

Name _____

1.3 SUBSTITUTION GUIDED NOTES

Solve by Substitution	①	SOLVE one equation for x or y. (Isolate a variable)
	②	SUBSTITUTE the resulting equation from step 1 into the other equation for that variable.
	③	SOLVE for the remaining variable.
	④	SUBSTITUTE your answer from step 3 into either original equation to find the other variable.

Directions: Solve each system of equations below by substitution. Identify the solution.

7. $y = -7x - 1$
 $y = x - 9$

$$-7x - 1 = x - 9 \quad y = 1 - 9$$

$$-1 = 8x - 9 \quad y = -8$$

$$8 = 8x$$

$$x = 1$$

(1, -8)

8. $y = -5x + 30$
 $7x + 3y = 42$

$$7x + 3(-5x + 30) = 42$$

$$7x - 15x + 90 = 42$$

$$-8x + 90 = 42$$

$$-8x = -48$$

$$x = 6$$

$y = -5(6) + 30 = 0$

(6, 0)

9. $6x - 5y = -28$
 $7x + y = 22$

$$y = -7x + 22$$

$$y = -7(2) + 22 = 8$$

$$6x - 5(-7x + 22) = -28$$

$$6x + 35x - 110 = -28$$

$$41x - 110 = -28$$

$$\frac{41x}{41} = \frac{82}{41} \quad x = 2$$

(2, 8)

10. $x - 7y = 53$
 $-4x - 5y = 19$

$$x = 7y + 53$$

$$-4(7y + 53) - 5y = 19$$

$$-28y - 212 - 5y = 19$$

$$-33y - 212 = 19$$

$$-33y = 231$$

$$y = -7$$

$x = 7(-7) + 53 = -49 + 53 = 4$

(4, -7)

11. $2y = 6x + 10$
 $3x - y = 5$

$$-y = -3x + 5$$

$$y = 3x - 5$$

$$2(3x - 5) = 6x + 10$$

$$6x - 10 = 6x + 10$$

$$-10 = 10$$

NO SOLUTION

12. $5x + 7y = -17$
 $4x - 3y = -5$

(This system is crossed out with a large blue X)

If all variables cancel:
 - Untrue Statement = No Solution
 - True Statement = Infinite Solutions