5C Systems: Substitution

Name: _____ Per: _____

SHOW YOUR WORK FOR FULL CREDIT. NO WORK, NO CREDIT. NO WORK IN PEN.

Solve the following using **SUBSTITUTION**. Be sure to find **BOTH x and y**. **CHECK** your answers.

1. $\begin{cases} y = 4x - 2 \\ -6x + y = 4 \end{cases}$

$-6x + (\quad\quad) = 4$

2. $\begin{cases} y - x = -4 \\ y - 4 = 3x - 4 \end{cases}$

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

Solve for x:

Find y:

Solution: (_____, _____)
Check:( ) = 4( ) – 2

Solution: _____
Check:

Solution: _____
Check:

$-6x + (\quad) = 4$

Solve the following using **any method**. Be sure to find **BOTH x and y**. **CHECK** your answers.

4. $\begin{cases} 6x + 7y = -3 \\ y = x + 7 \end{cases}$

5. $\begin{cases} 16x + 2y = 6 \\ y = -8x - 8 \end{cases}$

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

Solution: _____
Check:

Solution: _____
Check:

Solution: _____
Check:

7. Debra is starting a catering business and is attempting to figure out who she should be using to transport the food to different locations. Peter's Pick Up charges $0.40 per mile and charges a flat fee of $68. Helen's Haulers charges $0.65 per mile and charges a one-time fee of $23.

   a. Define your variables.

   b. Write TWO equations

   c. Solve the system of equations

   d. Explain what the solution means. _____

8. Sam is planning a ski trip and wants to figure out which mountain offers the best deal. Sam needs to rent skis and buy a lift ticket. He researched his options, and he found the following two packages which include ski rental and lift ticket.

   a. Write equations to represent each package.

Zippity Ski Slopes Rental Package	Cruising Ski Slopes Rental Package
$5 + $5 each hour for rental	$20 + $2 per hour for rental

   b. Solve the system of equations.

   c. What is the solution set of the ski packages? _____

   d. If Sam is planning to ski for 6 hours, which company should he use_____ WHY?

   _____

9. Kristin spent $131 on shirts. Fancy shirts cost $28 and plain shirts cost $15. If she bought a total of 7 of them,
   a. Define your variables.

   b. Write a system of equations

   b. Solve the system of equations and find out how many fancy shirts and plain shirts she bought.

10. $\begin{cases} y = -5x + 7 \\ 10x + 2y = 5 \end{cases}$ Anna says the system of equations has no solutions. Is she right or wrong? _____

    Show your work and explain.

11. **Use the map to find a National Treasure.**

    The solution to the linear inequality system will send you right to the location of the treasure! The treasure will be located at the section that satisfies the system. Graph the following inequalities to find the treasure.

$2x + 3y < 18 \quad -4x - 4y < 8$

$-3x + 4y < 12 \quad\quad y > -5$

$x < 12 \quad\quad 4x - 5y < 20$