Topic 6 Systems of Equations- Study Guide

Standards:

8.EE.C.8a

Analyze and solve pairs of simultaneous linear equations. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

8.EE.C.8b

Analyze and solve pairs of simultaneous linear equations. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.

8.EE.C.8c

Analyze and solve pairs of simultaneous linear equations. Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.

For your test, you should be able to:

- Identify when linear equations are showing a system of equations.

- Identify the 3 types of solutions by analyzing the system of equations and/or looking at the graph.
    - One Solution
    - No Solution
    - Infinitely Many Solution

- Show if a given ordered pair (x,y) is a solution to a given system of linear equations.
    - Substitute the x and y value into each equation and simply.
    - If the result is a true statement, it is a solution. (ex: 3=3)
    - If the result is a false statement, it is not a solution to the system. (ex. 3=7)

- Graph a system of linear equations by putting both equations in y=mx +b form and writing the solution as an ordered pair (x,y).

- Analyze a given system of linear equations and decide which type method for solving will be most efficient and why.

- Solve a system of equations with the substitution method.
    - Used when one variable is already isolated.
    - Example:
      y= 3x-9
      2x+7 = 13

    The system above would be solved most efficiently with substitution because the first equation has the y isolated.

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- Solve a system of equations with addition.
    - Used when terms in each equation has opposite signs (+/-) with same coefficient.
    - For example, the system below would most efficiently solved with addition because the first equation has -3x and the second equation had 3x.

$$7y-3x=9$$
$$8y+3x=12$$

- Solve a system of equations with subtraction.
    - Used when terms in each equation has the same signs (both + or both -).
    - For example, the system below would most efficiently solved with subtraction because both of the equations has a 7y.

$$7y-3x=9$$
$$7y+4x=12$$

- Write a system of equations to solve by reading a word problem and creating linear equations from the information given.