

NTTI Media-Rich Lesson

Bettye Howard-Whitfield

NAME

Order in the Court

LESSON TITLE

6th grade

GRADE LEVEL

1 hour (60 minutes) 1 class period

TIME ALLOTMENT

In grades 6-8, students should deepen their understanding of fractions, decimals, percents, and integers and they should become proficient in using them to solve problems. By solving problems that require multiplicative comparisons (e.g., “How many times as many?” or “How many per?”), students will gain extensive experience with ratios, rates, and percents, which helps form a solid foundation for their understanding of, and facility with proportionality. The study of rational numbers in the middle grades should build on students’ prior knowledge of whole-number concepts and skills and their encounters with fractions, decimals, and percents in lower grades and in everyday life. Students’ facility with rational numbers and proportionality can be developed in concert with their study of many topics in the middle grades curriculum. For example, students can use fractions and decimals to report measurements, to compare survey responses from samples of unequal size, to express probabilities, to indicate scale factors for similarity, and to represent constant rate of change in a problem or slope in a graph of a linear function.

The activities will review prior knowledge of fractions, decimals and percents. The activities will build on and extend students’ experience to become facile in using fractions, decimals, and percents meaningfully. Students will develop a deep understanding of rational numbers through experiences with a variety of models, such as fraction strips, number lines, 10 x10 grids, area models, and objects. These models will offer students concrete representations of abstract ideas and support students’ meaningful use of representations and their flexible movement among them to solve problems. After exploring activities using fractions, decimals and percents, students

will demonstrate what they have learned by participating in a mock trial as the culminating activity

OVERVIEW

Measurement, Problem Solving, Statistic and Communication

SUBJECT MATTER

Student will be able to:

- Use and recognize the fundamental characteristics of numbers and number systems including ordering, using number lines, and their relationship to fractional and decimal parts; understands development and use of place value in the base 10 system; and uses and recognizes the general descriptive properties of numbers.

Examples include: identifying, representing, naming, writing, comparing, and ordering numbers (whole, fractions, and decimals); understanding basic arithmetic operations; classifying and sorting numbers by their basic characteristics; recognizing place value and notation; and rounding and estimating numbers.

LEARNING OBJECTIVES

Students will be able to

Standards

National Council of Mathematics grades k-12

<http://www.nctm.org/standards/standards.htm>

Georgia Quality Core Curriculum (QCC)

<http://www.glc.k12.atlanta.ga.us>

Standard 29

Standard 30 L: <http://www.math.com/school/subject1/lessons/S1U1L2>

Standard 32 Equivalent representations

Standard 35

Problem solving

30 **Topic:** Equivalent Representations

Standard: Uses fractions, decimals, and percents interchangeably (e.g., $\frac{1}{4}$, .25, 25%).

Page-1

- **Communication**
 - Organize and consolidate mathematical thinking through communication
 - Communicate mathematical thinking coherently and clearly to peers, teachers and others
 - Analyze and evaluate the mathematical thinking and strategies of others
 - Use the language of mathematics to express mathematical ideas precisely

State Standards: Mathematics Quality Core Curriculum Standard/s:

Source:

- 1) Georgia Learning Connections. [Http://glc.k12.ga.us](http://glc.k12.ga.us)
 - 2) NCTM (2000). *Principals and Standards for School Mathematics*. National Council of Teachers of Mathematics
-

MEDIA COMPONENTS

Websites

<http://peachstar.unitedstreaming.com/index.cfm>

L: <http://www.math.com/school/subject1/lessons/S1U1L2>

Title: **Decimal Numbers** This is a resource of activities (with worksheets) and unit quizzes which demonstrates how to convert fractions to decimals.

URL: <http://www.math.com/school/subject1/lessons/S1U1L2>

PREP FOR TEACHERS

Before the lesson, prepare a set of twelve fraction cards, avoid equivalent fractions so that no two fractions would occupy the same spot in a sequential arrangement:

$1/16$ $1/8$ $3/16$ $_$ $3/8$ $_$ $5/8$ $_$ $15/16$ $1/1$ $9/8$ $3/2$

Make sure that all Web sites are bookmarked on all the computers in the room, make sure all links are still valid. Cue your videotape to the first segment you are going to use in the learning activity.

Make sure you have all materials for each activity

Activity 1

As students enter the class, pass out the sets of fraction cards.

Ask the students to spread out their fraction cards on their desk so they can refer to them easily. Place the index card with the $_$ on it on the chalkboard, and then show the students the card with $_$ on it. **NOTE** Start with $_$ on purpose because it is fairly easy for students to compare other fractions to $_$. This will serve as a familiar benchmark from which to begin. Spend time at the beginning of the lesson emphasizing the importance of the students' explanations. Follow $_$ with $1/16$, and then $1/1$. Other fractions maybe selected randomly. The fractions don't have to be positioned proportionally, like marks on a ruler, the task is to place the fraction in ascending order. Teacher asks "Where should I put $_$ so that the fractions on the chalkboard are in order of size, going up from left to right?" "You also have to tell me and the class why you suggest putting $_$ in the position". Call on students as you observe the number of students who raise their hand. Before placing the fraction where the student suggests, ask "Does anyone have a different way to explain. Listen to other members of the class who wish to explain. Ask if there are any other explanations. Continue asking questions and listening to the students give explanations for placing each fraction in the proper relationship to the others. Even when students have similar ideas, encourage them to express them in their own words. It's useful for the class to hear the different ways students explain their answers.

This should take about thirty-five minutes to place the ten fractions in the set. As a culminating I want the students to write about $3/16$ and $5/16$ so do not ask where to place them on the board. Tell the student to write in their journal where $3/16$ and $15/16$ should be placed in the sequence. Model how students should record their thinking by calling on a student and recording the student's answer on the board. Tell students to draw a picture to validate the position chosen for each fraction.

Activity 2

Sense or Nonsense – This activity is designed to assess how much students know about fractions and decimal equivalency

As students enter the class they are given cards that have fractions and decimals on them. Explain to the students that they are going to work in groups to complete this activity but first we will review what you know about a dollar,

Ask students the following questions. Responding to them and recording on the board the answers that you are seeking to help guide the students in the activity for today.

Questions

1. What can you tell me about a dollar?
2. Can you write that using a fraction?
3. Can you represent that fraction another way?
4. What do you call this kind of number?
5. Can you demonstrate the equivalence relationship with these numbers?
6. How do we write money?
7. Write your answers as you would write money/

Answers that you may get from the students

1. 100 pennies
2. 10 dimes
3. 20 nickels
4. 4 quarters
5. 2 50 cents etc.

After the review students are to find their mate. If you have a fraction you look for a decimal and if you have a decimal you look for fraction. You should match with an equivalent expression. After about 5 minutes students should have found their mate . They will introduce their equity partner.

Focus for media Interaction

Students are asked to view the video Using Percentage to Solve Problems at <http://peachstar.unitedstreaming.com> and write in their journal how percentages are used in real world connections.

. Stop the video for discussion.

Discuss the video clip and guide the discussion to the next activity by asking students the following questions?

1. How many of you love to go shopping for clothes? Do you remember seeing percent being used when you were shopping? How was it used ; give me an example? Listen for answers such as 50% off and 20% off. Answers will vary. Ask students "Who can give me a fraction, decimal and percent that are equivalent?" "You have to justify your answer". Listen to the students and allow others to agree or disagree with justification.

We also use percentages in laboratory settings. We are going to visit a lab and participate in an experiment. Get your lab sheets ready. We will conduct an experiment to see how much fat is in ground beef. After the lab exercise, students will relate what has been learned about fractions, decimals and percents. Using

counters, money, graph paper or grid paper illustrate equity using fraction, decimal and percentage. This group activity leads into the culminating activity,

Teacher will instruct students

- *To discuss as a group the scenario on the cards on the table.*
- *Last but not least, students will share group product as a form of evaluation and create a video of a mock trial that demonstrates mastery of the objectives presented in this unit*

CULMINATING ACTIVITY

Mrs. Hunnicut has deceased and left her daughters equal shares of her \$200,000,000. Estate

Daughter #1 received (.33 and $\frac{1}{3}$) of the amount

Daughter #2 received $\frac{1}{3}$ of the amount

Daughter #3 received (33 and $\frac{1}{3}$)% of the amount

Daughter # 2 has filed a suit on the other two daughters because she feels she has been awarded the least of the three amounts. Daughter # 1 says she has .33 which is less than 1 and $\frac{1}{3}$ so she knows she has more than Daughter #2 but she feels daughter #3 has 33 plus $\frac{1}{3}$ and this is highway robbery and her mother should not have been so cruel. Trial is set for next Friday and students have to choose who will play the daughters, who will be the lawyers and jurors and the expert witness (The Three Mathketeers , $\frac{1}{10}$, .1, and 10%) . Who will video the trial. Other students can also help with the props. Who is going to be the judge in "Order in the Court"

CROSS-CURRICULAR EXTENSIONS

Science , Math, Social Studies, Art, Law, Drama

COMMUNITY CONNECTIONS

Students can ask Drama teacher to assist in props, costumes, etc. The art teacher can talk to the class geometric designs that can illustrate, fractions, decimals and percentages of a whole. Students can visit supermarket in neighborhood and bring sales paper to class and discuss the fractions, decimals and percentages in the paper. Parents can be invited to the school to the presentation of the mock trial o Order in the court.

