

Treasure Hunt

While camping in the woods during the summer, Matt found half of what appeared to be an old pirate map. He was sure that the map led to the location of a secret buried treasure. Matt got up early the next morning very excited to follow the map. He wanted to see if the map could help him find the secret treasure.

After a couple of long hours on his trail, Matt saw a girl (Erin) approaching him. Erin was holding what seemed like the missing half of the map. The two students eagerly ran toward one another. They knew that if they put their two maps together, they would find the buried treasure.

*Your task is to help Matt and Erin find the location of the mystery treasure. If you follow Matt's path of $y = \frac{1}{3}x - 3$ and Erin's path of $y = 2x - 8$ you will be able to find the buried treasure.

Matt's path: $y = \frac{1}{3}x - 3$
Erin's Path: $y = 2x - 8$

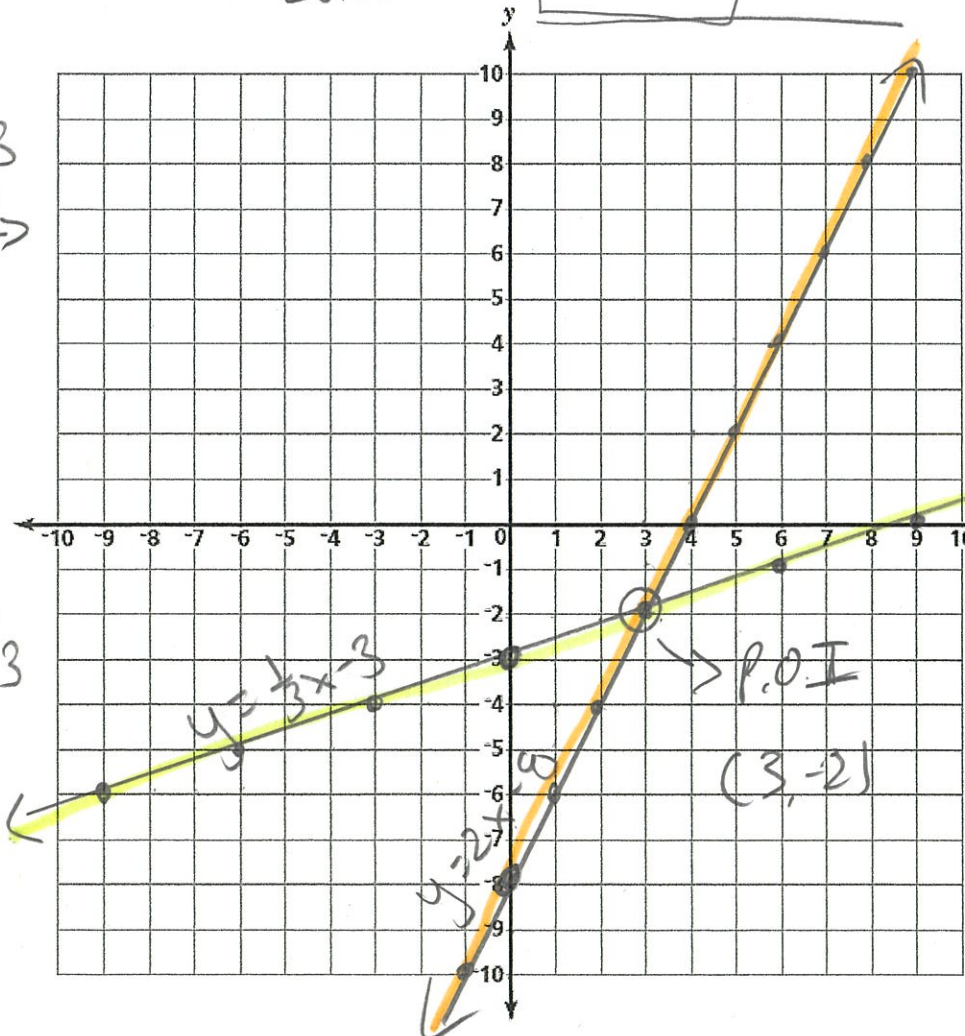
Solution Point $(3, -2)$

$y = \frac{1}{3}x - 3$
m = $\frac{1}{3}$ ↑
B = -3
Begin

$y = 2x - 8$
m = $\frac{2}{1}$ ↑
B = -8

Check #1
 $(3, -2)$
 $y = \frac{1}{3}x - 3$
 $-2 = \frac{1}{3}(3) - 3$
 $-2 = 1 - 3$
 $-2 = -2$
✓

Check #2
 $(3, -2)$
 $y = 2x - 8$
 $-2 = 2(3) - 8$
 $-2 = 6 - 8$
 $-2 = -2$
✓



Solving Systems of Linear Equations

To Solve A System of Linear Equations:

- 1) Graph the first linear equation
- 2) Graph the second linear equation
- 3) Circle the point of intersection. This is your solution.
- 4) Check your solution point into BOTH equations

Practice Examples:

Solve the following system of equations and check your answer:

1) $y = -2x + 8$

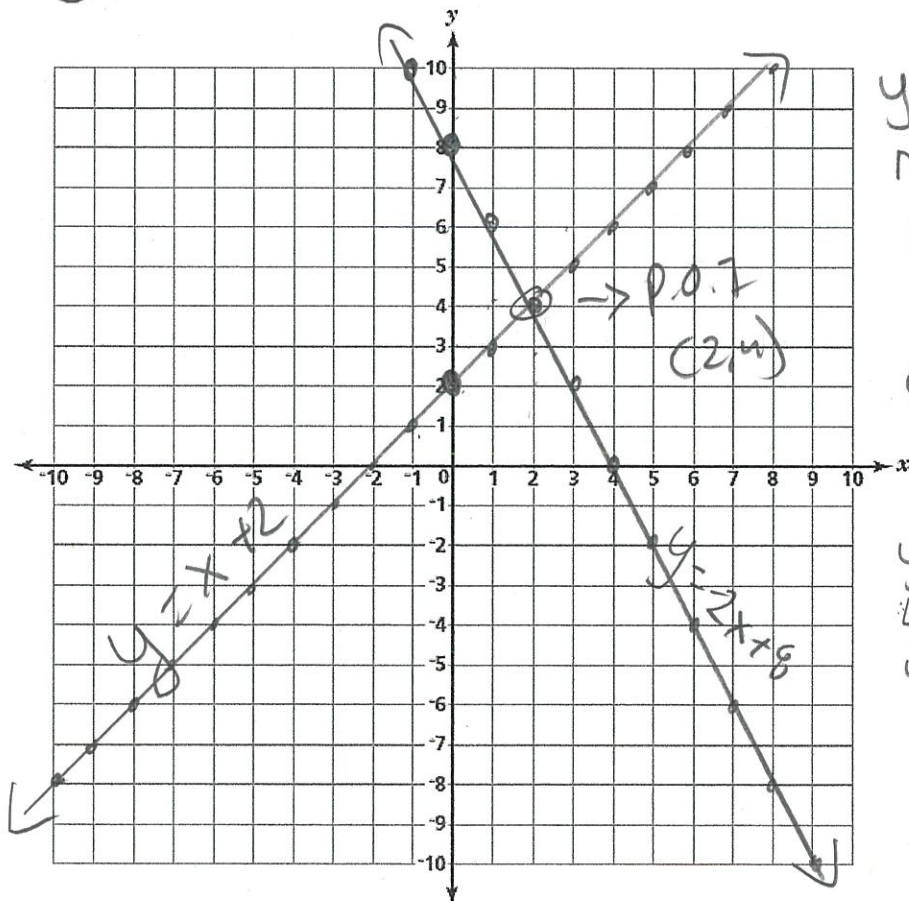
$y = x + 2$

Solution Point: (2, 4)

$y = -2x + 8$
 $m = \frac{-2}{1} \rightarrow$
 $B = 8$

Check #1

$(2, 4)$
 $y = -2x + 8$
 $4 = -2(2) + 8$
 $4 = -4 + 8$
 $4 = 4$
✓



$y = x + 2$
 $m = \frac{1}{1}$
 $B = 2$

check #2

$(2, 4)$
 $y = x + 2$
 $4 = 2 + 2$
 $4 = 4$
✓

$$2) y = 2x + 3$$

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

Solution Point: $(-2, -1)$

$$y = 2x + 3$$

$$m = \frac{2}{1}$$

$$B = 3$$

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

$$m = -\frac{1}{2}$$

$$B = -2$$

Check #1

$$(-2, -1)$$

$$y = 2x + 3$$

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

$$-1 = -4 + 3$$

$$-1 = -1$$

Check #2

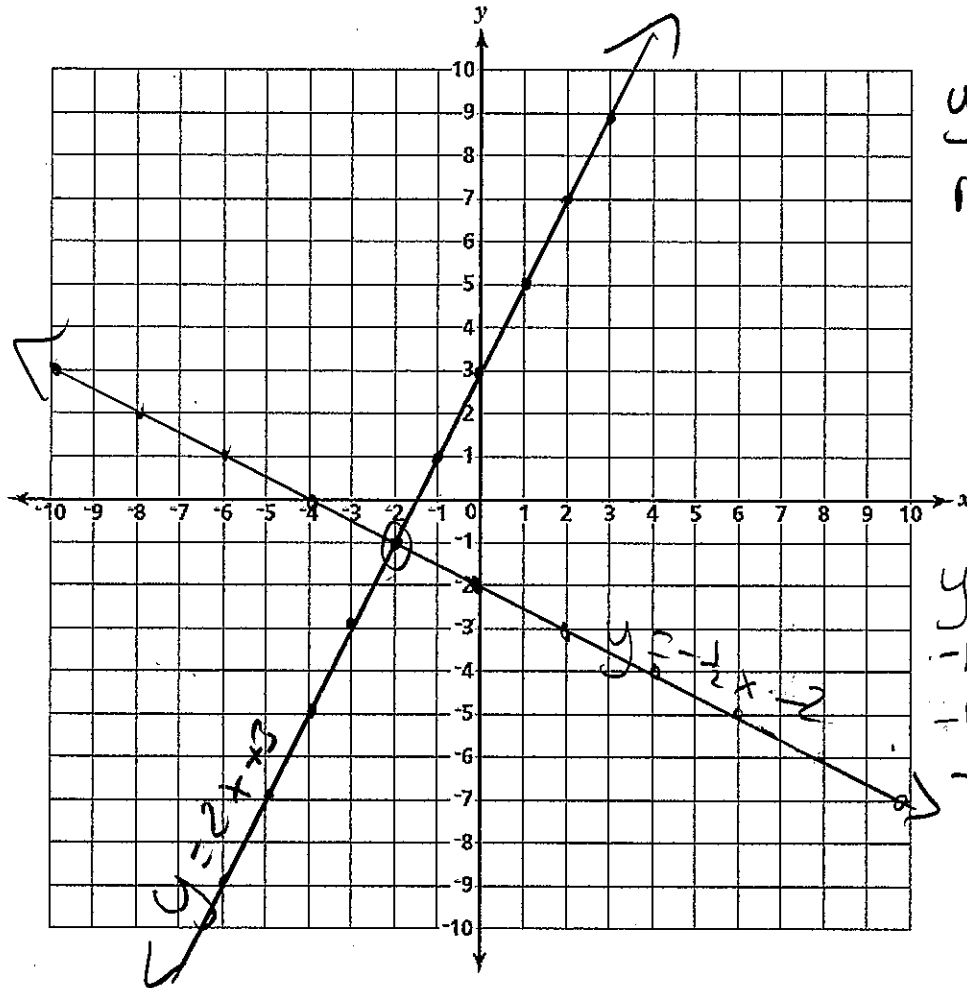
$$(-2, -1)$$

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

$$-1 = -\frac{1}{2}(-2) - 2$$

$$-1 = 1 - 2$$

$$-1 = -1$$



3) Is (2,4) a solution to the following system? Verify your answer.

$$y = x + 2$$

$$y = -x + 6 \quad (2, 4)$$

$$y = x + 2$$

$$4 = 2 + 2$$

$$4 = 4$$

$$(2, 4)$$

$$y = -x + 6$$

$$4 = -1(2) + 6$$

$$4 = -2 + 6$$

$$4 = 4$$

yes! It is a solution point b/c it satisfies both equations

