beetles. What if there were 30 beetles? Or 50 beetles? Encourage students to identify strategies that the beetles could use if their group was larger in number. Students can also write division number sentences that demonstrate the beetles' efforts, making sure to identify the remainders.
- A remainder needs to be smaller than the divisor in a given division number sentence, or else there's more dividing to be done! Students can help themselves to remember this rule by writing catchy jingles or rhymes which they can share with their classmates.