

Subject: Mathematics

Grade: Sixth

Standard: #2 Place Value & #4 Computation and Estimation

Key Concept: Students work with decimal numbers to thousandths.

Generalization: Students compare and perform operations with decimal numbers.

Background:

This activity is adapted from Math for Fun Projects, ISBN# 0-7613-0789-3. Students have worked with decimal numbers including those with thousandths place and have completed a number of activities which include ordering, adding, subtracting, and multiplying decimals.

In pairs or triads, students play a game of *Diabolical Decimals* which is based on their readiness level. Students who have a minimal understanding of decimals should be placed in the **Basic** tier. Those who show a better understanding of decimals and of comparing numbers should be placed in the **Grade Level** tier. Students who have demonstrated a complete understanding of decimals and who can easily perform operations with decimals should be placed in the **Advanced** tier.

Particular materials are dependent on each tier. Students in **Grade Level** and **Advanced** tiers may need calculators to check their answers.

This lesson is tiered in **process** according to **readiness**.

Tier I: **Basic Learners**

Pairs of students are given the following rules for playing the game *Diabolical Decimals*. The object of the game is to create the largest number. Each student rolls a four sided die or six sided die five times and tries to create the largest five digit decimal number. After each roll of the die, each player records a digit from the die on a paper which has five columns labeled tens, ones, tenths, hundredths, and thousandths. A point is scored by the player with the larger number and the game is won by having the most points. The teacher can predetermine the number of rounds or the student pair could set the number

of rounds before beginning play. Each pair should play the game several times.

Pairs should also play the game with the object of creating the smallest number.

Tier II: *Grade Level Learners*

Pairs of students are given the same rules as the *Basic* tier for playing the game *Diabolical Decimals* except these pairs would use six sided or eight sided die.

Pairs should also play the game with the object of creating the smallest number and/or by trying to make their numbers as far apart as possible, a player scores a point if their difference is the largest.

Tier III: *Advanced Learners*

Triads of students are given the same rules as the *Basic* tier for playing the game *Diabolical Decimals* except these students would use eight or nine sided die.

Triads should also play the game with the object of creating the smallest number and/or of trying to make their numbers as close together as possible, a player scores a point if their difference is the smallest.

Assessment:

This lesson is meant to provide extra practice with decimals and doesn't require any assessment. However, you could use observation to assess each students knowledge of decimals and/or use a rubric to assess how well they work cooperatively to play the game and practice.