Name:_____ Date:_____
PC: Solving Systems of Equations Algebraically Ms. Loughran

Do Now:

1. Solve the following system of equations:

$$y = x + 1$$
$$2x + y = -2$$

Models:

1. Solve the system of equations:

$$3x + y = 3$$
$$7x + 2y = 1$$

Classwork:

1. Solve the system of equations algebraically by substitution and then by elimination:

$$2x - y = -1$$
$$2x + y = -7$$

2. Solve the system of equations algebraically by substitution and then by elimination:

$$2x + 2y = 3$$
$$x = 4y - 1$$

3. Solve the system of equations algebraically by substitution and then by elimination:

$$x - 2y = 3$$
$$-2x + 4y = 1$$

4. Solve the system of equations algebraically by substitution and then by elimination:

$$2x - y = 1$$
$$4x - 2y = 2$$

5. Solve the system of equations algebraically by substitution and then by elimination:

$$3x + 2y = 2$$
$$5x + 7y = -4$$

Summary

For a system of linear equations, there can be:

1.

2.

3.

Answer the following question on your index card:
Which method (substitution or elimination) do you think is easier? Explain why.

Practice

Solve each of the following systems of equations algebraically.

1. $\begin{cases} y = -x + 2 \\ x - y = 0 \end{cases}$

2. $\begin{cases} x + 2y = 1 \\ 5x + 3y = -23 \end{cases}$

3. $\begin{cases} x - y = 0 \\ 7x + y = 0 \end{cases}$

4. $\begin{cases} 8x + y = -16 \\ -3x + y = -5 \end{cases}$

5. $\begin{cases} 2x + y = 5 \\ 4x + 2y = 10 \end{cases}$

6. $\begin{cases} x - y = 2 \\ -2x + 2y = 5 \end{cases}$

7. $\begin{cases} 3x + 4y = -1 \\ 2x + 5y = 4 \end{cases}$

8. $\begin{cases} 4x - 3y = 25 \\ -3x + 8y = 10 \end{cases}$

9. $\begin{cases} 5x + 4y = -30 \\ 3x - 9y = -18 \end{cases}$

10. $\begin{cases} 2x + 8y = 6 \\ -5x - 20y = -15 \end{cases}$

11. $\begin{cases} 5x + 4y = -14 \\ 3x + 6y = 6 \end{cases}$

12. $\begin{cases} -4x - 15y = -17 \\ 5y = x - 13 \end{cases}$

13. $\begin{cases} 8x + 14y = 4 \\ -6x - 7y = -10 \end{cases}$

14. $\begin{cases} 2x - y = 1 \\ 4x - 2y = 2 \end{cases}$

15. $\begin{cases} \frac{1}{5}x + \frac{1}{2}y = 8 \\ x + y = 20 \end{cases}$

16. $\begin{cases} \frac{1}{5}x - \frac{1}{3}y = 1 \\ -3x + 5y = 9 \end{cases}$

17. $\begin{cases} 2.5x - 3y = 1.5 \\ 10x - 12y = 6 \end{cases}$

18. $\begin{cases} -7x - 8y = 9 \\ -4x + 9y = -22 \end{cases}$

19. For each of the following systems, find a value of k such that the system has infinitely many solutions.

    (a) $\begin{cases} 4x + 3y = -8 \\ x + ky = -2 \end{cases}$

    (b) $\begin{cases} 3x - 12y = 9 \\ x - 4y = k \end{cases}$

    It is possible to find values of k such that the systems have no solutions? Explain why or why not for each system.

20. On the index card that you were given, write a linear equation.