

Make My Number

Summary

This lesson helps students to relate decimal fractions to common fractions and reinforces the fact that decimals are fractions written in a different symbolic form.

Materials

Paper unit squares
Sandwich board

Background for Teachers

When you are counting items that have parts less than one we use decimals. Decimals are used in our place value system to write fractions in tenths, hundredths, thousandths, and so on. We use a dot as a symbol to separate the whole number part from parts that are less than one. The dot is called a decimal point. The decimal indicates that the position to the left is being counted as units or ones. Numbers that are written with a decimal point are called decimals. Decimals follow the same place value pattern as whole numbers. When you are using a base ten system, no matter what place you are looking at, its value increases ten times the value of the place to its right and when you move to the right on this system each piece gets smaller by one-tenth.

Students need to read 2.7, as two and seven-tenths. This helps them to relate decimal fractions to common fractions and reinforces the fact that decimals are fractions written in a different symbolic form. When we read numbers with decimals in them we say "and" when we get to the decimal point.

Intended Learning Outcomes

5. Connect mathematical ideas within mathematics, to other disciplines, and to everyday experiences.

Instructional Procedures

Invitation to Learn

Model the following sharing problems as a whole class. Ask students to volunteer and come to the front of the class to help solve each problem. You can use real items or paper representations of the items. Ask the students to represent the remainder as a fraction.

Share five cookies between four people. How much does each person get?

Share seven cookies among three children. How much does each child get?

Divide nine apples between two people. How much does each person get?

Divide seven brownies among four children. How much does each person get?

Divide a whole pie among ten people. How much does each person get?

Ask the students what answers they would get if they used a calculator? Have a group use a calculator to solve the problem. Explain that the answer is a decimal number and that it is the way a calculator represents a number that is between two whole numbers. The decimal number and the fraction are the same amounts, they are just written two different ways. Our place value system is a decimal system so that we can write numbers less than one using digits.

Instructional Procedures

Lesson 1 - Decimals

Review the place value activity previously completed. Ask the students what pattern our place value system follows? (Each place increases 10 times to the place to the right.)

Explain that the students just discovered that we can write numbers in our place value system that are less than one or in between two whole numbers. What do you think the pattern would be for those numbers? (Guide students by going from the ten thousand place down to the ones

place and show them that the values decrease by one-tenth when you move from left to right.)

Ask: How many pieces would we cut the unit into to make the tenths place?

Cut a unit square into 10 pieces and place it on the place value chart.

Illustrate .5, .9, and other tenths by drawing ten strips on the whiteboard and telling them to pretend that they are looking at the small pieces under a microscope. Shade in various pieces and then talk about half of the pieces being shaded or nine tenths being almost a whole. (You can refer back to the remainders from the story problems used in the "Invitation to Learn.")

Practice reading five digit numbers including the tenths place. Remind the students that when they are reading a large number they follow the same steps learned earlier, except when a number has a decimal they say "and" at the decimal point and then read the tenths place.

Lesson 1 - Make that Number!

Divide the class into two teams. Have six students from each team come up to the front of the classroom. Give each student a *sandwich board* to wear. Boards should be prepared prior to class. The boards should have the following numbers on the front and back. (0, decimal point) (1,2) (3,4) (5,6) (7,8) (9,6). Two sets need to be prepared.

Explain that you (the teacher) will read a number aloud and that the students need to model the number. The team that completes the task first and correctly gets a point. Let that group model a few numbers and then have them change places with someone on their team that has not had a turn.

Extensions

Have students write in their journals and explain the 10 to 1 relationship of our place value system.

For struggling students let them see the number to be modeled before you read it aloud when playing "Make that Number".

Family Connections

Ask students to find examples from the newspaper that show decimal numbers being used and bring the examples to class to share.

Students can practice reading large numbers and decimals to the tenths place to parents.

Assessment Plan

Walk around the room while students are working on the above activities and observe what they are doing and saying. Are they able to model the numbers in standard form? Or are they struggling and making errors? Are they able to use the tenths place correctly?

Assess students' understanding during whole group discussion from their comments. Are the comments correct or do they have misconceptions?

Assess students individually. Dictate several numbers for the student to write in standard form including the tenths place. Have the student read numbers aloud.

Bibliography

Jensen, E. (2000). Moving with the brain in mind. *Educational Leadership*, 58 (3), 34-37. Retrieved January 18, 2007 from <http://www.newsletteronline.com/>

Brain research has shown that physical movement -- moving, stretching, and acting out concepts, can increase the learning process. Active learners remember the information longer and better than sedentary learners. Teachers should have students: engage in a variety of postures throughout the day, engage in movement during class, use their bodies to demonstrate concepts, role play and include a variety of physical activities to help students learn and if these ideas are not possible then students should at least stop and stretch every 20 minutes.

Marzano, R.J., Pickering, D.J., & Pollock, J.E. (2001). *Nonlinguistic Representations. In classroom*

instruction that works, (72-83). Alexandria, Virginia: ASCD.

Researchers believe that students learn and store information in two different ways. The first form is a linguistic form where the learner either listens to the information or reads it in a book. In the second form, non-linguistic, the learner forms a mental image or a physical sensation by touching, smelling, listening, tasting, or kinesthetic association. Research has shown that when students learn using both forms their achievement improves greatly. After a non-linguistic form of learning has taken place students should be asked to explain and justify what they have learned. When students are able to explain their thinking and reasoning to others their knowledge increases and they are able to recall it easier. Non-linguistic representations include: making physical models, using manipulatives, drawing pictures, graphic organizers, or engaging in kinesthetic activities.

Authors

[Utah LessonPlans](#)