Key

Graphing by Intercepts

Yesterday, we learned how to graph a linear equation using it's slope and y-intercept.
*Today, we will graph using the **x-intercept** and **y-intercept**.*

How is this done?

1. The equation must be in **standard form**!
2. Cover up the y-term and solve for x.
   This is called the x- intercept.
3. Cover up the x-term and solve for y.
   This is called the y-intercept.
4. Plot both intercepts and connect!!

Ax + By = C

Ax = C By = C

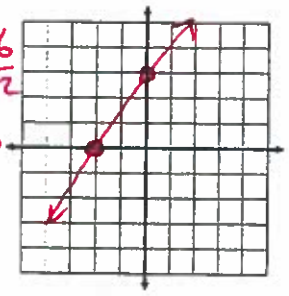
Practice!

Find the x- and y-intercept, then graph the line.

1. $3x - 2y = -6$

$\frac{3x}{3} = \frac{-6}{3}$ $x = -2$

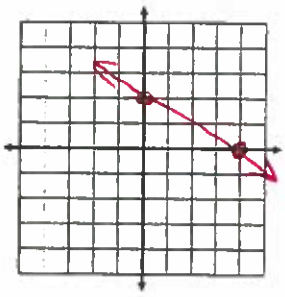
$\frac{-2y}{-2} = \frac{-6}{-2}$ $y = 3$



2. $x + 2y = 4$

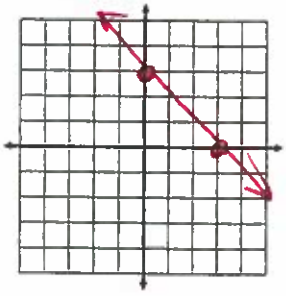
$x = 4$

$\frac{2y}{2} = \frac{4}{2}$ $y = 2$



3. $x + y = 3$

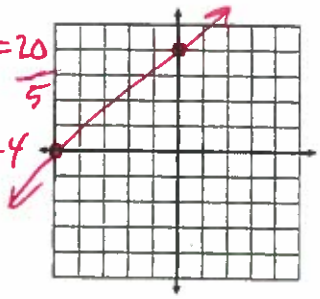
$x = 3$ $y = 3$



4. $-4x + 5y = 20$

$\frac{-4x}{-4} = \frac{20}{-4}$ $x = -5$

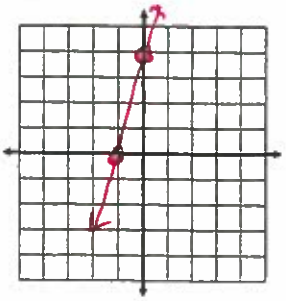
$\frac{5y}{5} = \frac{20}{5}$ $y = 4$



5. $4x - y = -4$

$\frac{4x}{4} = \frac{-4}{4}$ $x = -1$

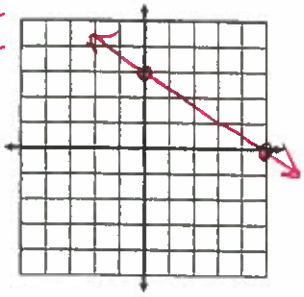
$\frac{-y}{-1} = \frac{-4}{-1}$ $y = 4$



6. $9x + 15y = 45$

$\frac{9x}{9} = \frac{45}{9}$ $x = 5$

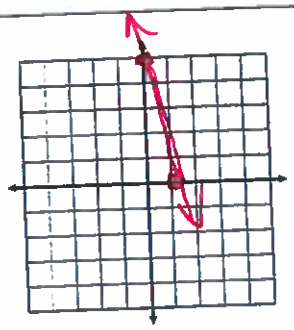
$\frac{15y}{15} = \frac{45}{15}$ $y = 3$



7. $10x + 2y = 10$

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

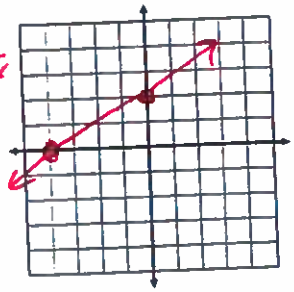
$x = 1$ $y = 5$



8. $2x - 4y = -8$

$\frac{2x}{2} = \frac{-8}{2}$ $\frac{-4y}{-4} = \frac{-8}{-4}$

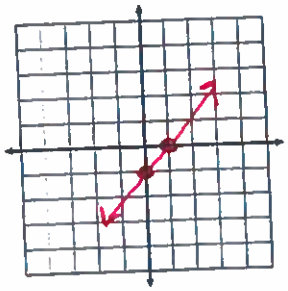
$x = -4$ $y = 2$



9. $x - y = 1$

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

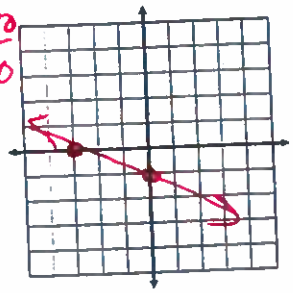
$y = -1$



10. $10x + 30y = -30$

$\frac{10x}{10} = \frac{-30}{10}$ $\frac{30y}{30} = \frac{-30}{30}$

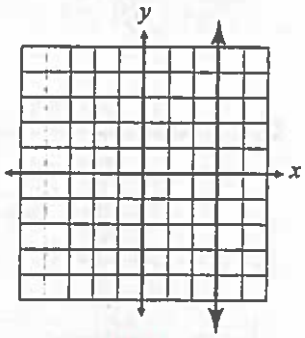
$x = -3$ $y = -1$



SPECIAL CASES: Vertical & Horizontal Lines

Vertical Lines

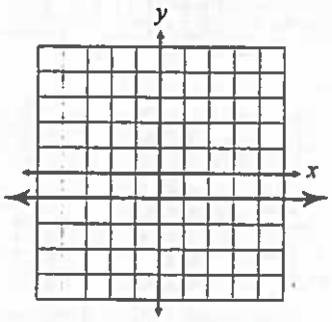
A vertical line is written in the form $x = a$, where a represents the line's x-intercept.



In this case, X=3.

Horizontal Lines

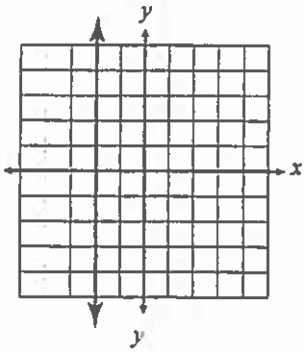
A horizontal line is written in the form $y = a$, where a represents the line's y-intercept.



In this case, y=-1.

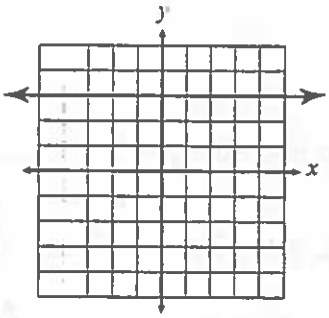
Directions: Write the equation of each line below.

1.



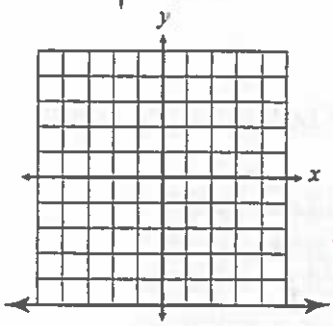
X=-2

2.



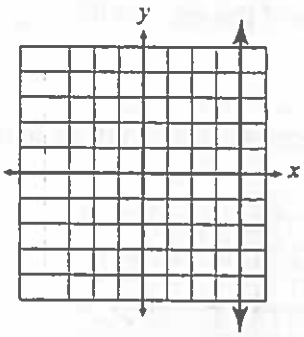
y=3

3.



y=-5

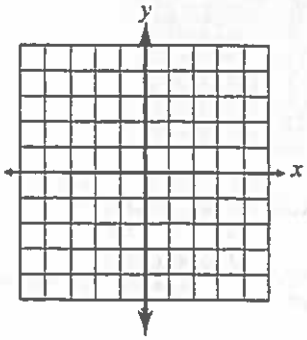
4.



X=4

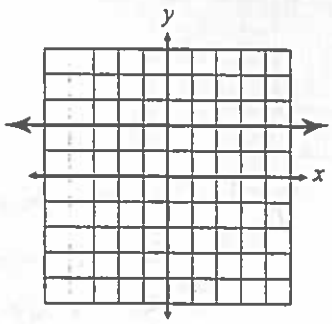
y=1

5.



X=0

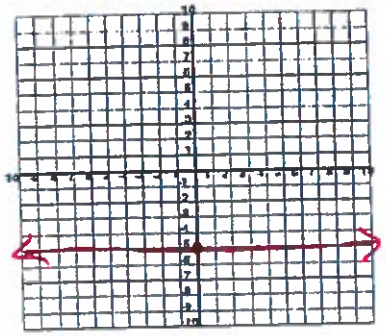
6.



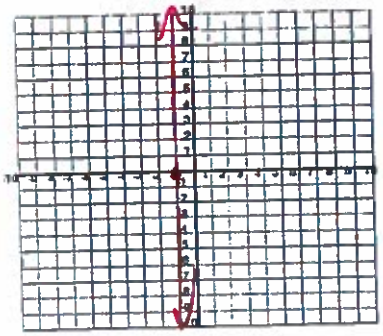
y=2

Directions: Graph the vertical and horizontal lines below.

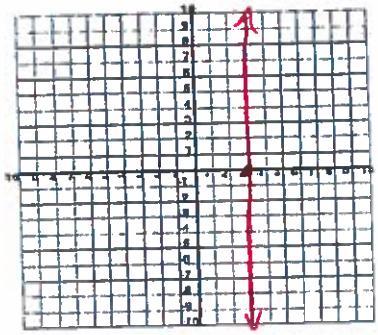
7. $y = -5$



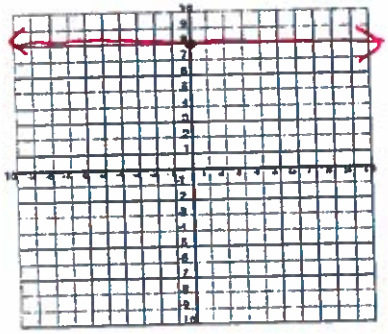
8. $x = -1$



9. $x = 3$



10. $y = 8$



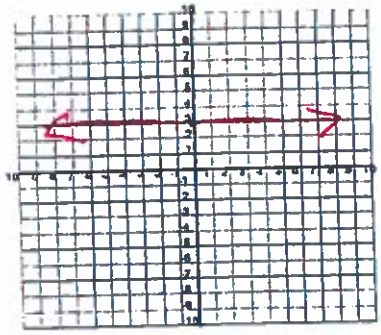
Some Questions...

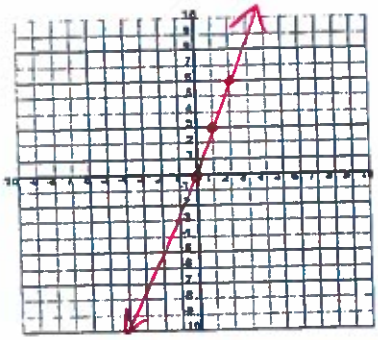
11. What is the slope of the line $y = 5$? 0 slope

12. What is the slope of the line $x = -2$? No slope

13. What is the slope of the line $x = 0$? No Slope

14. What is the difference between the graphs $y = 3$ and $y = 3x$? Graph both below and explain.





y=3 is a horizontal line while y=3x has a slope of 3 going through the origin.