**7A Lesson Plans for the Week of 12-10-18 to 12-14-18**

**Monday, December 10th, 2018: Intro to One-Step Equations**

* Bell Work
* Correct/Collect Homework Assignments
* Introduction to Solving One-Step Equations
* Homework: Finish One-Step Equation Worksheet

**Tuesday, December 11th, 2018: Simplification Quiz/More Practice of Solving One-Step Equations and Writing Equations to represent Real World Problems**

* Bell Work.
* Simplification Quiz
* Correct/collect Homework
* Guided Practice: pp. 179-181: 1-3, 5-7
* Homework: Pp. 182-184: 3-5, 7-9, 12-14, 16, 18

**Wednesday, December 12th, 2018: Intro to Multi-Step Equations Using Silver and Bronze Bolts, Nickels, and Pennies.**

**Goals**:

7.EE.1, 7.EE.2, 7.EE.3, 7.EE.4

**Objectives**:

* Students will use bolts, nickels, and pennies as concrete representations of coefficients and constants in multi-step equations.
* Students will use these concrete representations to solve for the missing variable in multi-step equations.
* As students use the manipulatives to solve each equation, they will also accurately record each of their algebraic steps in pencil.
* Students will correctly solve multi-step equations by using inverse operations in reverse order of operations.

**Methodology**:

* Direct Instruction and Individualized Instruction.

**Anticipatory Set:**

* I will begin the class by telling the students that instead of learning to solve equations the traditional pencil and paper method, today will make it fun and use bolts, nickels, and pennies. This will help make equations more visual than pencil and paper.

**Procedure:**

* Students will complete their Bell Work problems on Unit Rates.
* Correct and Collect Homework
* Review for College Loan Quiz.
* After completing the Bell Work, I will then model solving multi-step equations using bolts and nickels with the ELMO. Students will follow along using their own bolts, nickels, and pennies at their desk (Each pair of students will work together and share the bag)
* The following contents are in each bag and are represented as follows:
  1. Silver bolts are positives coefficients
  2. Bronze Bolts are negative coefficients
  3. Nickels are positive constants
  4. Pennies are negative numbers.
* I will first demonstrate by solving the equation 2x + 2 = 8.
  1. I will first model the equation on the ELMO using the bolts and pennies. I will explain that constants (or numbers) are represented by pennies and the coefficients are represented by the bolts. In this equation I will model that we have 2 bolts + 2 nickels = 8 nickels. How many nickels does each bolt represent?
  2. I first ask the students what my first step should be? The students should recognize that we should try to get the bolts on one side and the nickels on the other. So I will subtract 2 nickels from both sides of the equal sign. I will make sure that the students realize that whatever you do to one side of the equation, you must do the same thing to the other side. The mathematical steps will be shown accordingly and students will realize that they are subtracting because this is the opposite operation of addition. The following step will be written:

2x + 2 = 8

+-2 +-2

* 1. After we have subtracted 2 pennies from both sides, we are left with 2 bolts that are equal to 6 nickels or 2x = 6. I will then ask the students what the next step in solving the equation should be? The students at this point will be able to see that each bolt is worth 2 nickels. I will model this on the ELMO and match up each bolt with 2 nickels, thus 1 bolt is equal to 2 nickels. Students will also recognize that matching up each bolt with the remaining nickels is the same as dividing both sides of the equation by 2, the coefficient of x. I will discuss that we are dividing because this the opposite operation of multiplication is division. The mathematical steps will also be recorded and students will record their steps in their notes:

2x = 6

1. 2

x = 3

* I will continue to model the following equations on the ELMO using the same process.
  1. 3x + 6 = 12
  2. 1 + 2x = 9
  3. 5 = 4x + 1
* After completing these problems together as a class, I will then give each student a worksheet of more multi-step equation problems. There are ten more problems that are similar to the problems just completed as a class. Students will be able to use bolts and nickels as they complete these problems. As the students work on these problems, I will be around the class monitoring their progress and helping any students that need assistance.
* On the back of this worksheet there are more problems. Problems 11 – 14 are problems in which students will solve the equations just as before, but for these problems I want the students to solve them without using the bolts and nickels.
* If time allows, I will then have students attempt to solve problems with negative constants and coefficients. For these problems students will have to use bronze bolts and pennies and create zero pairs to eliminate positive and negative constants and positive and negative coefficients.
* After using the manipulatives to solve the guided practice problems, students will then work on their homework assignment, a worksheet on multi-step equations.

**Assessment**:

* Informal individualized and whole group assessment through direct instruction, small-group instruction, and individual instruction.
* I will be assessing on whether the students need more practice solving the equations or whether they are ready to move on to more complex equations such as equations with negative numbers and coefficients (Problems 15-18 on their homework provide this challenge).
* Homework: Solving Equations Worksheet

**Thursday, December 13th, 2018: 6.4 – Solving Two-Step Equations**

**Goals**:

7.NS.1, 7.NS.2, 7.NS.3, 7.EE.1, 7.EE.2, 7.EE.3, 7.EE.4

**Objectives**:

* Students will correctly solve challenging 2-step equations.
* Students will represent real-life situations and problems using variables in the context of two-step equations and then solve the problem.

**Methodology**:

* Direct and Individualized Instruction.

**Procedure:**

* Bell Work.
* Guided Practice: Pg. 191: 1-4, Pg. 192: 6-7
* Example 3
* Students will review more complicated problems in which they will have to simplify equations before beginning to solve.
* Students will work on Homework, while I will monitor progress and hold a small study group in the back of the class.

**Assessment**:

* Informal individualized assessment, Informal whole group assessment
* Homework: Pp. 195-196: 6-27

**Friday, December 14th, 2018: Additional Practice Solving Multi-Step Equations**

**Goals**:

7.NS.1, 7.NS.2, 7.NS.3, 7.EE.1, 7.EE.2, 7.EE.3, 7.EE.4

**Objectives**:

* Students will correctly solve challenging 2-step equations.
* Students will represent real-life situations and problems using variables in the context of two-step equations and then solve the problem.

**Methodology**:

* Direct and Individualized Instruction.

**Procedure:**

* Bell Work Quiz.
* Correct/Collect Homework.
* Pg. 196: 28-30, 32-34
* Homework: Solving Equations Practice Worksheet.

**Assessment**:

* Informal individualized assessment, Informal whole group assessment
* Homework: Equation Practice Worksheet.