Systems of Equations – Linear Combination / Elimination

The strategy for solving equations by LINEAR COMBINATION is to add the equations together in such a way as to eliminate a variable resulting in an equation being in $ax + b = c$ format

Eliminating a variable changes the system of 2 equations into one equation with one variable – which I know how to solve.

Algorithm Linear Combination/Elimination

1. If necessary, multiply either or both equations by number(s) which will make the coefficients of one of the variables the same but opposite in sign
2. Add the two equations together
3. Solve the resulting equation
4. Substitute that value into one of the given equations to find the value of the other variable
5. Write the solution as an ordered pair.

Example Solve $3x + 10y = 2$

$x - 2y = 6$

Eliminate the x

$3x + 10y = 2$

$x - 2y = 6$ mult by -3

$-3x + 6y = -18$

Adding

$16y = -16$

Solve

$y = -1$

$x - 2y = 6$

$x - 2(-1) = 6$ Substitute in $y = -1$

$x + 2 = 6$ Simplify

$x = 4$

The answer is $(4, -1)$