

Instructions: Solve each system.

<p>1. $\begin{cases} 4x + 6y = 24 \\ 10x - 6y = 18 \end{cases}$</p> <p>Step 1: Both equations are in standard form.</p> <p>Step 2: The y's are opposite (6y and -6y) so go to step 6.</p> <p>$4x + 6y = 24$ $+ \quad 10x - 6y = 18$</p> <p>$\frac{14x}{14} = \frac{42}{14}$</p> <p>$x = 3$</p> <p>Step 6: Add the equations</p> <p>Step 7: Solve for x.</p> <p>Step 8: Substitute back into one of the equations and solve for y.</p> <p>$4x + 6y = 24$ $4(3) + 6y = 24$ $12 + 6y = 24$ $-12 \quad -12$</p> <p>$\frac{6y}{6} = \frac{12}{6}$</p> <p>$y = 2$</p> <p>Step 9: report solution as ordered pair</p> <p>$(3, 2)$</p>	<p>2. $\begin{cases} 4x - 3y = 5 \\ 4x + 2y = 10 \end{cases}$</p> <p>Step 1: Both equations are in standard form.</p> <p>Step 2: No opposites in either variable so go to step 3.</p> <p>Step 3: The coefficients for x are the same so multiply second equation by -1 and go to step 6.</p> <p>$4x - 3y = 5$ $+ \quad -1(4x + 2y = 10)$</p> <p>$\frac{-5y}{-5} = \frac{-5}{-5}$</p> <p>$y = 1$</p> <p>Step 4: Add the equations</p> <p>Step 7: Solve for y</p> <p>Step 8: substitute and solve for x</p> <p>$4x + 2y = 10$ $4x + 2(1) = 10$ $4x + 2 = 10$ $-2 \quad -2$</p> <p>$\frac{4x}{4} = \frac{8}{4}$</p> <p>$x = 2$</p> <p>$(2, 1)$ solution</p>
--	--

TOPIC: Solving a System of Linear Equations

3. $\begin{cases} 5x + 3y = 11 \\ 3x - y = 15 \end{cases}$

Step 1: Both in standard form
 Step 2: No opposites
 Step 3: x's are not the same

$3(5x + 3y = 11)$
 $-5(3x - y = 15)$

Step 4: Multiply first equation by 3.

Step 5: multiply second equation by -5

$15x + 9y = 33$
 $-15x + 5y = -75$

Step 6: Add equations

$14y = -42$
 $\frac{14y}{14} = \frac{-42}{14}$

Step 7: Solve for y

$y = -3$

Step 8: substitute and solve for x.

$5x + 3y = 11$
 $5x + 3(-3) = 11$
 $5x - 9 = 11$
 $+9 +9$

$\frac{5x}{5} = \frac{20}{5}$

$x = 4$

$(4, -3)$ solution

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

Step 1: Get second equation into standard form. Then rewrite the system.

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

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

Steps 2+3: No opposites, x's not the same.

$-2(3x + 5y = 4)$
 $3(-2x + y = 5)$

Step 4: Multiply first equation by -2.

$6x - 10y = -8$
 $-6x + 3y = 15$

Step 5: Multiply second equation by 3.

$-7y = 7$
 $\frac{-7y}{-7} = \frac{7}{-7}$
 $y = -1$

Step 6: Add equations

Step 7: solve for y

$-3x + 5y = 4$
 $-3x + 5(-1) = 4$
 $-3x - 5 = 4$
 $- +5 +5$

Step 8: substitute and solve for x

$\frac{-3x}{-3} = \frac{9}{-3}$

$x = -3$

$(-3, -1)$ solution