**Solving Two Step Equations**

1. TITLE OF LESSON: Solving Two Step Equations
2. CONTEXT OF LESSON: The students should be able to solve one step equations using addition, subtraction, multiplication and division. They should also be able to combing like terms and simplify expressions. This lesson would come after one step equations, and before solving equations with variables on both sides of the equal sign.
3. LEARNING OBJECTIVES and ASSESSMENT:

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| Learning Objective  The student should be able to: | Bloom | Assessment (Formative/Summative) |
| Solve equations with more than one operation | U | Students will be evaluated while working problems individually and also while doings pairs check with a switch, and the computer lab game. |
| Solve an equation by working backwards. | U |
| Solve one step equations | U | Students will complete a 4 square activity at the beginning of class. |
| Create math sentences from an equation | A |
| Justify steps of solving an equation. | E | The students will be doing this by showing all work for problems, as well as explaining the answer to the journal entry. |

1. RELATED 2009 VIRGINIA STANDARDS OF LEARNING:

A.4: The student will solve multi-step linear and quadratic equations in two variables, including:

* 1. Solving literal equation for a given variable
  2. Justifying steps used in simplifying expressions and solving equations, using field properties and axioms of equality that are valid for the set of real numbers and its subsets
  3. Solving quadratic equations algebraically and graphically
  4. solving multistep linear equations algebraically and graphically
  5. solving systems of two linear equations in two variables algebraically and graphically and
  6. Solving real world problems involving equation and systems of equation.

Graphing calculators will be used both as a primary tool in solving problems and to verify algebraic solutions.

1. MATERIALS NEEDED:

I supply: 4 square handouts, PowerPoint, guided notes, pairs check handout, calculators, and also reserve computer lab.

They supply: Pencil and Paper

1. PROCEDURE:

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| Time | Mathematical Tasks to be Used,  Teacher Thoughts/Actions/Questions | Anticipated Student Comments, Questions, Actions, and Strategies |
| 15  Min | I will be walking around checking for completion of homework from the night before and listening to conversations that the kids are having about warm up.  After the completion of each 4 square go over answers and answer any questions. | Pick up warm up from overhead and complete 4 square activity.  Have students number off 1 -4. Each student will complete the square of their number and then alternate. So 4 will become 1 and 2 becomes 3 and 3 becomes 4. This is so that each student will get the four different difficulty levels. |
| 15 min | Go over power point presentation of solving equations and distribute guided notes. | Students should fill out guided notes and discuss answers to individual problems. |
| 20 min | Distribute pairs check with a switch to students.  Go over instructions on how to do pairs check with a switch.  Once one group is completely finished with their sheet, check it, and allow them to check other student’s sheets. | Students should decide who maroon is and who is white. Each will complete problem 1 on their sheet and switch. They should check the #1 problem and if it is not correct they must give it back to their partner and have them correct it. If it is correct they do #2 and switch again. |
| 5 min | Go over pairs check with a switch and go over any problems that they had. | Ask any questions about the problems that they did. |
| 15 min | Take students to computer lab next door and have them work together on the following site:  <http://www.math-play.com/Two-Step-Equations-Game.html> | Students should work together to complete basketball game. They must print out certificate that shows how many problems they got correct. |
| Time Rem. | Discuss anything that the kids had trouble with. Discuss all the different steps of solving a two step equation. I will also distribute homework at this time, and the journal entry.  Journal Entry: Your friend George is having trouble reading his bill from Enterprise. The bill says that he owes $230, but he claims to only owe $150. Enterprise charges $50 for the car and .30 per mile. George drove the car 600 miles. Who is correct and why? | The students should be completing the journal entry and discussing any problems that they struggled with from the online game. |

1. MEETING THE NEEDS OF ALL STUDENTS: Students should be paired with students that are on the same level in the pairs with a switch activity as not to get frustrated with time. If I see that they need more time I may shorten the assignment. Students may also choose to work alone in the computer lab.
2. WHAT COULD GO WRONG WITH THIS LESSON AND WHAT WILL YOU DO ABOUT IT? Students may get off task in going to the computer lab, in which case they will be reminded of privileges being taken away in the future. This usually makes them more apt to being on task. Students may race through the pairs with a switch in which case I would give them more problems to work on at a higher level.
3. Link to CTA: I am using Strebe’s methods of pairs with a switch, which I really liked since the kids are made to justify their answers to a partner if need be and creates a reason for students to check work. I am also using Mulligan’s 4 square activity for the kids to practice different levels of mathematical thinking, and in the 4 square activity I have a couple of open ended questions.







