Name: _____ Date: _____

What is a solution? - the answer
- add water to chemicals

→ 2 equations - where they cross (graphically)
- where the equations are equal (algebraically)

(x, y)

Example Is the point $(-1,1)$ a solution to:

$$7x + 6y = 1$$
$$x + 2y = -3$$

Justify your answer.

$7(-1) + 6(1)$
$= -7 + 6$
$= -1 \neq 1$

$(-1) + 2(1)$
$= -1 + 2$
$= 1 \neq -3$

* these lines do not cross through the point (-1,1)

Example Find the solution to each of the following systems:

a.

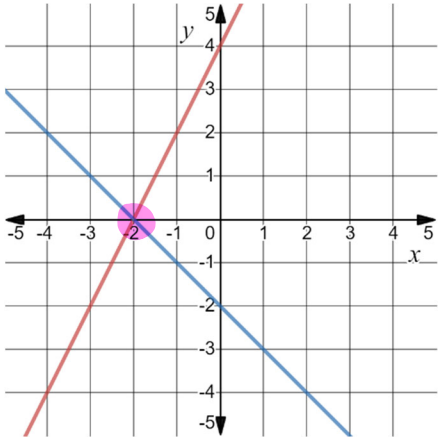
* common points

x	y
-4	0
-2	-2
0	-4
2	-6
4	-8

x	y
-2	-14
-1	-12
0	-10
1	-8
2	-6

the solution will be (2, -6)

b.



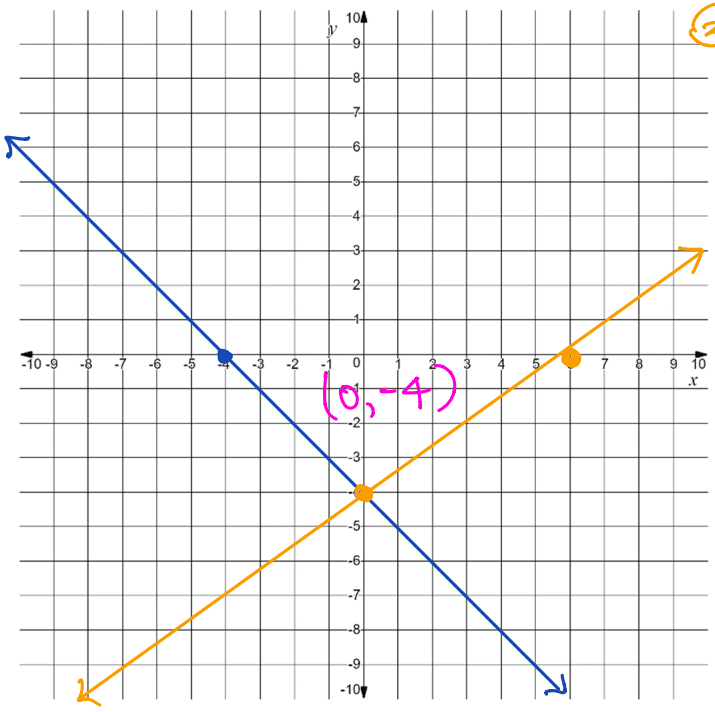
* intersection point

(-2, 0)

Example Solve the following system graphically. Check your solution.

① $x + y = -4$

② $2x - 3y = 12$



x-int ($y=0$): $x + 0 = -4$, $x = -4$

y-int ($x=0$): $0 + y = -4$, $y = -4$

x-int ($y=0$): $2x - 3(0) = 12$, $\frac{2x}{2} = \frac{12}{2}$, $x = 6$

y-int ($x=0$): $2(0) - 3y = 12$, $\frac{-3y}{-3} = \frac{12}{-3}$, $y = -4$

Check: $0 + (-4) = -4$ ✓

$2(0) - 3(-4) = 0 + 12 = 12$ ✓

Example A school raised \$140 by collecting 2000 cans and glass bottles for recycling. The school received 5¢ for a can and 10¢ for a bottle. How many cans and bottles were returned?

c = the # of cans returned

b = the # of bottles returned.

① $c + b = 2000$

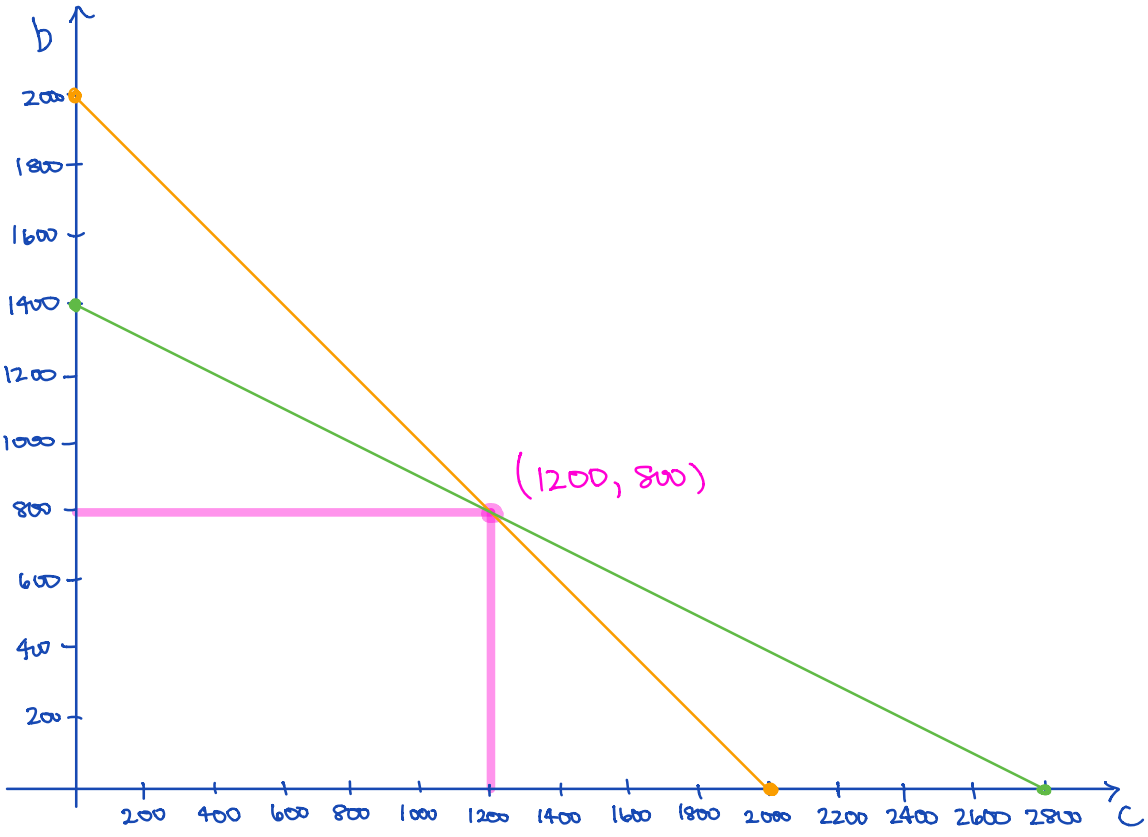
② $5c + 10b = 14000$ (¢ = ¢)

c-int ($b=0$): $c + 0 = 2000$, $c = 2000$

b-int ($c=0$): $0 + b = 2000$, $b = 2000$

c-int ($b=0$): $5c + 10(0) = 14000$, $\frac{5c}{5} = \frac{14000}{5}$, $c = 2800$

b-int ($c=0$): $5(0) + 10b = 14000$, $\frac{10b}{10} = \frac{14000}{10}$, $b = 1400$



$c + b = 2000$

$5c + 10b = 14000$

CHECK: $1200 + 800 = 2000$ ✓

$5(1200) + 10(800) = 6000 + 8000 = 14000$ ✓

They returned 1200 cans and 800 glass bottles.