

Unit Test Review Problems
Slope

Use the following given information to determine the slope.

1.) (9, -2), (3, 4)

$$\frac{4 - (-2)}{3 - 9} = \frac{6}{-6} = -1$$

2.) (-4, -5), (-9, 1)

$$\frac{1 - (-5)}{-9 - (-4)} = \frac{6}{-5} = -\frac{6}{5}$$

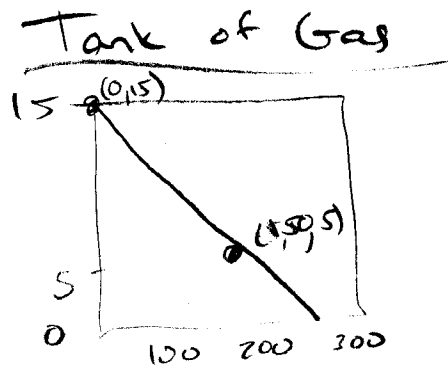
3.) Cost for Renting a Cabin in Garmisch

Number of Days x	Rental Fee y
5	\$595
7	\$833

Find the rate (or slope) for cost per day (or \$/day).

$$\frac{833 - 595}{7 - 5} = \frac{238}{2} = \$119/\text{day}$$

4.)



$$\frac{5 - 15}{150 - 0} = \frac{-10}{150} = -\frac{1}{15}$$

5.) Find the rate (or slope).

A baby is 18 inches long at birth and 27 inches long at ten months.

inches/month

(0, 18) (10, 27)

$$\frac{27 - 18}{10 - 0} = \frac{9}{10} \text{ inch/month}$$

Rearranging Linear Equations to find Slope and y-intercept

Rearrange the following equations and find the slope and y-intercept.

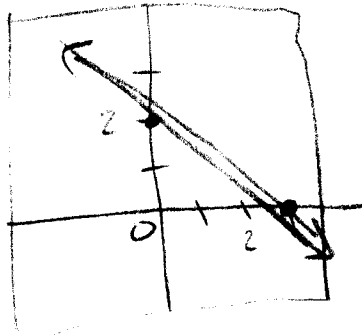
<p>1.)</p> $3y + 4x = 8$ $\begin{array}{r} -4x \quad -4x \\ \hline 3y = 8 - 4x \\ \hline y = 8/3 - 4/3x \end{array}$ <p>Slope = $-4/3$</p> <p>y - intercept = $8/3$</p>	<p>2.)</p> $5x + y = 3$ $\begin{array}{r} -5x \quad -5x \\ \hline y = 3 - 5x \end{array}$ <p>Slope = -5</p> <p>y - intercept = 3</p>
<p>3.)</p> $3y = x + 6$ $\begin{array}{r} y \\ \hline y = 1/3x + 2 \end{array}$ <p>Slope = $1/3$</p> <p>y - intercept = 2</p>	<p>4.)</p> $7x - 2y = 12$ $\begin{array}{r} -7x \quad -7x \\ \hline -2y = 12 - 7x \\ \hline -2 \quad -2 \\ \hline y = -6 + 7/2x \end{array}$ <p>Slope = $7/2$</p> <p>y - intercept = -6</p>

Writing Linear Equations

Use the following given information to write linear equations in the $y = a + bx$ form.

<p>1.) $(2, 0), b = -1$</p> $0 = a - 1(2)$ $0 = a - 2$ $\begin{array}{r} +2 \quad +2 \\ \hline 2 = a \end{array}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $y = 2 - 1x$ </div>	<p>2.) $(-2, 1), b = -5/2$</p> $1 = a - 5/2(-2)$ $1 = a + 5$ $\begin{array}{r} -5 \quad -5 \\ \hline -4 = a \end{array}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $y = -4 - 5/2x$ </div>
<p>3.) $(0, 2), (4, -1)$</p> $\frac{-1 - 2}{4 - 0} = \frac{-3}{4}$ $-2 = a - 3/4(0)$ $-2 = a$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $y = -2 - 3/4x$ </div>	<p>4.) $(4, -1), (5, -7)$</p> $\frac{-7 - (-1)}{5 - 4} = \frac{-6}{1} = -6$ $-1 = a - 6(4)$ $-1 = a - 24$ $\begin{array}{r} +24 \quad +24 \\ \hline 23 = a \end{array}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $y = 23 - 6x$ </div>

5.) Write an equation for the line on the graph:



$(3, 0) (0, 2)$

$$\frac{2-0}{0-3} = \frac{2}{-3} = -\frac{2}{3}$$

$$0 = a - \frac{2}{3}(3)$$

$$\begin{array}{r} 0 = a - 2 \\ +2 \quad +2 \\ \hline 2 = a \end{array}$$

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

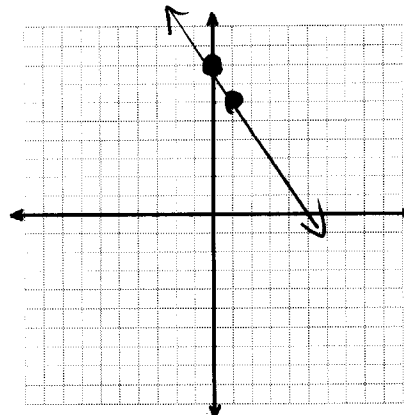
Graphing Linear Equations

Graph each linear equation:

1.) $y = -2x + 8$

Slope = -2

y - intercept = 8



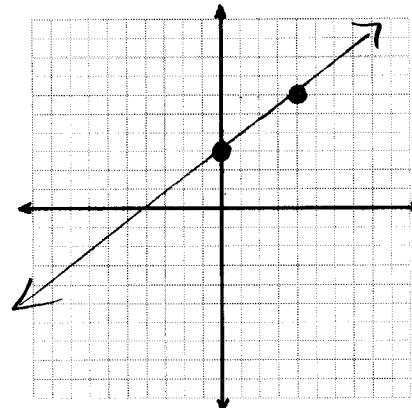
2.) $y = -3x + 4y = 12$

$$\begin{array}{r} +3x \quad +3x \\ \hline 4y = 12 + 3x \end{array}$$

$$\begin{array}{r} 4y = 12 + 3x \\ \hline 4 \quad 4 \\ y = 3 + \frac{3}{4}x \end{array}$$

Slope = $\frac{3}{4}$

y - intercept = 3



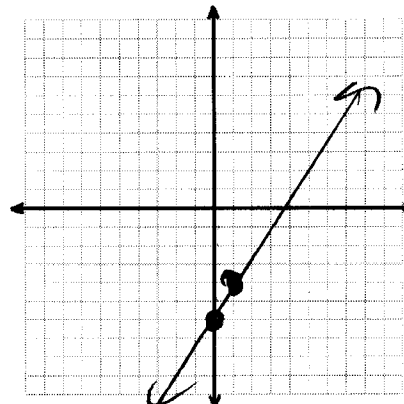
3.) $-14x + 7y = -42$

$$\begin{array}{r} +14x \quad +14x \\ \hline 7y = -42 + 14x \end{array}$$

$$\begin{array}{r} 7y = -42 + 14x \\ \hline 7 \quad 7 \\ y = -6 + 2x \end{array}$$

Slope = 2

Y - intercept = -6



Graphing Inequalities

Graph the following inequalities:

1.) $y < 2 - \frac{2}{3}x$

Slope = $-\frac{2}{3}$

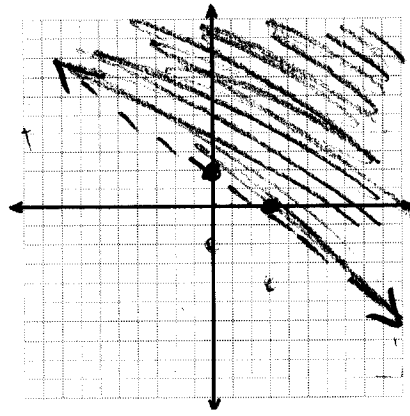
y - intercept = 2

Solid or Dashed Line? *Dashed*

Test a point on the graph to see if it keeps the inequality true. (An easy point to try is point (0, 0), as long as it does not fall on the line already.)

$$0 < 2 - \frac{2}{3}(0)$$

$$0 < 2 \quad \text{True}$$



2.) $4x - 4y \leq 8$

$$\begin{array}{r} -4x \quad -4x \\ \hline -4y \leq 8 - 4x \\ \hline \quad -4 \quad -4 \\ y \geq -2 + x \end{array}$$

Slope = 1

y - intercept = -2

Solid or Dashed Line? *Solid*

Test a point on the graph to see if it keeps the inequality true. (An easy point to try is point (0, 0), as long as it does not fall on the line already.)

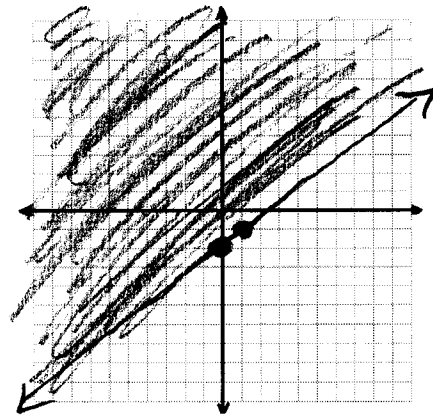
$$0 \geq -2 + 0$$

$$0 \geq -2$$

$$4(0) - 4(0) \leq 8$$

$$0 \leq 8$$

True



3.) $\frac{4y}{4} \geq \frac{6x+2}{4}$

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

Slope = $\frac{3}{2}$

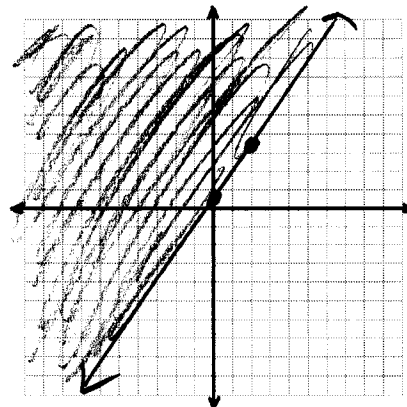
y - intercept = $\frac{1}{2}$

Solid or Dashed Line? *Solid*

Test a point on the graph to see if it keeps the inequality true. (An easy point to try is point (0, 0), as long as it does not fall on the line already.)

$$4(0) \geq 6(0) + 2$$

$$0 \geq 2 \quad \text{UnTrue}$$



Solving Systems

Find the solution to the system.

System #1:
 $y = -2x + 3$
 $y = x - 6$

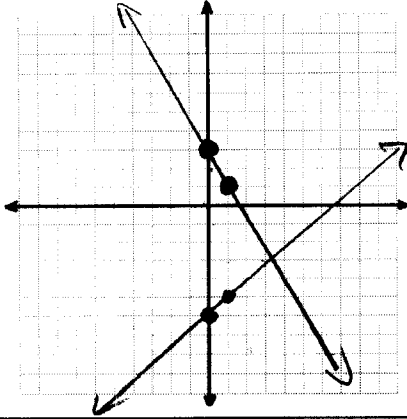
Does this equation need to be rearranged in order to be in the $y = a + bx$ form?
 $y = -2x + 3$

Slope: -2
 y-int.: 3

Does this equation need to be rearranged in order to be in the $y = a + bx$ form?
 $y = x - 6$

Slope: 1
 y-int.: -6

Graph:



Answer: (3, -3)
 (Make sure it's written as a coordinate, "I.M.S.", or "no solution")

Plug in your answer (x, y) into both original equations to CHECK for correctness.

$$y = -2x + 3$$

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

$$-3 = -6 + 3$$

$$\boxed{-3 = -3}$$

$$y = x - 6$$

$$-3 = 3 - 6$$

$$\boxed{-3 = -3}$$

System #2:
 $y = 8x$
 $-2x + y = 6$

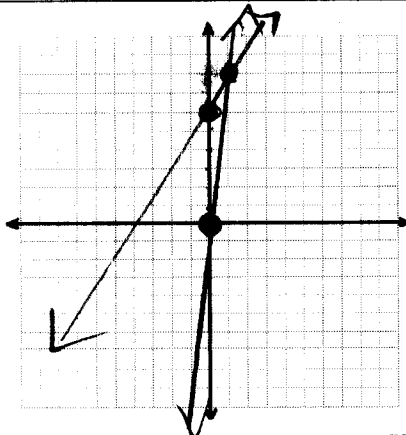
Does this equation need to be rearranged in order to be in the $y = a + bx$ form?
 $y = 8x$

Slope: 8
 y-int.: 0

Does this equation need to be rearranged in order to be in the $y = a + bx$ form?
 $-2x + y = 6$
 $y = 6 + 2x$

Slope: 2
 y-int.: 6

Graph:



Answer: (1, 8)
 (Make sure it's written as a coordinate, "I.M.S.", or "no solution")

Plug in your answer (x, y) into both original equations to CHECK for correctness.

$$y = 8x$$

$$8 = 8(1)$$

$$\boxed{8 = 8}$$

$$-2x + y = 6$$

$$-2(1) + 8 = 6$$

$$-2 + 8 = 6$$

$$\boxed{6 = 6}$$