Dana Ewing / Math Fundamentals / 3-26-21

1. TOPIC
   1. The students will solve a two-step equation in proper order and be able to justify their work.
2. OBJECTIVE
   1. Given practice problems and visuals, TSWBAT solve two-step equations and visually represent their work to at least 70% accuracy.
3. STANDARDS
   1. Write expressions in equivalent forms to solve problems (CC.2.2.HS.D.2)
      1. Simplify/reduce a rational algebraic expression (A1.1.1.5.3)
4. TEACHING PROCEDURES

**Anticipatory Set (3 minutes)**

* 1. “Has anyone seen the commercial for Tootsie Pops with the wise old owl? What does the boy ask him?” *Wait for student response*. “What is the boy’s ultimate goal in eating the Tootsie Pop*?” Scaffold students as needed to get to the answer that the boy wants to reach the Tootsie Roll in the center.* “This gives us a picture of what we are trying to do when we solve equations. Just like we want to clear away the lollipop to access the Tootsie Roll, we want to clear away the surrounding numbers to reach the variable.”
  2. Write an example of a one-step addition/subtraction equation on the board and ask a student to guide me through how to solve it. Repeat for multiplication/division and emphasize both times how the goal is to get the variable by itself.

**Development 1 (10 minutes)**

1. Write a two-step equation on the board and explain why you cannot simply divide everything by the coefficient without first removing the constant. (Ex. 3x+4=19)
   1. Show the difference in difficulty between dividing vs. subtracting first.
2. Write another problem on the board and walk through the steps as the students follow along by copying the problem down on notebook paper. Emphasize removing the constant and isolating the variable.
3. Hand out notecards to the students with blank spaces for them to record the two steps in their own words.

**Guided Practice 1 (5 minutes)**

1. Write a problem on the board and give the students a few minutes to solve the problem on their own before choosing one person to write out their work on the board. Scaffold as necessary.
2. Affirm the student and correct any errors.
3. Repeat the process with one more example.

**Development 2 (5 minutes)**

1. Add a third step of checking your work! Allow students time to include this on their notecards.
2. Model for students using the last example how to plug the number for *x* back into the original equation to see if it matches on both sides. Place a check over the equal sign as a clear indicator.

**Independent Practice 2 (15-20 minutes)**

1. Hand out a worksheet with practice problems to students, and have the students take turns in guiding you through the steps of the first problem.
2. Allow the students to solve the other problems on their own, directing them to show all their work.
3. Walk around and assist the students as needed.

**Closure (2 minutes)**

1. Ask for questions and give specific feedback to students about their achievement.
2. MATERIALS
   1. Big notecards
   2. Notebook paper
   3. Pencils/markers
   4. Handouts
   5. Whiteboard/marker
   6. Tootsie Pop
3. ADAPTATIONS
   1. For students who still feel confused about why the variable must be isolated, I will show them the “balance scale visual.” I will re-explain things as necessary and provide lots of chances for affirmation, questions, and feedback in general. With less time, I will remove certain examples as necessary. With more time, I will have the students race to put their answers to examples on the board.
4. EVALUATION
   1. Formative – Questioning, thumb gauge, student handout answers
   2. Summative – Students will eventually be tested by Mrs. Miner on these concepts.
5. REFLECTION
   1. Did my students seem to understand the concept of two-step equations? Did they engage in the lesson? Do the students have enough examples to reference?
   2. Was my pacing good? Did I motivate the students to learn? Did I provide enough feedback and adaptations? Would I do anything differently?

[see lesson reflection under page in digital portfolio]