p. 107 # 8. Two observations are made concerning a certain number of coins placed on a table. They are described mathematically by the following equations:

$\rightarrow 0.25x + 0.1y + 2 = 3.5 \rightarrow$ amt of money

$\rightarrow x + y + 1 = 10 \rightarrow$ # of coins

a) Describe these observations. i.e. what does each equation represent?

b) How many coins of each denomination are on the table?

① $0.25x + 0.1y = 1.5$

$x + y = 9$

$y = 9 - x$

$x = 9 - y$

$x = -y + 9$
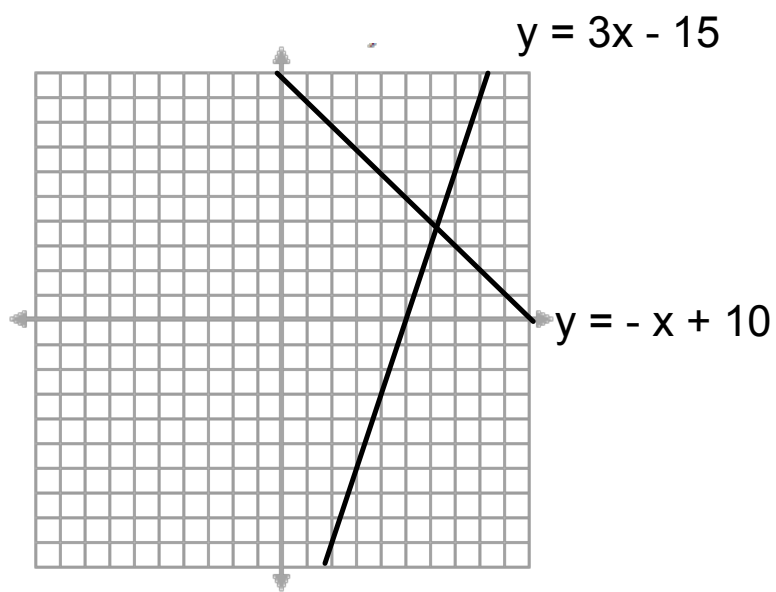
$0.25x + 0.1(9 - x) = 1.5$

$0.25x + 0.9 - 0.1x = 1.5$

$0.15x = 0.6$

$x = 4$

$y = 9 - 4 = 5$

$0.25(9 - y) + 0.1y = 1.5$

$2.25 - 0.25y + 0.1y = 1.5$

$\frac{9}{4} - \frac{1}{4}y + 0.1y = 1.5$

5.

$y = 3x - 15$

$y = -x + 10$

Substitution

Plug in your answer into one of the original equations.

Solve.

Plug in (substitute) the expression for the variable in the **other** equation.

Simplify and solve.

Pick an equation and isolate one of the variables.

Elimination

How to solve a system of equations by elimination:
1. Rearrange the equations so that they are in the same order.
2. Multiply one or both equations to get two matching variables.
3. Subtract one equation from the other, **eliminating** one of the variables (be sure to flip all the signs!).
4. Simplify and solve.
5. Plug in and solve again.

e.g. p. 106 #3.b)

$$2x - 2y = -8$$
$$-(x + 3y = 2)$$

$$0 \quad -5y = -10$$
$$\frac{-5y}{5} = \frac{-10}{-5}$$
$$y = 2 \quad \times$$

$$632$$
$$\underline{1 \; 1 \; 1}$$
$$5 \; 2 \; 1$$

$$2x - 2y = -8$$
$$-2(x + 3y = 2)$$
$$\underline{-2x - 6y = -4}$$
$$0 \quad -8y = -12$$
$$\frac{-8y}{-8} = \frac{-12}{-8}$$
$$y = 1.5$$

$$2x - 2y = -8$$
$$-(x + 3y = 2)$$
$$\underline{}$$
$$x - 5y = -10$$

$$2x - 2(1.5) = -8$$
$$2x = -5$$
$$x = -2.5$$

Recall: Common multiple

number that both smaller numbers can divide into evenly

easy way to find: