

HW Practice with Lines  
Fill in the missing information:

1. Equation:  $2x - 6y = 12$

Graph:

Slope:  $\frac{1}{3}$

y-intercept:  $-2$

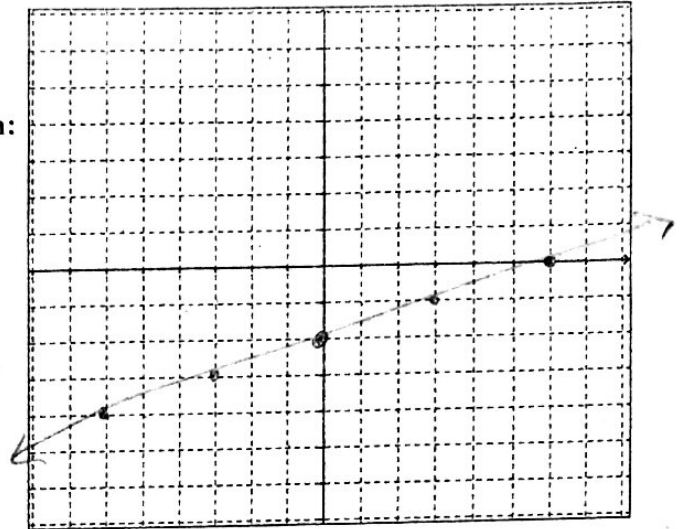
Table:

x	y
3	-1
-3	-3

$2x - 6(-3) = 12$   
 $2x + 18 = 12$   
 $2x = -6$   
 $x = -3$

$-6y = -2x + 12$   
 $-6$   
 $y = \frac{2}{6}x + -2$   
 $y = \frac{1}{3}x - 2$

$2(3) - 6y = 12$   
 $6 - 6y = 12$   
 $-6y = 6$   
 $y = -1$



2. Equation:  $y = -\frac{2}{3}x + 2$  or  $2x + 3y = 6$

Graph:

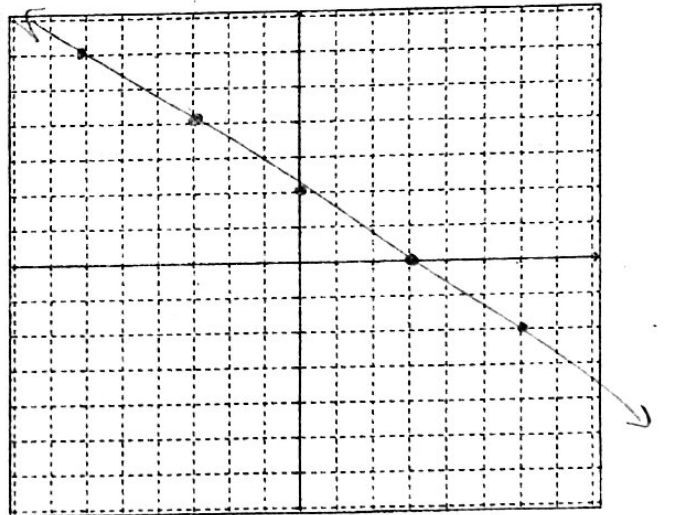
Slope:  $-\frac{2}{3}$

y-intercept:  $(0, 2)$

Table:

x	y
-3	4
6	-2

$y = -\frac{2}{3}(6) + 2$   
 $y = -4 + 2$   
 $y = -2$



3. Equation:  $y = \frac{1}{4}x + 1$  or  $x - 4y = -4$

Graph:

Slope:  $\frac{1}{4}$

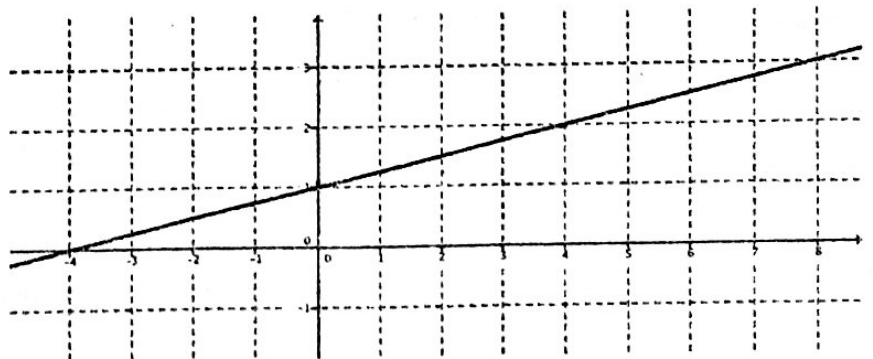
y-intercept:  $(0, 1)$

Table:

x	y
2	$1\frac{1}{2}$
8	3

$x \mid y$   
 $-4 \mid 0$   
 $-4 \mid 2$

$y = \frac{1}{4}(2) + 1$   
 $y = \frac{2}{4} + 1$   
 $y = \frac{1}{2} + 1$   
 $y = \frac{1}{4}(8) + 1$   
 $y = \frac{8}{4} + 1$   
 $y = 2 + 1$   
 $y = 3$



4. Draw the graph of each function. Fill in the missing information.

a) Equation:  $y = 1 + \frac{2}{3}x$

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

y-intercept:  $(0, 1)$   
(as a point)

Table:

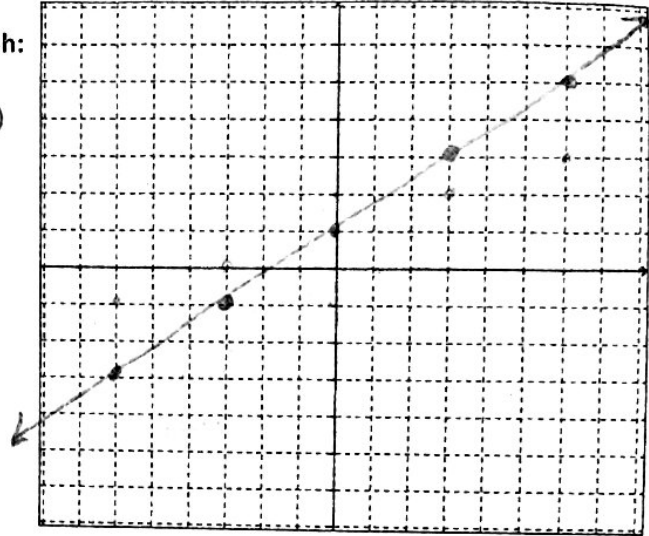
x	y
3	3
-3	-1

$y = 1 + \frac{2}{3}(3)$   
 $y = 1 + 2$   
 $y = 3$

$-1 = 1 + \frac{2}{3}x$   
 $-2 = \frac{2}{3}x$   
 $-\frac{2}{1} \cdot \frac{3}{2}$

$-\frac{2}{1} \cdot \frac{3}{2} = x$

Graph:



b) Equation:  $y = 2x$

Slope:  $2$

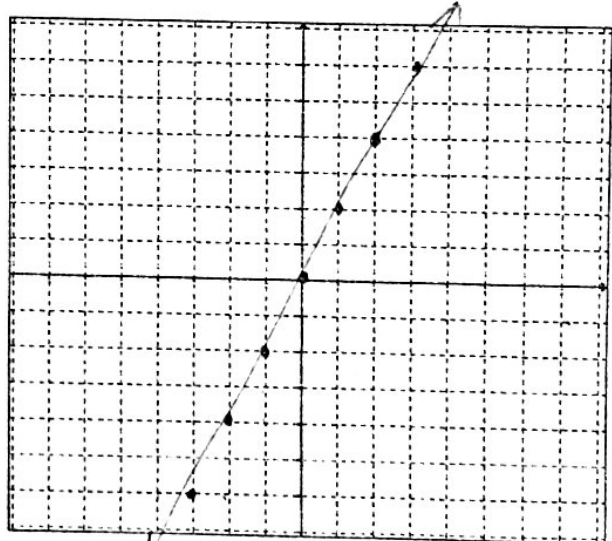
y-intercept:  $(0, 0)$   
(as a point)

Table:

x	y
-4	-8
$-\frac{1}{2}$	-1

$y = 2(-4)$   
 $y = -8$   
 $-1 = 2x$   
 $-\frac{1}{2} = x$

Graph:



c) Equation:  $y = 2 - \frac{1}{2}x$

Slope:  $-\frac{1}{2}$

y-intercept:  $(0, 2)$   
(as a point)

Table:

x	y
-7	$5\frac{1}{2}$
2	1

$y = 2 - \frac{1}{2}(-7)$   
 $y = 2 + \frac{7}{2}$   
 $y = \frac{4}{2} + \frac{7}{2}$   
 $y = \frac{11}{2}$   
 $y = 5\frac{1}{2}$

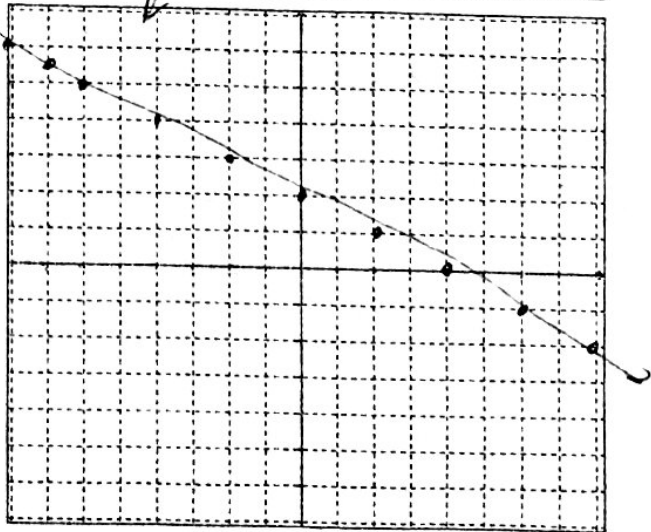
$1 = 2 - \frac{1}{2}x$

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

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

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

Graph:



For 5 - 8, answer the following questions:

- How can you determine if a table/graph/rule represents a linear function?
- How can you find the rate of change or the slope of the graph?
- How do you determine the y-intercept?

5. Given a table of values (like to the right)

X	-2	0	1
Y	-1	5	8

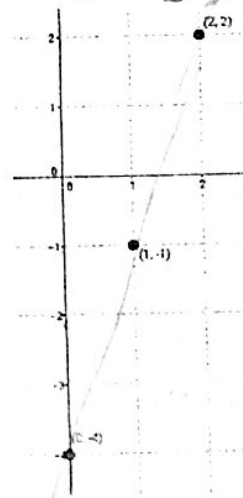
$$\frac{6}{2} = \frac{3}{1}$$

$$\frac{3}{1}$$

a.  $\frac{\text{change in } y}{\text{change in } x}$  is the same. constant rate of change

b.  $\frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - (-1)}{0 - (-2)} = \frac{+6}{+2} = \frac{3}{1}$

c. where  $x=0$   $y=5$  y-intercept  $(0, 5)$



6. Given a graph of a function (like to the right)

a. Vertical line test - Straight line

b. choose two points and do rise over run  
 $(0, 4)$   $(1, -1)$   $\frac{3}{1}$

c. where the line crosses the y-axis  
 $(0, -4)$

7. Given a symbolic rule relating y to x like:  $y = -\frac{2}{3}x - \frac{5}{3}$

a. x value has an exponent of 1. Linear equation

b. Number in front of x  $m = (-\frac{2}{3})$

c. The constant  $(0, -\frac{5}{3})$

8. Given a NOW-NEXT rule like: START at 5, NEXT = NOW - 4

- adding or subtracting a value at the end (constant) No x or
- amount added or subtracted  $m = -4$
- Start value  $(0, 5)$

9. What is the NOW-NEXT rule for a linear function with rule  $y = mx + b$ ?

start at b, next = now + m