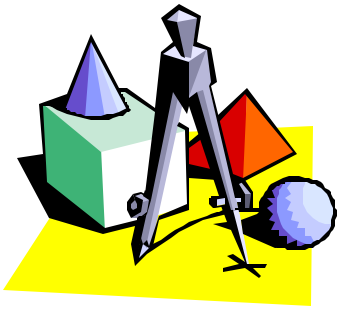
Algebra/Geometry Institute Summer 2003



Lesson Planning Guide

Lesson Plan 1

Faculty Name: Ruth Dotson
School: Broad Street High School
City: Shelby, MS
Grade Level: 8

1 Teaching objective(s)

D. Use manipulative models to demonstrate operations for monomials and polynomials.

2 Instructional Activities

♠ The teacher will: Write the objective on the board. Review monomials and polynomials while students take notes. Introduce students to Algebra tiles by identifying each tile as, (x^2, x, and the unit 1). Explain that the large square is called x^2 because it is x long and x wide; x times x is x^2 . The rectangular tiles is called x because it is x long and 1 wide; x times 1 is x. The small square is the unit 1, because its length and width is 1; 1 times 1 is 1. Explain that the negative and positive tiles are divided by color. The negative tiles are usua lly the color red, and the positive tiles are usually the color green.

♠ Model the following examples on the overhead projector using Algebra tiles.

1. $(x^2 + 3x + 4) + (2x^2 + 5x + 5)$, 2. $(5x + 7) – (3x + 1)$, 3. $2(2x + 4)$
4. $(9 x + 6) \div 3$.

For example 1, the teacher will combine like terms by adding 1 and 2 large squares, 3 and 5 rectangles, 4 and 5 units to get $3x^2 + 8x + 9$. Example 2, the teacher will take 3 rectangles from 5 rectangles, and 1 unit from 7 units to get the answer $2x + 6$. Example 3, the teacher will add two rectangles and 4 units, twice, to get the answer $4x + 8$. Example 4, the teacher will take 9 rectangles, 6 units and divide them in 3 equal sets of 3 rectangles, and 2 units to show an answer of $3x + 2$.

♠ Assign students several examples of problems to model at their desks. Students will sit four to a group and use their Algebra tiles to model the following. Example 1. $(x^2 + 4x + 9) + (5x^2 + 2x + 6)$. Example 2. $(3x^2 + 5x + 2) – (x^2 5x + 1)$. Example 3. $5(3x^2 + 2x - 6)$. Example 4. $(12x + 8) \div 4$. The first group to complete a model will select someone from their group to explain their work to the class on the overhead. .

♠ Assign the class several problems to do for homework. The students will complete a written exercise by drawing models of the problems given.

Draw models of the problems below to answer questions 1 – 10.

1. $(2x^2 + 3x + 9) + (4x^2 + 6x + 4)$
2. $(5x + 8) + (3x + 8)$
3. $(x^2 + 6x + 5) – (x^2 + 2x + 3)$
4. $(9x + 12) – (5x + 7)$
5. $6(3x + 4)$
6. $8(5x^2 + 2x – 3)$
7. $3(2x^2 -3x + 4)$
8. $(8x + 24) \div 4$
9. $(18x^2 + 12x + 6) \div 6$
10. $(16x^2 + 8x + 24) \div 8$

3 Materials and Resources

- ♦ Merrill Mathematics textbook, and workbook; Merrill Publishing Co.
- ♦ Overhead Projector
- ♦ Screen
- ♦ Wet-Erase fine point
- ♦ Algebra tiles
- ♦ Pencil
- ♦ Paper
- ♦ Notebook
- ♦ Teacher made worksheet

4 Assessment

- ♣ Class demonstration
- ♣ Oral response
- ♣ Homework
- ♣ Weekly quiz