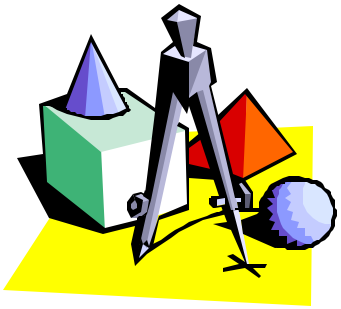
Algebra/Geometry Institute Summer 2003



Lesson Plan 3

Faculty Name: Patansy Miller
School: Solomon Middle School
City: Greenville, MS
Grade Level: 7th

1. Teaching objective(s)

   Given an algebraic expression, equation, or inequality, the student will write a corresponding real-life situation.

2. Instructional Activities

   1. The teacher will introduce the vocabulary: expression (a group of numbers, variables, and operations), equation (a mathematical sentence that contains an equal sign), and inequality (a statement that compares two expressions using one of the following symbols <, =, >, =, or ?).

   2. The teacher will group the students in fours. Each group will be instructed to assign someone as a recorder, a presenter, and all will brainstorm on each situation given.

   3. The teacher will give an example of an expression, such as 17*y*. In order to demonstrate how to use the expression in everyday life, the teacher will ask the students to think of the number 17 as money. The teacher will then ask for situations when you will multiply something by 17.

   4. The student will create different situations where they can multiply money times something and share with the class. An example from one of the groups is Karen was chosen to purchase an automatic pencil sharpener for each classroom in which the pencil sharpener is broken in the school. Each pencil sharpener costs $17.00. In order to determine the total cost of the pencil sharpeners, Karen would have to multiply the cost of the pencil sharpener (17.00) times the number of classrooms that have broken pencil sharpeners (*y*) or 17*y*. 

5. The teacher will then give the equation y + 10 = -3. The teacher will demonstrate how to use the equation to write a real-life situation. The teacher will instruct the students that to think of the number as money and write down a situation dealing with money to make this situation true. The teacher will instruct the students to look at the positive integers as money you have and the negative integers as money you owe. The teacher will then ask the question "Do you think it is possible to receive $10.00 in payment and still owe someone $3.00?" After listening to a few suggestions, the teacher will suggest the situation of John over-drawing from the bank in the amount of $13.00. When John receives his $10.00 allowance and deposits it in the bank, he will still owe the bank $3.00. Therefore, the equation $y + 10 = -3$ will apply in that situation with y representing the amount he overdrew and can be solved if $y = (-13)$.

6. The teacher will give the students the same equation and instruct the students to create a real-life situation to make the equation true. The teacher will offer the suggestion of looking at the numbers as temperature as opposed to as money. An example of one suggestion is, the temperature in Chicago rose 10 degrees from 3:00 am to 7:00am. What was the original temperature if the temperature was 3 degrees below zero at 7:00 am?

7. The teacher will then give the inequality t = 21. Using the inequality, she will address the students by saying, "The number 21 is very important when it deals with a person's age. Can you think of a time when a person has to be 21 in order to legally be able to do something?" After listening to suggestions, the teacher offers the situation whereas a person can not work with a casino unless he/she is 21. If t represents the person's age, the inequality $t = 21$ can show the relationship of the individual's age and the legal requirement.

8. The teacher will further the lesson on inequalities by giving the inequalities: $f < 3$, $g \geq 3$, and $s = 5$. The teacher gives the following examples to correspond with the inequalities. According to the *Mayo Clinic Health Letter*, a healthful breakfast cereal contains less than 3 grams of fat ($f < 3$), at least 3 grams of fiber ($g = 3$), and no more than 5 grams ($s = 5$) of sugar per serving.

9. The student will use the inequalities to create real-life situations. The inequalities given are $a = 18$, $x = 9$, $m > 15$, and $p < 10$.The class will work in their groups to create a real-life situation for each given inequality. After the class has created a real-life situation for each inequality in their groups, they will choose an example of the real- life situations given and share with the class. An example of one of each given were:

    a. A person can not purchase tobacco products unless he/she is 18 years old or older $a = 18$, with a representing the person's age.
    b. In order to play Little League Baseball, a participant must be 9 years old or younger $x = 9$, with x representing the participant's age.

c. Joe is the youngest person in his family. He is 15 ($m > 15$), with m the ages of the rest of the family.
d. Jimmy had more marbles than anyone else is his class. He had ten ($p < 10$), with p representing the number of marbles the class has.

10. The teacher will assign the students homework where they will create six of their own statements from everyday life and write the corresponding expressions, equalities, and inequalities.

3 Materials and Resources

Pencil
Paper
Notebook
Textbook- Mathematics-Applications and Connections, Course (Glencoe, 1995)
Mayo Clinic Health Letter, February, 2001

4 Assessment

Teacher observation of student participation
Peer evaluation of presentations
Student product- homework