

Name: KEY Hour: \_\_\_\_\_ Date: \_\_\_\_\_

## NOTES: Section 4.7 – Graphing Lines Using Slope-Intercept Form

Goals: #1 – I can graph a linear equation in slope-intercept form.

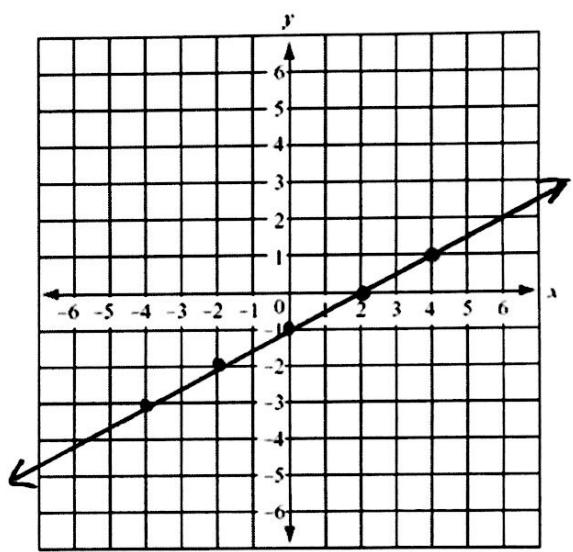


Homework: Section 4.7 Worksheet

Exploration #1: Work with a partner.

1. Graph  $y = \frac{1}{2}x - 1$  using a table of values.

x	y
-4	-3
-2	-2
0	-1
2	0
4	1



a. Find the *slope* of the line.

$$\frac{1}{2}$$

b. Find the *y*-intercept of the line.

$$-1$$

c. What do you notice?

it's in the equation

Notes:

The linear equation  $y = mx + b$  is written in slope-intercept form.

$$y = mx + b$$

↓                      ↓  
slope                      y-int

Example #1: Rewrite the equation in slope-intercept form. *(solve for y)*

$$1. \begin{array}{l} 2y + 12 = x \\ -12 \quad -12 \\ \hline 2y = x - 12 \\ \hline y = \frac{1}{2}x - 6 \end{array}$$

$$2. \begin{array}{l} 10x - 5y = 50 \\ -10x \quad -10x \\ \hline -5y = -10x + 50 \\ \hline y = 2x - 10 \end{array}$$

Example #2: Identify the slope and the y-intercept of the following equations.

1.  $y = -\frac{4}{3}x - 1$

slope:  $-\frac{4}{3}$   
y-intercept:  $(0, -1)$

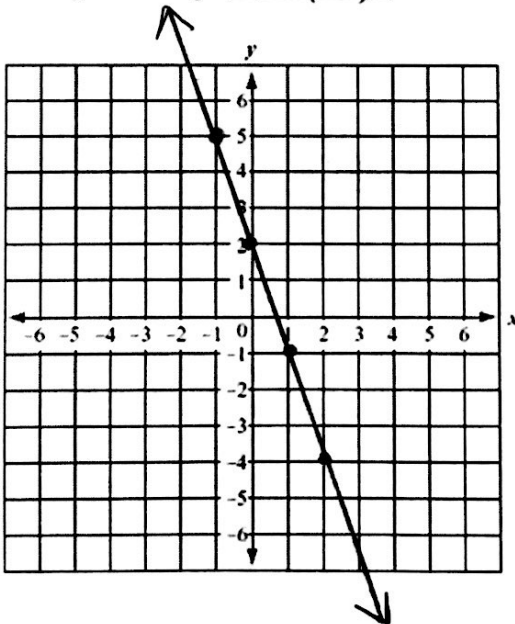
2.  $2x - y = -3$

$-2x \quad -2x$   
 $-\cancel{y} = \frac{-2x - 3}{-1}$   $y = 2x + 3$   
slope:  $2$   
y-intercept:  $(0, 3)$

Example #3: Graph the following equations.

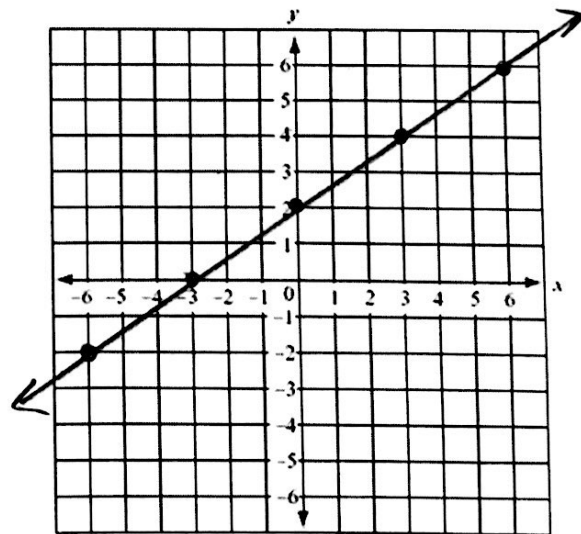
1.  $y = -3x + 2$

slope:  $-3 \rightarrow \frac{-3}{1}$   
y-intercept:  $(0, 2)$



2.  $y = \frac{2}{3}x + 2$

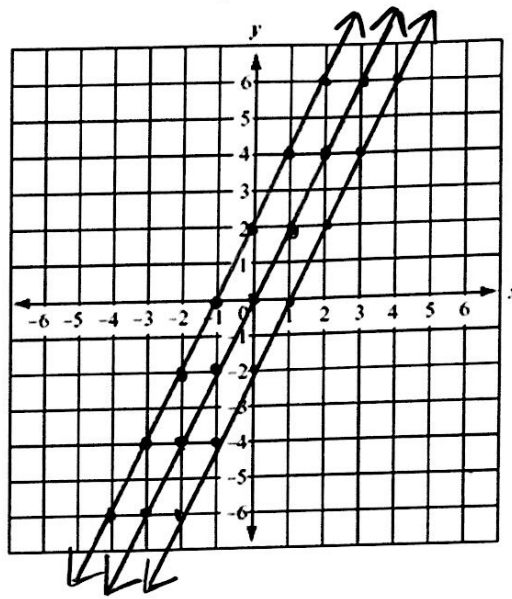
slope:  $\frac{2}{3}$   
y-intercept:  $(0, 2)$



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**Exploration #2:** Graph each equation on the same coordinate plane. Describe any patterns you see.

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



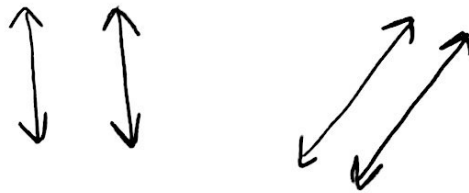
4. What do you notice?

Parallel lines

**Notes:**

Parallel lines have the same slope.

Examples:



**Example #4:** Which of the following lines are parallel?

1. line  $a$ :  $-x + 2y = 6$   
 $+x$        $+x$

$$\frac{2y}{2} = \frac{x+6}{2}$$

$$y = \frac{1}{2}x + 3$$

line  $b$ :  $x + 2y = -2$   
 $-x$        $-x$

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

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

line  $c$ :  $x + 2y = 4$   
 $-x$        $-x$

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

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

↑ parallel ↓

2. line  $a$ :  $3x + 2y = 6$   
 $-3x$        $-3x$

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

$$y = -\frac{3}{2}x + 3$$

line  $b$ :  $3x - 2y = 6$   
 $-3x$        $-3x$

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

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

line  $c$ :  $6x + 4y = 6$   
 $-6x$        $-6x$

$$\frac{4y}{4} = \frac{-6x+6}{4}$$

$$y = -\frac{3}{2}x + \frac{3}{2}$$

← parallel →