

Remember that _____ a linear system means to find the values of the variables that satisfy ALL of the equations in the system. Graphically speaking, this means you will find the ordered pair (x, y) where the lines intersect.

There are 3 main methods for solving a linear system:

- 1) Graphing
- 2) Substitution
- 3) Elimination

Steps for Solving by ELIMINATION:

- 1) Get rid of decimals or fractions if necessary
- 2) Rewrite the equations with like terms in the same column ($x + y = \#$)
- 3) Multiply one or both equations by a number so that you have two equations in which the coefficients of one variable are the same or opposite
- 4) Add or subtract the equations to eliminate a variable and solve the resulting equation for the remaining variable
- 5) Substitute your solution for one of the variables in to either of the original equations to solve for the other variable
- 6) Check that the solutions satisfy BOTH of the original equations

Example 1: Solve each of the following linear systems using the method of ELIMINATION

a) $\ell_1: 3x + 2y = 19$
 $\ell_2: 5x - 2y = 5$

b) $\ell_1: x + 4y = 6$
 $\ell_2: 2x - 3y = 1$

c) $\ell_1: 3x + 2y = 2$
 $\ell_2: 4x + 5y = 12$

d) $\ell_1: 0.6x - 0.3y = 2.4$

$\ell_2: -0.4y + 0.7x - 2.9 = 0$

e) $\ell_1: \frac{x}{2} + \frac{y}{8} = 4$

$\ell_2: \frac{x}{3} - \frac{y}{2} = -2$

f) $l_1: 5x + 2y = 2$
 $l_2: 10x + 4y = -4$

Helpful tip:

When coefficients of a variable have opposite signs, _____ will eliminate them
When coefficients of a variable have the same sign, _____ will eliminate them