## Math Manipulative Lesson Plan:

**(Decker & Hillebrand/Math Methods/4-1-25)**

**I. Topic**

A. Students will solve and create algebraic equations containing variables and involving different operations like addition, subtraction, and division. Students will then demonstrate how they solved these problems while using algebra tile math manipulative.

**II. Objective/Standard**

A. Students will be able to use algebra tiles to model, simplify, and solve one-step algebraic equations.

B. Standard CC.2.2.6.B.2: Understand the process of solving a one-variable equation or inequality and apply it to real-world and mathematical problems

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**III. Teaching procedures**

A. **Introduction/Anticipatory Set**: Teacher will give students a real life scenario "Imagine you buy 3 tickets to a concert for you and two other friends. The total comes to $54, how much did each ticket cost?"

B. **Development**: Teacher will then explain to students that you can use a math manipulative to help you solve algebraic equations. Teacher will introduce algebra tiles to the class and will explain how they can be used to solve certain problems.

1. Teacher will demonstrate how to use them with the real life scenario problem she presented to the class; he/she will thoroughly demonstrate and explain how to use algebra tiles.
2. Additionally, the teacher will then project two more examples “2x-4=10; 5x+2=20” and will have students write these problems down in their notes. Teacher will set up and solve most of the problem, and then will call on students to answer the equation.

C. **Guided Practice**: Students will be given a worksheet with ten algebraic problems, and the teacher will have students work with a partner on the first five problems that involve algebra tiles. Give students a whiteboard and a dry erase marker, and have them use the algebra tiles to work on each problem given. Students will write their answers on the whiteboard. After students complete the first five problems, the teacher will go over the answers and demonstrate step-by-step how to accurately solve each problem.

D. **Independent Practice**: Students will work on their own to solve 5 more equations on the worksheet with the algebra tiles. They will write each answer on the whiteboard, and the teacher will go over them together. After solving the equations, each student will share their answers with the class.

1. Students then will be tasked to write and solve two of their equations. The students will demonstrate to their class how they used algebra tiles to solve these problems. They will write there problem and the answer on their whiteboards when done. Students are being graded for accuracy on their solving strategies and explanation of their own equations.

E. **Closure**: The teacher will call on a few students to share their created equation with the class, under the doc-cam. Students will copy down and solve the shared equation in their notebooks.

## IV. Materials

A. Doc-Cam

B. Algebra Tiles

1. One single square represents: 1
2. One green line: a variable
3. One red block: a negative number
4. One big blue block: the squared value

C. Whiteboard

D. Dry Erase Marker

E. Pencil

F. Algebraic Problems Worksheet

## V. Adaptation/Plan Modifications

A. Students can work in a small group rather than a partner if they struggle with working one-on-one.

B. Students struggling with the algebra tiles can also use drawings in addition to the algebra tiles to visualize the equation better.

C. Provide instructions for each step of solving the equation with the algebra tiles.

## VI. Evaluation

A. **Formative Assessment**

1. Students will work on the Algebraic Problems Worksheet with a partner as well as individually so the teacher can assess their knowledge and understanding of solving different algebraic expressions. Students will use algebraic tiles to aid them in solving algebraic expressions so they can visualize the solving process through hands-on learning.

B. **Summative**

1. Students will be tasked/graded on creating their own algebraic expressions and being able to accurately solve/demonstrate their problems while using the algebraic tiles. Each student will demonstrate to the class step by step how to solve their problems using algebraic tiles.
2. Teachers will grade students for accuracy on their explanation and ability to accurately solve their problems using the algebraic tiles.

## VII. Reflection

A. **Student**

1. Were all objectives met? Does the teacher have to reteach how to solve algebraic expressions or demonstrate how to use algebraic tiles to solve algebraic expressions?
2. What parts were challenging for students to understand?
3. What should I review for the students in the next lesson?

B. **Teacher Evaluation**

1. Did the students respond well to the questions?
2. Were students involved in the learning process?
3. What changes can I make to this lesson and this teaching style?

**Name:**_____ **Date:**_____

# Algebra Problems Worksheet

Directions: For each problem, solve the equation in order to find x. Use the Algebra Tiles to aid you in solving for x, and be sure to show your work for each problem. The first five problems you will work with a partner and then the next set of problems you will work independently.

**Work With a Partner** **Show Work**

1. 2x-4=10

2. 3x+5=20

3. 4x-7=17

4. 5x+2=27

5. 6x-3=15

**Independently**

6. 7x+4=32

7. 8x-6=42

8. 9x+1=28

9. 10x-5=45

10. 12x+8=56