Algebra/Geometry Institute Summer 2006

Lesson Plan 1: Relating fractions, decimals, and percents

Faculty Name: Emily Hatcher
School: Grenada Middle School, Grenada, MS
Grade Level: 7th

1. **Teaching objective**

    ❖ The student will be able to convert among percents, decimals, and fractions.

2. **Instructional Activities**
    (This lesson will be implemented after students have been taught to convert fractions to decimals.)

    ❖ The teacher will begin with a five problem review on converting fractions to decimals.

    1. $\dfrac{4}{5} = .8$ 2. $\dfrac{3}{8} = .375$ 3. $\dfrac{1}{3} = .\overline{3}$ 4. $\dfrac{5}{6} = .8\overline{3}$ 5. $\dfrac{7}{10} = .7$

    ❖ The teacher will review how to convert a fraction to a decimal.

    ❖ The teacher will call on volunteers to come to the overhead and work each problem.

    ❖ The teacher will answer any questions that the students have to make sure every student has mastered converting a fraction to a decimal before moving on to the next lesson.

    ❖ The teacher will introduce the lesson by asking students to define "percent". The teacher will discuss each answer as the students call them aloud to the teacher.

    ❖ The teacher will tell the students that percent means "parts per hundred".

    ❖ The teacher will explain to the students that in order to change a decimal to a percent you must multiply by one hundred. Remind students that you must attach a percent sign to the answer since the "%" sign means $\dfrac{1}{100}$.
    The teacher will discuss with the students how many times to move the

decimal over when multiplying by one hundred. The students will have to draw on prior knowledge of how to multiply by powers of ten. The teacher and students will discuss that in order to multiply by one hundred; you must move your decimal two places to the right. The teacher and the students will discuss the short cut of changing a decimal to a percent is to move the decimal two places to the right and attach a percent sign.

❖ The teacher will work numerous examples on the overhead with the student's help. Once the students understand how to convert a decimal to a percent, the teacher will introduce how to convert a percent to a decimal.

❖ The teacher will ask the students what they think they should do in order to convert a percent to a decimal. The teacher will hopefully get answers that are close to the correct procedure. The teacher will discuss with the students that if you multiply by one hundred to convert a decimal to a percent, then you would have to divide by one hundred and drop the percent sign to convert a percent to a decimal.

❖ The teacher will work examples on the overhead while asking for the student's help. Once the students understand how to convert a percent to a decimal, the teacher will put the students into groups of four. Each group will be given an activity sheet on converting fractions to decimals, decimals to percents and percents to decimals. Each activity sheet has five problems for the group to work. Prior to working the problems, each group will decide who will be the recorder and who will be the reporter. Once this has been determined, all four group members will work their problems showing their work on their paper. The students may discuss each problem as they work it. The activity is a group effort and not individual. Once all groups are finished with their activity sheet, the reporter from each group will tell their answers and how they worked each problem. The teacher and/or the students can answer questions that may arise. (See Attachment 1)

❖ Once the group project is over, the teacher will explain to the students that they will be doing a fun activity that involves converting fractions to decimals, decimals to percents, and percents to decimals. The teacher will explain that each student will receive an index card. On the index card there will be an answer and a question. The teacher will have the first question to ask the class. A student in the room will have the answer to the question on their index card and will say the answer out loud. The student that answered the question will go stand in the front of the classroom. Once the student is standing in the front of the room, they will read the next question. Another student in the room will have the answer and will say it out loud, then join the first student in the front of the classroom. This process will continue until each student is standing in the front of the room and all questions have been answered. The teacher and students will

monitor the answers to the questions throughout the game to make sure the questions are being answered correctly (It is good to let the students find the mistakes that are made instead of pointing them out to them). (See Attachment 2)

3. **Materials and Resources**

Overhead projector
Pencil
Notebook
Index cards
Activity sheet – Converting fractions to decimals, decimals to percents, and Percents to decimals (Attachment 1)
Questions for index card game (Attachment 2)

4. **Assessment**

❖ Teacher observation of student participation.
❖ Teacher will monitor and observe students as they work in their groups.
❖ Performance assessment: The teacher will observe students as they play the index card game.

Group Activity

Directions: Solve each problem. Show your work on this sheet of paper.

Convert each fraction to a decimal (Show your work!)

1. $\dfrac{10}{16}$ = _____

2. $\dfrac{23}{40}$ = _____

Convert each decimal to a percent or each percent to a decimal

3. .45 = _____

4. 89% = _____

5. .915 = _____

Index Card Game

Directions: You will need a pack of index cards. On each card you will write each answer and question that is on this sheet. The first index card will only have a question on it, and will be the teacher's index card. Give each student an index card. Start the game with the question that is on the teacher's index card. The student that has the answer to the question will raise their hand and answer the question. Once the student has answered the question, they will walk to the front of the classroom. Once the student is standing at the front, they will ask the next question. The student that has the answer to that question will call out the answer, and then join the other student in the front of the room. The student will ask the next question. This will continue until all students are standing in the front of the room. This should mean that all questions have been answered.

Questions and Answers for Index Cards

1. What is $\dfrac{3}{4}$ written as a decimal?

2. Answer: I am .75
   Question: What is .35 written as a percent?

3. Answer: I am 35%
   Question: What is 50% written as a decimal?

4. Answer: I am .5
   Question: What is $\dfrac{7}{8}$ written as a decimal?

5. Answer: I am .875
   Question: What is .875 written as a percent?

6. Answer: I am 87.5 %
   Question: What is 46.9% written as a decimal?

7. Answer: I am .469
   Question: What is $\dfrac{15}{40}$ written as a percent?

8. Answer: I am 37.5%
   Question: What is $\dfrac{36}{75}$ written as a decimal?

9. Answer: I am .48
   Question: What is .48 written as a percent?

10. Answer: I am 48%
    Question: What is $\dfrac{3}{75}$ written as a decimal?

11. Answer: I am .04
    Question: What is 89% written as a decimal?

12. Answer: I am .89
    Question: What is .257 written as a percent?

13. Answer: I am 25.7%

    Question: What is $\dfrac{1}{4}$ written as a percent?

14. Answer: I am 25%
    Question: What is 25% written as a decimal?

15. Answer: I am .25

    Question: What is $\dfrac{1}{3}$ written as a decimal?

16. Answer: I am $.\overline{3}$