TOURO COLLEGE
The Graduate School of Education and Psychology
EDSE 601– **Principles of Middle School Instruction in Mathematics
in General & Special Education, Grades 5-9**
Daniel Stein, Adjunct Professor - http://touroweb.webhop.org

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 ♦ NYC Dept of Mathematics- ♦ Everyday Math ♦ Impact Math ♦ NAEYC ♦ NCATE ♦ CEC ♦

This lesson is for the **Special Education Population** and teaches to one of the topics in either Everyday Math or Impact Math that leads to a regents question. I have also listed a sample Regents Question from Baron's (page, year and question number), which the lesson addresses.

If you have not yet done so please create an account on CAST, then use the UDL lesson plan format (shown below).
Extra Credit: Create you lesson on the CAST website (in addition to sending it the BB.) Let others in the class know how to access your UDL Lesson that this is done in BBDB FAQ.

This (topic, title and number) can be found as part of the Impact Math approach.
My Mathematics Lesson Plan 2- For a Special Education Class
Lesson Topic: **Solving Multistep Equations**

I have chosen the above mathematics topic from our class text: Barons Regents Review Math "A".
This lesson is geared towards teaching to the following lesson in Barons Math A
(Page 27, Example 1)
IMPORTANT At the end of this lesson plan I will describe how this lesson is in alignment with the Impact Math approach.

General Mathematics Area: Algebra
        Examples: Computation, algebra, graphing, number patterns, probability, etc.
Target grade for this lesson: Grade 8

UDL Format from www.cast.org – *Please note that you can substitute the lesson plan format used in your school.*

Lesson Overview

Title: Solving for x in Multistep Equations
Author: Lauren Giaquinto
Subject: Algebra
Grade Level(s): 8
Duration: 40 minutes

Unit Description
        This unit will explore multistep equations in depth. Students will be taught and have opportunities to practice working with solving for x in a variety of methods. Throughout the unit, students will learn how to solve x, check their answers, and use the value of x to find other missing values.

Lesson Description for Day
        In this lesson, students will be introduced to the concept of balancing equations. It will be stressed that they need to make sure they do the same operation on either side of the equal sign. Students will watch a modeled example, practice an example with the teacher, and do some problems independently.

State Standards

8.PS.16 – Justify solution methods through logical argument.

8.CM.10 – Use appropriate language, representations, and terminology when describing objects, relationships, mathematical solutions, and rationale.

8.R.2 – Explain, describe, and defend mathematical ideas using representations.

8.A.14 – Solve linear inequalities by combining like terms, using the distributive property or moving variable to one side of the inequality (include multiplication or division of inequalities by a negative number).

Goals

Unit Goals: By the end of the unit, students will be able to set up equations with variables and solve for x in these multistep equations correctly.

Lesson Goals: By the end of this lesson, students will be able to solve for x, making sure that they balance the equations correctly by performing the necessary operations on both sides of the equal sign.

Methods

Anticipatory Set:
1. Explain that when we solve multistep equations, we need to make sure that whatever we do to one side of the equal sign, we need to do to the other.
2. As an example, show the student a balance scale.
3. Explain that solving a multistep equation is just like making sure the balance scale always has equal weight on both sides.
    a. Explain that the middle of the balance is just like an equal sign, and the two sides of the scale represent the two sides of an equation.
    b. Show how if we add weight to on side, the scale is no longer balanced until we add the same weight to the other side.
    c. Also show that if we take away weight on one side, the scale will still be unbalanced until we take away the same amount of weight on the other side.

Introduce and Model New Knowledge:
1. Use sample problem 3x - 5 = 22.
2. Remind the students that we already know how to eliminate a constant or a coefficient by using the inverse operation.
3. Tell the students that the goal is to get x alone on one side of the equation.
4. To do this, we need to first get rid of the -5. The inverse operation of subtraction is addition, so we need to add 5.
    a. Remind the students that we need to make sure the equation stays balanced like the scale, so whatever we do to one side, we must do to the other. (I will also have drawn a line through the equal sign

and down so that the students can clearly see the work being done on both sides) Thus, we get:

$$3x - 5 = 22$$
$$\underline{+5 \quad +5}$$
$$3x \ = \ 27$$

5. Now, in order to eliminate the 3, we need to do the inverse operation, which is to multiply.
    a. Again, remind the students that we need to make sure the equation stays balanced like the scale, so whatever we do to one side, we must do to the other. Thus, we get:

$$\frac{3x}{3} = \frac{27}{3}$$
$$x \ = \ 9$$

Provide Guided Practice:
6. Do one more example with the students: $4z + 6 = 38$. Follow the same procedure, except this time, have the students do the problem along with you and help you to solve it correctly.

Provide Independent Practice:
7. Give the students 5 problems to do on their own. (See student worksheet)

Wrap-Up
8. Have the students share out their answers and explain how they got their answers.
9. Allow other students the opportunity to agree or disagree with their classmates, using accountable talk stems and their work to back up their reasoning.

Assessment
Formative/Ongoing Assessment:
        Students will be assessed throughout the unit on their understanding of the topics at hand through permanent product worksheets, quizzes, and an end of the unit test. They will also we assessed on classroom participation and on their ability to explain how they arrived at their answers using math language and clear explanations.

Summative/End of Lesson Assessment:
        Students will be assessed on their understanding of the skill by their completed worksheet and by their class participation in explaining how they arrived at their answers.

Materials

Board/Whiteboard/Chart paper
Chalk/Markers
Student Worksheets