

Algebra/Geometry Institute Summer 2002

Lesson Planning Guide 1

Faculty Name: Mrs. Adrienne Moore

School: Greenville-Weston High School (Weston Campus)

Grade Level: 9 – 12



MS Framework competencies:

1 Teaching objective(s)

- 5d-Use manipulative models to demonstrate operations with monomials and polynomials.

2 Instructional Activities

- ❖ The class states the motivational statement, “Math is the key, I can unlock the door!!!!!!”
- ❖ Teacher will then instruct students to work Daily Skills Warm-13-5, while observation of roll is done. The teacher will allow 5 minutes, then teacher will randomly choose a student to explain a Daily Skills Warm-up problem. The teacher will ask for a brief summary of what combining like terms implies first. Then the teacher will state, “To add or subtract like terms, you add or subtract their coefficients to get the result. Teacher will then ask, “Would it be easier to count coins in a cash register or savings bank by combining all of the coins of the same denomination or by counting the coins individually as they occur?” After students answer responsively, teacher will say, “it’s better to combine all the same coins and calculate than to randomly count”.
- ❖ Teacher will now introduce a manipulative to add and subtract polynomials. The teacher will show what the Algebra tiles shapes represent and the color. Each blue square tile represents positive x^2 and each red square represents $-x^2$, green rectangle represents positive x and red rectangle represents $-x$, and the small yellow square represents positive 1 and the small red square represents -1 . Then the teacher will ask, “What are the coefficients of the x^2 and x terms in the polynomials?” The students will give logic to the question and the teacher will stress,

“The coefficients are 1 because any variable by itself has an understood coefficient of 1.

- ❖ The teacher will model a polynomial first. (Example $2x^2 + 5x - 4$). Then the teacher will allow students to model 1) $-x^2 - 6x + 7$ and 2) $3x^2 - x + 5$. The teacher will now model adding a polynomial $(2x^2 + 5x - 4) + (-x^2 + x + 2)$. The teacher will have students to first model the following $(-3x^2 - 4x - 7) + (x^2 + 4x + 2)$. Students will then model and simplify the following a) $(2x^2 - 8x - 4) + (-2x^2 - 7x - 2)$ and b) $(-3x^2 + 2x + 4) + (-x^2 - x - 2)$. Now the teacher will model subtracting polynomials with Algebra tiles. (Give Example) $3x^2 + 5x - 1 - (x^2 - 2x + 1)$ and $(2x^2 - 7x + 4) - (x^2 - 2x + 2)$. Students will model and simplify with the use of the algebra tiles, (Examples) $3x^2 + 2x - 4 - (x^2 - x + 2)$ and $(2x^2 - 7x + 4) - (x^2 + 2x + 2)$.
- ❖ Students will be grouped in fours. The game to be played is called, “Fan N- Pick” composed by Kathy Kagan. The object of the game is to allow everyone collective involvement. Teacher will pass 5 index cards out. Each student will choose one number between 1 & 4. The person number 1 will state, “Pick a card, any card”. The person number 2 will read the instructions and problem. The number 3 person will solve and explain the problem. The number 4 person will give praise to number 3s’ explanation. The game will continue but the number 1 person becomes number 4, number 2 becomes number 1, number 3 becomes number 2, and number 4 becomes number 3 continuing the pattern until the original number 1 starts with instruction # 1. Students will perform the activity for approximately 20 minutes.(sample cards included)
- The teacher will collect all cards and have students clear their desk.
Lesson Quiz 13-5; Using the algebra tiles, model each sum or difference and simplify the results.

3 Materials and Resources

- Prentice Hall Pre-Algebra text: pp. 684-686
- Dry-erase board, markers
- Algebra tiles
- Index Cards
- Pencil/paper
- Overhead Projector

4 Assessment

- ✓ Teacher will check for comprehension with a lesson quiz
- ✓ Teacher will give similar problems for homework assignment

(sample problems included).

- ✓ Teacher observation

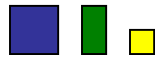
5 Enrichment (Optional)

- Enrichment, Adding Polynomials : Glencoe/McGraw-Hill p.116
Homework for the advanced students

Fan-n-pick

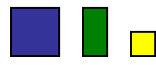
Show the Algebra tiles

Representation for each polynomial
and simplify.

$$(5x^2 - x - 7) + (2x^2 + 3x + 4)$$



Show the Algebra tiles

Representation for each polynomial
and simplify

$$(x^2 - x + 5) - (2x - 5)$$


Show the Algebra tiles

Representation for each polynomial
And simplify.

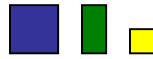
$$(7x^2 + x + 1) + (3x^2 - 4x - 3)$$


Show the Algebra tiles

Representation for each polynomials

And simplify.

$$(11x^2 + 13x - 4) - (-6x^2 - 13x + 1)$$

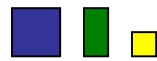


Show the Algebra tiles

Representation for each polynomial

And simplify.

$$(-5x^2 + 11x - 12) + (14x^2 + 15x + 6)$$



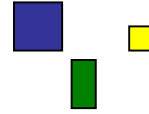
ANSWER KEY to FAN- N- PICK

1. $7x^2 + 2x - 3$
2. $x^2 - 3x + 10$
3. $10x^2 - 3x - 2$
4. $17x^2 + 26x - 5$
5. $9x^2 + 26x - 6$

Sample Homework Problems

Show the Algebra tiles

Representation for each polynomial
and simplify.



1. $(5x^2 - 2x - 7) + (2x^2 + 3x + 4)$

2. $(5x^2 - x + 5) - (2x - 5)$

3. $(-7x^2 + x + 1) + (3x^2 - 4x - 3)$

4. $(1x^2 + 13x - 14) - (-6x^2 - 13x + 1)$

5. $(-5x^2 + 10x - 12) + (4x^2 - 5x + 6)$