Lesson: Building Understanding of Solving Systems of Equations Using Alice

Teacher: Julie Fink
Level: Algebra I or Algebra II

Overview:
• This lesson is a practice (or a quiz) for students who have already learned to solve a system of linear equations.
• All equations are in the standard form \( Ax + By = C \)
• All solutions to the systems are integers. (No special solutions)

Objectives and Goals:
• Washington Standards
  o A.1.1.A Select and justify functions to model and solve problems.
  o A.1.1.C Solve problems that can be represented by a system of linear equations of inequalities.
  o A.1.4.D Write and solve systems of two linear equations and inequalities in two variables.

Anticipatory Set (5 min):
• Have students independently:
  o Define “System of Equations”
  o Explain what is a “solution” to a system.
  o List at least 2 different methods that can be used for solving a system of equations.

Direct Instruction (15 min):
• Put 3 examples on the board. Have students determine what method would be best for solving each system. (Use graphing, substitution, and elimination.)
• Ask them to individually solve each system using the method that the class decided would be “best”. Remind them to check each solution.
• Have 3 students put their work on the board.

Guided Practice (10 min):
• Demonstrate how the Alice program “SystemofEqFinal” will look and run.
• Have each student open and play the program “SystemofEqFinal”
• Note: If time allows, the teacher may want to edit the program to enable it to go beyond 5 correct answers before ending.

Closure (5 min):
• Discuss the kinds of solutions that occurred in the program (there were only integer answers).
• Ask students about what other kinds of possible answers can occur.
  (Hopefully they will come up with rational solutions as well as no solution or
  infinitely many)

Independent Practice:
  Continue practice at home with an assignment from the book or a worksheet.

Required Materials and Equipment:
• Computer(s) with Alice software
• Students will need paper, pencil, and calculator

Assessment
• Compare the number of points scored to the number of tries as students
  move through the program. Students who have many more tries than points
  scored will need remediation.
• You may want to have each student write down the problems and their work
  on their paper to turn in at the end of the class.