

Solving Systems of Linear Equations:

Name _____

Substitution

Date _____



You can use substitution to solve a system of equations.

To use substitution, one of the equations needs to have a variable alone on one side. In this system, neither equation has a variable alone.	$x - 3y = 16$ $x + 2y = 26$
Solve either equation for one of the variables. Choose the equation you think would be easier to solve. Let's solve the first equation for x . Add $3y$ to both sides.	$x - 3y = 16$ $x = 16 + 3y$
Since $x = 16 + 3y$, you can substitute $16 + 3y$ for x in the second equation. Then solve for y .	$x + 2y = 26$ $16 + 3y + 2y = 26$ $16 + 5y = 26$ $5y = 10$ $y = 2$
Now that you know y , you can find x . Substitute 2 for y in either equation to solve for x . Let's use the second equation, $x + 2y = 26$.	$x + 2y = 26$ $x + 2(2) = 26$ $x + 4 = 26$ $x = 22$
Finally, write the solution as an ordered pair. Since $x = 22$ and $y = 2$, the solution is (22, 2) .	

Practice! Solve each system of equations using substitution.

$$y = 3x$$

$$x + y = 20$$

(____, ____)

$$x = 3$$

$$-5x + 2y = 1$$

(____, ____)

$$3x + 5y = 4$$

$$y = -x - 2$$

(____, ____)

$$y = 6x - 12$$

$$y = -6x$$

(____, ____)

$$x - 2y = 22$$

$$x + y = 10$$

(____, ____)

$$y = 3x + 12$$

$$y = -4x + 5$$

(____, ____)

$$2x - y = 1$$

$$3x + 4y = 40$$

(____, ____)

$$x + 2y = -16$$

$$3x - 5y = -15$$

(____, ____)

$$5x + 7y = 16$$

$$2x + y = 10$$

(____, ____)