NAME key

More Practice with Graphing

Solve each of the following systems by graphing.

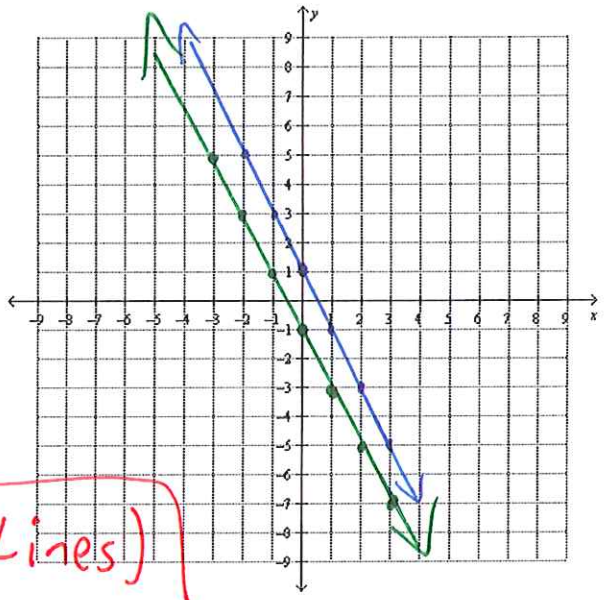
1. $y = -2x + 1$
   $2x + y = -1$

$-2x \quad -2x$

$y = -2x + -1$

$m = \frac{\downarrow 2}{\rightarrow 1} \quad b = (0, -1)$

$m = \frac{\downarrow 2}{\rightarrow 1} \quad b = (0, 1)$



No Solutions (Parallel Lines)

2. $x + y = 3$
   $2x = 10 - 2y$

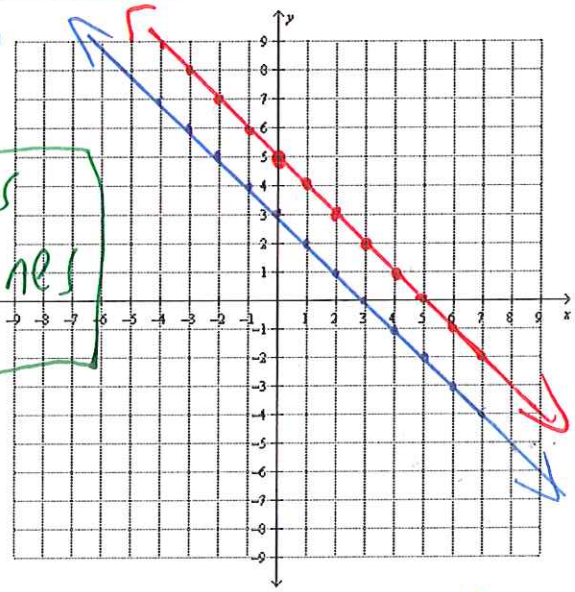
$-10 \quad -10$

$\frac{2x + 10}{-2} = \frac{-2y}{-2}$

$-x + 5 = y$

$m = \frac{\downarrow 1}{\rightarrow 1} \quad b = (0, 5)$

$y = -x + 3 \quad m = \frac{\downarrow 1}{\rightarrow 1} \quad b = (0, 3)$



No Solutions (Parallel Lines)

3. $y = 2x - 4$
   $2x - y = 4$

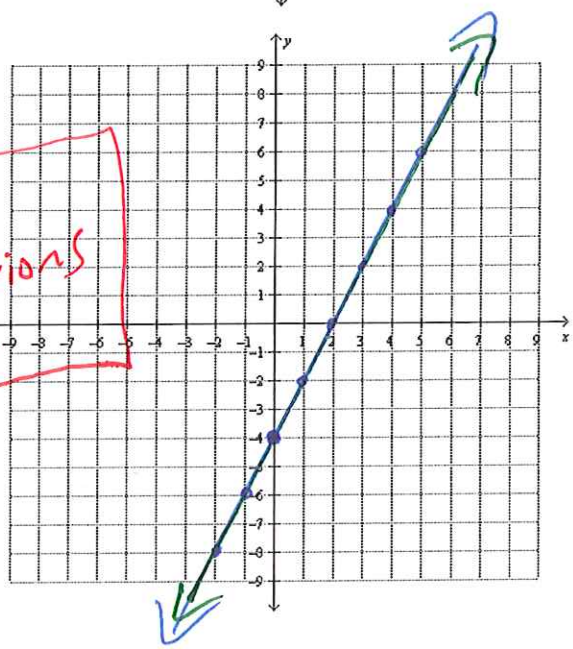
$-2x \quad -2x$

$\frac{-y}{-1} = \frac{-2x}{-1} + \frac{4}{-1}$

$y = 2x + -4$

$m = \frac{\uparrow 2}{\rightarrow 1} \quad b = (0, -4)$

$m = \frac{\uparrow 2}{\rightarrow 1} \quad b = (0, -4)$



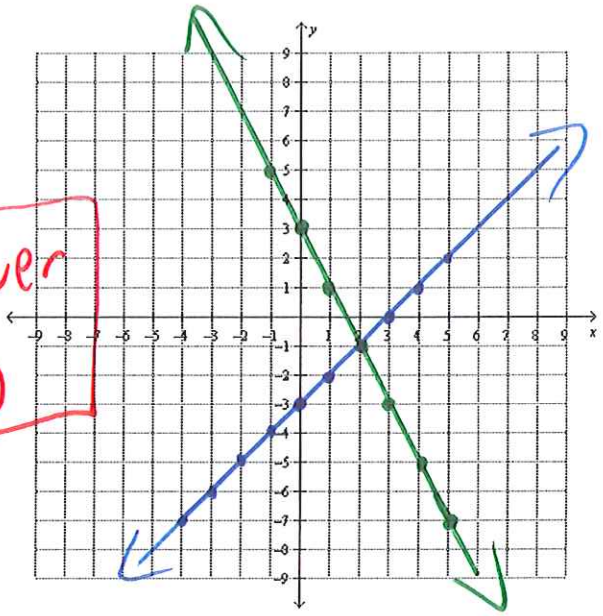
Infinitely many solutions (same line)

4. $x - y = 3$
$2x + y = 3$

$x - y = 3$
$-x \quad -x$
$-y = -x + 3$
$-1 \quad -1 \quad -1$
$y = x + -3$
$m = \frac{\uparrow 1}{\rightarrow 1}$
$b = (0, -3)$

$2x + y = 3$
$-2x \quad -2x$
$y = -2x + 3$
$m = \frac{\downarrow 2}{\rightarrow 1}$
$b = (0, 3)$

Answer
(2, -1)

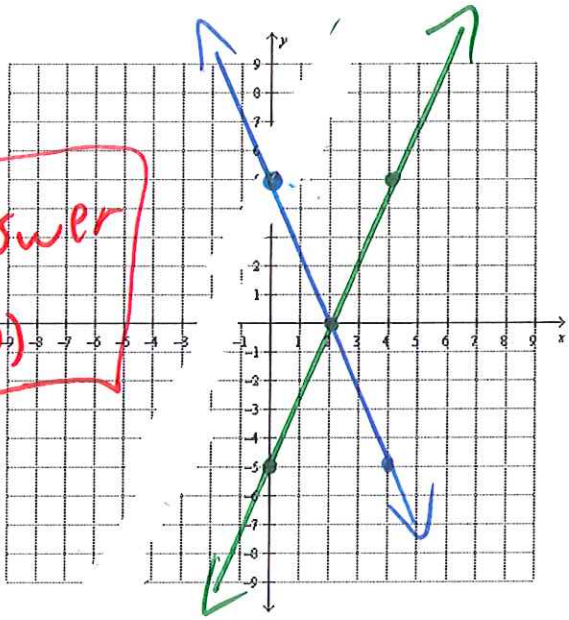


5. $5x + 2y = 10$
$5x - 2y = 10$

$5x + 2y = 10$
$-5x \quad -5x$
$\frac{2y}{2} = \frac{-5x}{2} + \frac{10}{2}$
$y = \frac{-5}{2}x + 5$
$m = \frac{\downarrow 5}{\rightarrow 2} = \frac{\uparrow 5}{\leftarrow 2}$
$b = (0, 5)$

$5x - 2y = 10$
$-5x \quad -5x$
$\frac{-2y}{-2} = \frac{-5x}{-2} + \frac{10}{-2}$
$y = \frac{5}{2}x + -5$
$m = \frac{\uparrow 5}{\rightarrow 2} = \frac{\downarrow 5}{\leftarrow 2}$
$b = (0, -5)$

Answer
(2, 0)

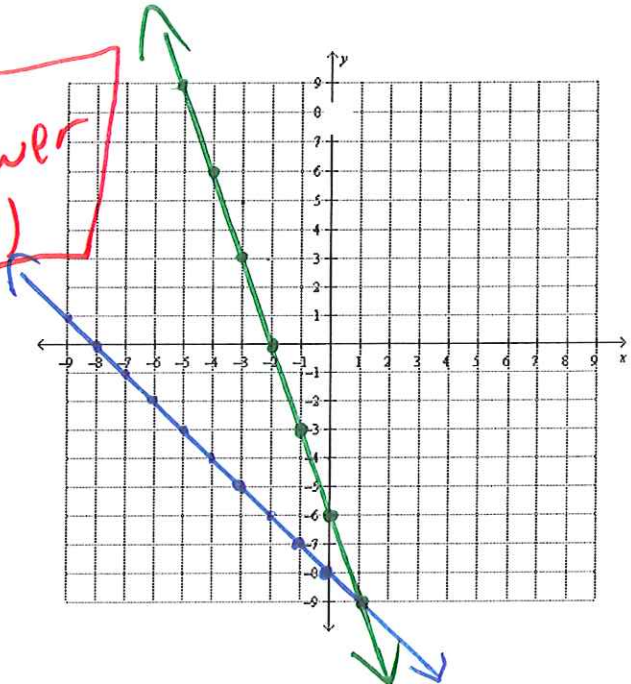


6. $x + y = -8$
$3x + y = -6$

$x + y = -8$
$-x \quad -x$
$y = -x + -8$
$m = \frac{\downarrow 1}{\rightarrow 1}$
$b = (0, -8)$

$3x + y = -6$
$-3x \quad -3x$
$y = -3x + -6$
$m = \frac{\downarrow 3}{\rightarrow 1} = \frac{\uparrow 3}{\leftarrow 1}$
$b = (0, -6)$

Answer
(1, -9)



7. Corey and Rob are brothers and are going to race. Corey runs at a pace of 5 meters per second. Rob runs at a rate of 7 meters per second. Since Corey is slower, he is going to get a 6 meter head start. How long will it take Rob to catch up to Corey?

x = # of sec y = # of meters

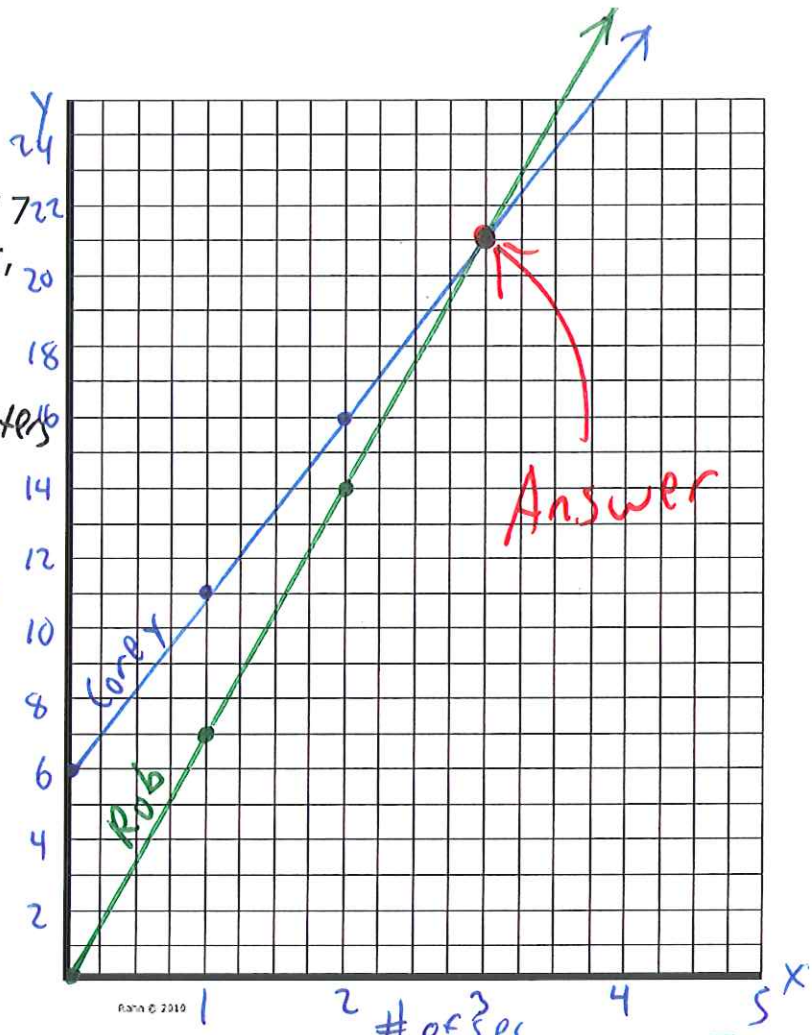
a. Create an equation for each brother.

Corey: $y = 5x + 6$

$m = \frac{\uparrow 5}{\rightarrow 1}$ $b = (0, 6)$

Rob: $y = 7x$

$m = \frac{\uparrow 7}{\rightarrow 1}$



b. Graph and solve the system.

(3, 21)

At 3 sec, Rob will catch up. And both will have gone 21 m.

8. Barbie and Ken are going bungee jumping. Barbie is bungee jumping with a cord that has rubber bands that each stretch 8 cm and she is 22 cm long. Ken is bungee jumping with a cord that has rubber bands that each stretch 6 cm and he is 26 cm long. What number of rubber bands would cause Barbie and Ken jump the same distance?

x = # of r.b. y = Jump distance (cm)

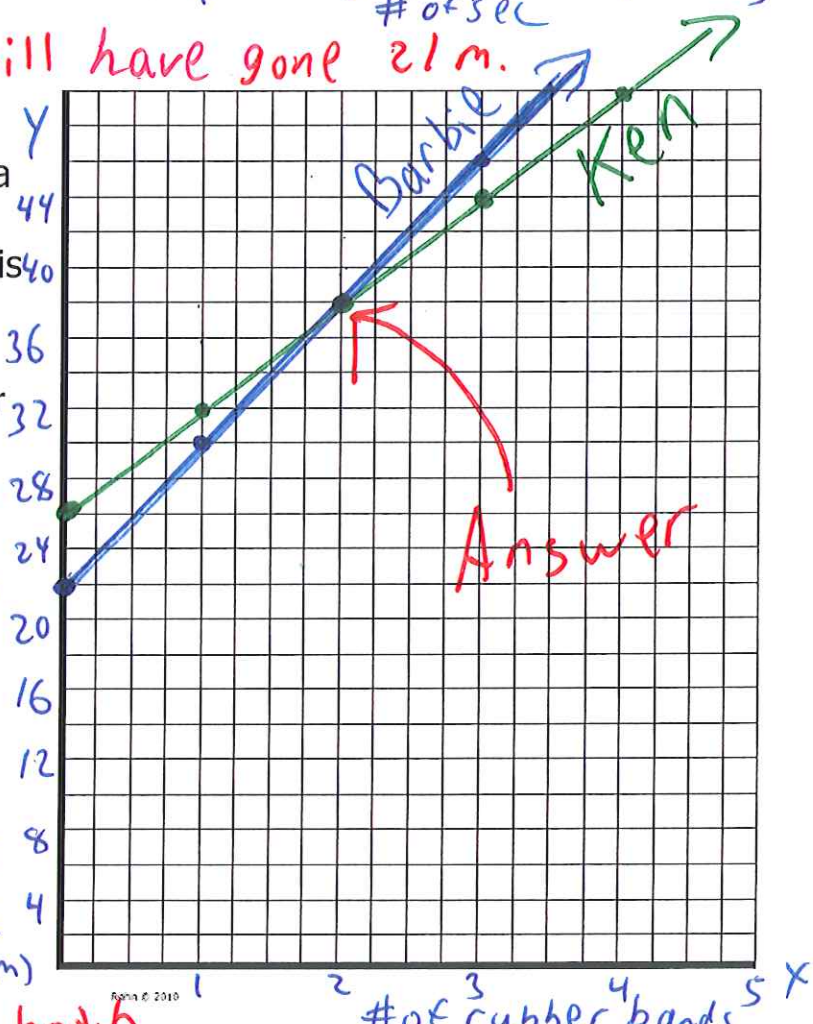
a. Create an equation for each doll.

Barbie: $y = 8x + 22$

$m = \frac{\uparrow 8}{\rightarrow 1}$ $b = (0, 22)$

Ken: $y = 6x + 26$

$m = \frac{\uparrow 6}{\rightarrow 1}$ $b = (0, 26)$



b. Graph and solve the system.

(2, 38)

At 2 rubber bands, they both jump a distance of 38 cm.

9. Suppose you plan to start taking an aerobics class. Non-members pay $4 per class while members pay a $10 fee plus an additional $2 per class.

a. Create a system of linear equations to model the situations.

x = # of classes

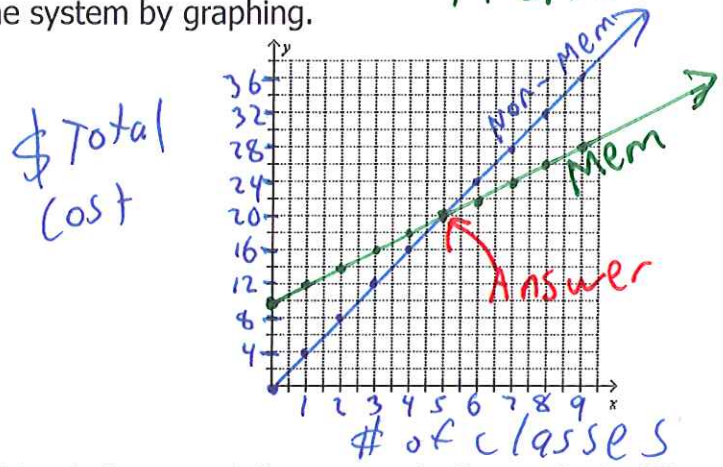
y = $ Total Cost

Non Member → $y = 4x$ $m = \frac{\uparrow 4}{\rightarrow 1}$ $b = (0,0)$

Member → $y = 2x + 10$

$m = \frac{\uparrow 2}{\rightarrow 1}$ $b = (0,10)$

b. Solve the system by graphing.



c. Distinguish what your solution means in the context of the problem?

(5, 20) At 5 classes, it cost the same for either person. $20.

10. Suppose you are testing two fertilizers on bamboo plants A and B, which are growing under identical conditions. Plant A is 6 cm tall and growing at a rate of 4 cm/day. Plant B is 10 cm tall and growing at a rate of 2 cm/day.

a. Create a system of linear equations to model the situations.

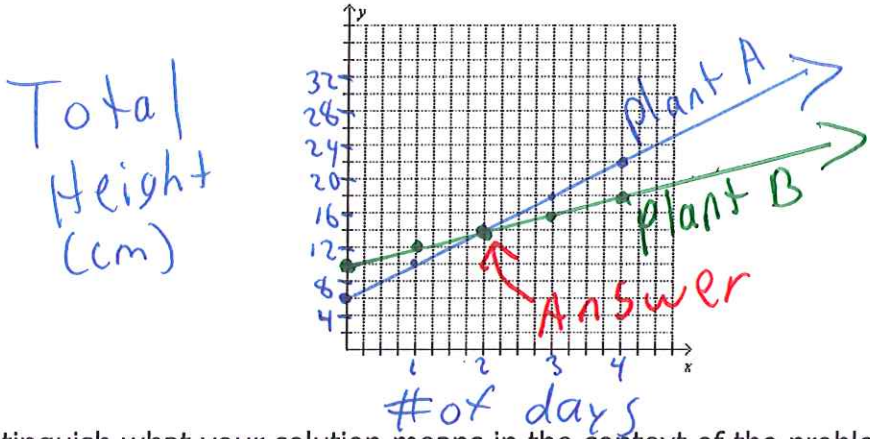
x = # of days

y = Total Height of bamboo (cm)

Plant A → $y = 4x + 6$ $m = \frac{\uparrow 4}{\rightarrow 1}$ $b = (0,6)$

Plant B → $y = 2x + 10$ $m = \frac{\uparrow 2}{\rightarrow 1}$ $b = (0,10)$

b. Solve the system by graphing.



c. Distinguish what your solution means in the context of the problem?

(2, 14) On the 2nd day, both plants will be 14 cm in Height.