Curriculum Outcomes:

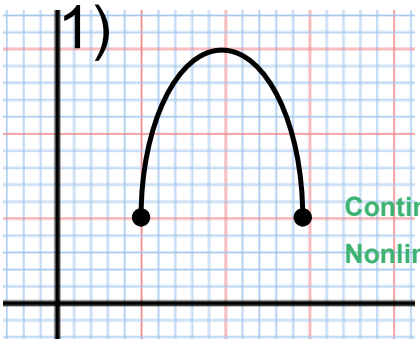
(PR1) Generalize a pattern arising from a problem-solving context using linear equations and verify by substitution.

(PR2) Graph linear relations, analyze the graph and interpolate or extrapolate to solve problems.

Student Friendly: Other forms of linear equations

Warm Up

1)



Continuous

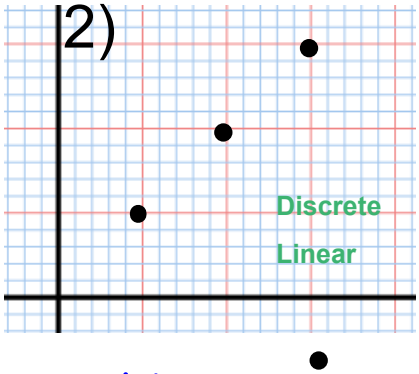
Nonlinear

Discrete

or

Continuous??

2)



Discrete

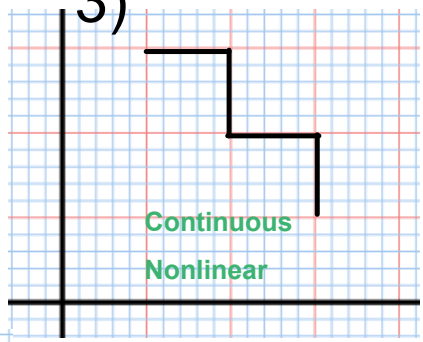
Linear

Linear

or

Nonlinear??

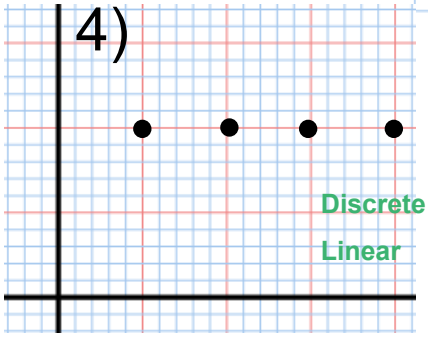
3)



Continuous

Nonlinear

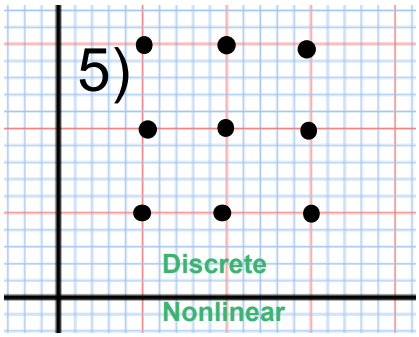
4)



Discrete

Linear

5)



Discrete

Nonlinear

Warm Up

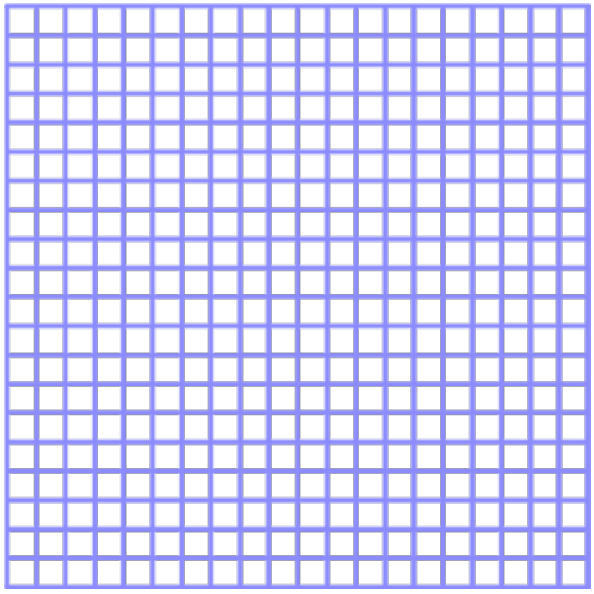
Use a table of values to graph the following.

hint: must use your equation to determine the change in your x values

Δx Δy

$y = \frac{2}{3}x - 5$

x	y
—	
0	
—	



Warm Up

$y = \frac{\Delta y}{\Delta x} x \pm \#$

Use a table of values to graph the following.

hint: must use your equation to determine the change in your x values

$\Delta x = -3$ $\Delta y = 2$

$y = \frac{2}{3}x - 5$

x= -3

$y = \frac{2}{3}x - 5$

$y = \frac{2}{3}(-3) - 5$

$y = -2 - 5$

$y = -7$

x= 0

$y = \frac{2}{3}x - 5$

$y = \frac{2}{3}(0) - 5$

$y = 0 - 5$

$y = -5$

x= 3

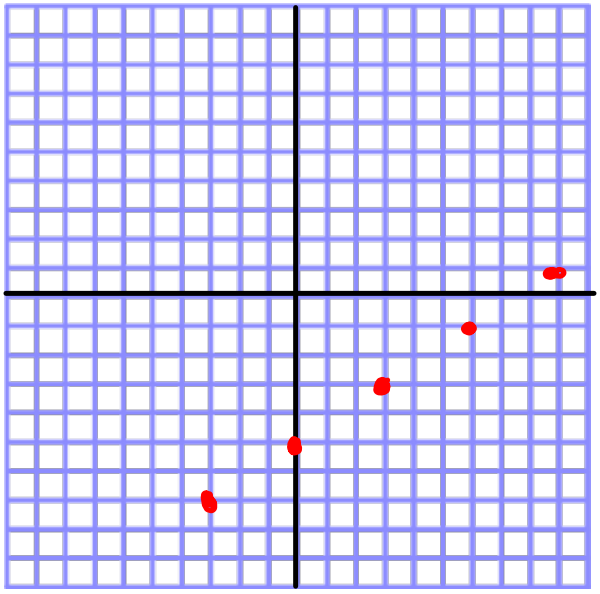
$y = \frac{2}{3}x - 5$

$y = \frac{2}{3}(3) - 5$

$y = 2 - 5$

$y = -3$

x	y
-3	-7
0	-5
3	-3



Section 4.3

Another Form of the Equation for a Linear Relation

$$y = \frac{\triangle y}{\triangle x}\ x \pm \#$$

Examples:

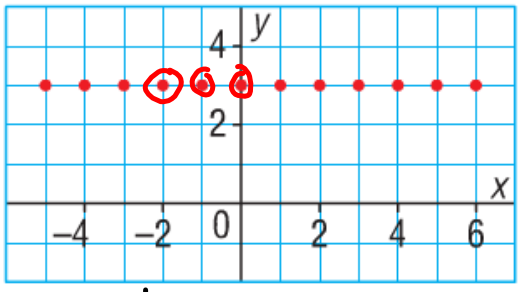
$y = \frac{2}{1}x - 6$

$y = \frac{-3}{5}x + 2$

These are some other ways to write the equation of a linear relation.

$3x + 2y = 7$ $ax + by = c$	a, b, c are just #
$x = 5$ x = #	
$y = -3$ y = #	

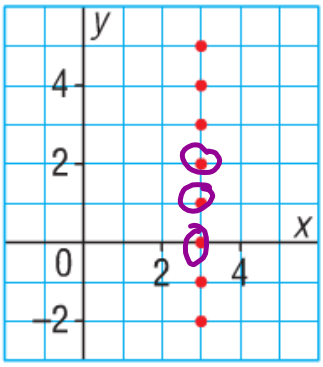
Horizontal vs. Vertical



x	y
-2	3
-1	3
0	3

For every 'x' value y will always equal 3

Equation : y = 3



x	y
3	2
3	1
3	0

For every 'y' value x will always equal 3

Equation: x = 3

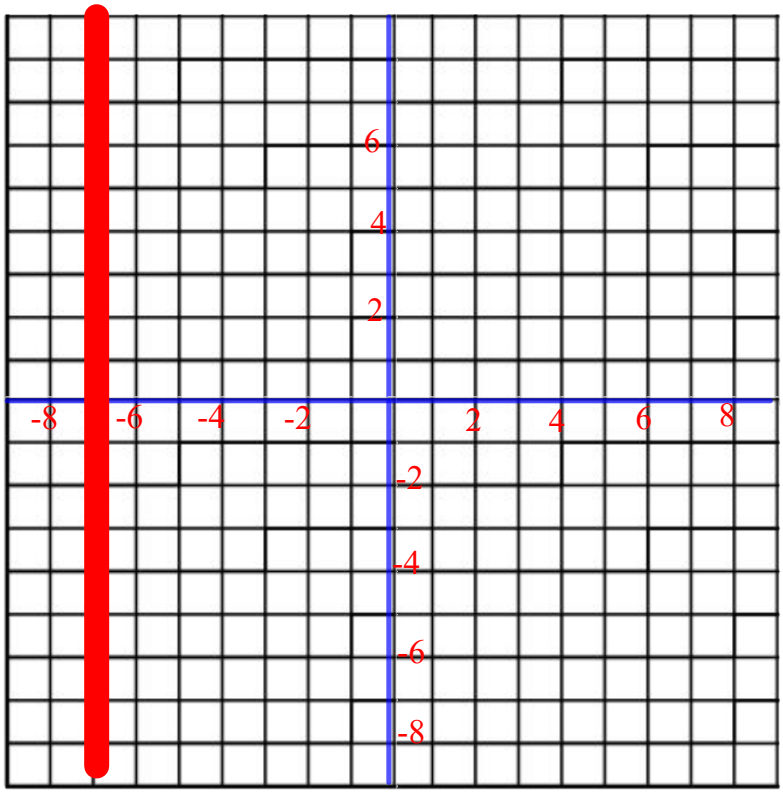
Your Turn

i) Describe the equation: Vertical or horizontal

$$\boxed{x} + 7^{-7} = 0^{-7}$$

$$\boxed{x = -7}$$

ii) Graph the equation

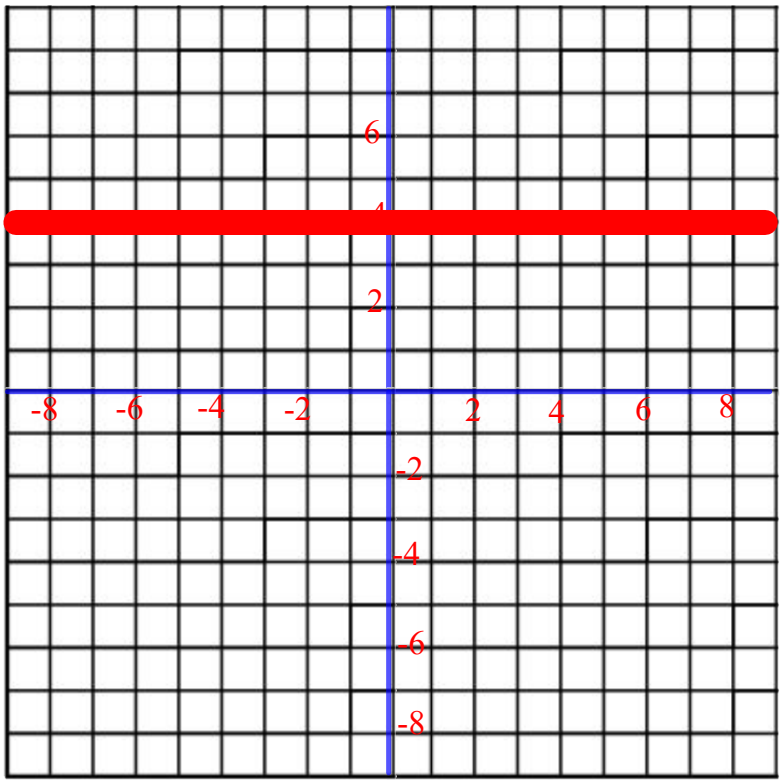


i) Describe the equation : Vertical or horizontal

$$\frac{2y}{2} = \frac{8}{2}$$

$$y = 4$$

ii) Graph the equation



Oblique Lines

An oblique line can be diagonal, sloping or slanted. It is not vertical, horizontal, parallel or perpendicular

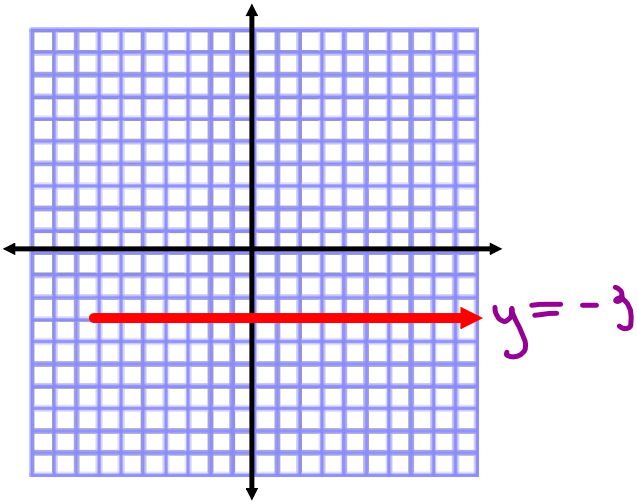
Oblique Linear Eqautions

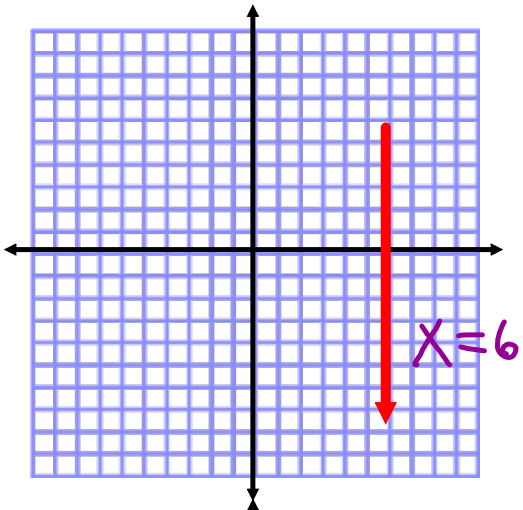
$y = \frac{\Delta y}{\Delta x} x \pm \#$

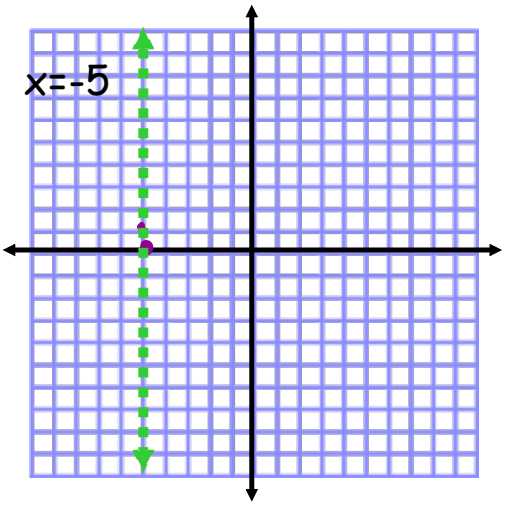
$ax + by = c$

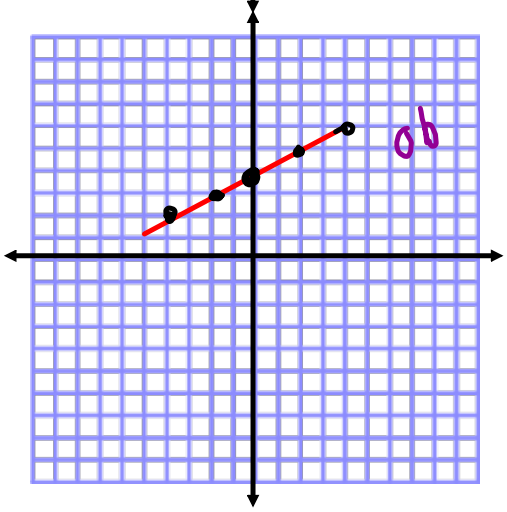
$y = 2x + 5$

$3x - 4y = 8$


y=-3


X=6


x=-5


ob

Test your Knowledge:

State if the line is vertical, horizontal, oblique or nonlinear

1) $2x = 7$

2) $3x + y = 5$

3) $2y - x = 7$

4) $y + 3 = 6$

5) $2x^2 - 5y^2 = 9$

6) $y = 8$

7) $x - 5 = -3$

Test your Knowledge:

State if the line is vertical, horizontal, oblique or nonlinear

1) $2x = 7$ vertical

2) $3x + y = 5$ oblique

3) $2y - x = 7$ oblique

4) $y + 3 = 6$ horizontal

5) $2x^2 - 5y^2 = 9$ nonlinear

6) $y = 8$ horizontal

7) $x - 5 = -3$ vertical

You try

Ways to write the equation of a linear relation.

ob $y = \frac{\Delta y}{\Delta x} x \pm \#$

$ax + by = c$

vert $x = \#$

a, b, c are just #

horiz $y = \#$

Graphing an Equation in the Form ax + by = c

For the equation 2x + 5y = 15:

$y = \frac{\Delta y}{\Delta x} x \pm \#$

a) Rearrange first

$$2(x) + \boxed{5y} = 15$$

$-2x \qquad -2x$

$$2(x) + \boxed{5y} = 15$$

$$5y = -2x + 15$$

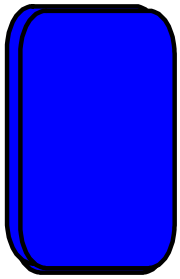
$$\frac{5y}{5} = \frac{-2x}{5} + \frac{15}{5}$$

$\Delta y = -2$

$$y = \frac{-2x}{5} + 3$$

$\Delta x = 5$

x	y
-5	5
0	3
5	1



x= -5

$y = \frac{-2(-5)}{5} + 3$

$y = \frac{10}{5} + 3$

$y = 2 + 3$

$y = 5$

x= 0

$y = \frac{-2(0)}{5} + 3$

$y = \frac{0}{5} + 3$

$y = 0 + 3$

$y = 3$

x= 5

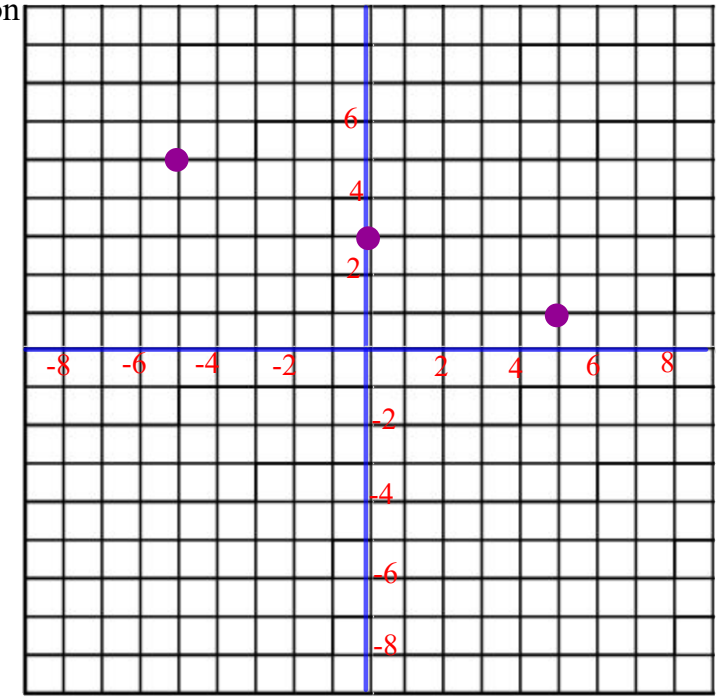
$y = \frac{-2(5)}{5} + 3$

$y = \frac{-10}{5} + 3$

$y = -2 + 3$

$y = 1$

b) Graph the equation



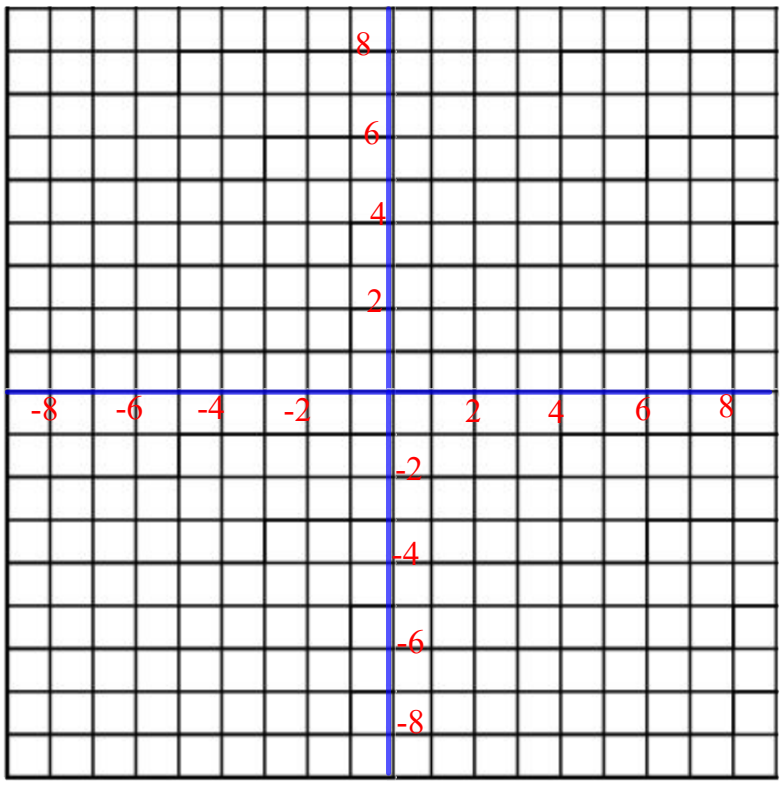
Graphing an Equation in the Form ax + by = c

For the equation $3x - 2y = 6$

You try

i) Rearrange and then graph

$$3x - 2y = 6$$



Graphing an Equation in the Form ax + by = c

For the equation $3x - 2y = 6$

You try

i) Rearrange and then graph

$$3x \boxed{- 2y} = 6$$

$$3x \overset{-3x}{} - 2y = \overset{-3x}{} 6$$

$$- 2y = -3x + 6$$

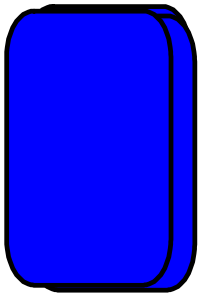
$$\frac{-2y}{-2} = \frac{-3x}{-2} + \frac{6}{-2}$$

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

$\Delta y = 3$

$\Delta x = 2$

x	y
-2	-6
0	-3
2	0



x= -2

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

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

$y = -3 - 3$

$y = -6$

x= 0

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

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

$y = 0 - 3$

$y = -3$

x= 2

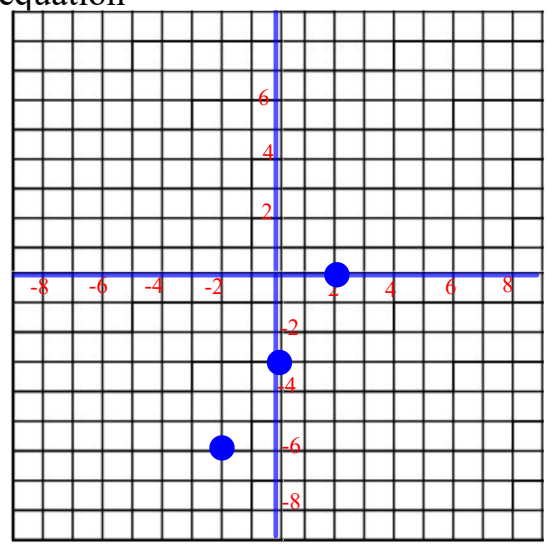
$y = \frac{3(2)}{2} - 3$

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

$y = 3 - 3$

$y = 0$

b) Graph the equation



What did we do in chapter 6 when we saw denominators?

We got rid of them by using the LCM

$$\frac{2}{5}x + \frac{1}{3}y = -2$$

$$\frac{2}{5}x^{\times 15} + \frac{1}{3}y^{\times 15} = -2^{\times 15}$$

$$\frac{30}{5}x + \frac{15}{3}y = -30$$

$$6x + \boxed{5y} = -30$$

$$\cancel{6x}^{-6x} + 5y = -30^{-6x}$$

$$5y = -6x - 30$$

$$\frac{\cancel{5}y}{\cancel{5}} = \frac{-6x}{5} - \frac{30}{5}$$

$$y = \frac{-6}{5}x - 6$$

x	y
-5	
0	
5	

$\Delta x = 5$

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

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

$$\frac{6}{3}x + \frac{6}{2}y = -18$$

$$2x + 3y = -18$$

$$2x + 3y = -18 \quad -2x$$

$$3y = -2x - 18$$

$$\frac{3y}{3} = \frac{-2x}{3} - \frac{18}{3}$$

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

x	y
-3	
0	
3	

$\Delta x = 3$

Class/Homework

-click on the "Homework" link on my teachers page for optional review questions

- If you have any questions you can contact me on the

Remind app

or

through email:

melanie.burns@nbed.nb.ca

Class/Homework

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4,5,6,7,8,9,10ai

11 , #15ad, # 17, # 21abcf

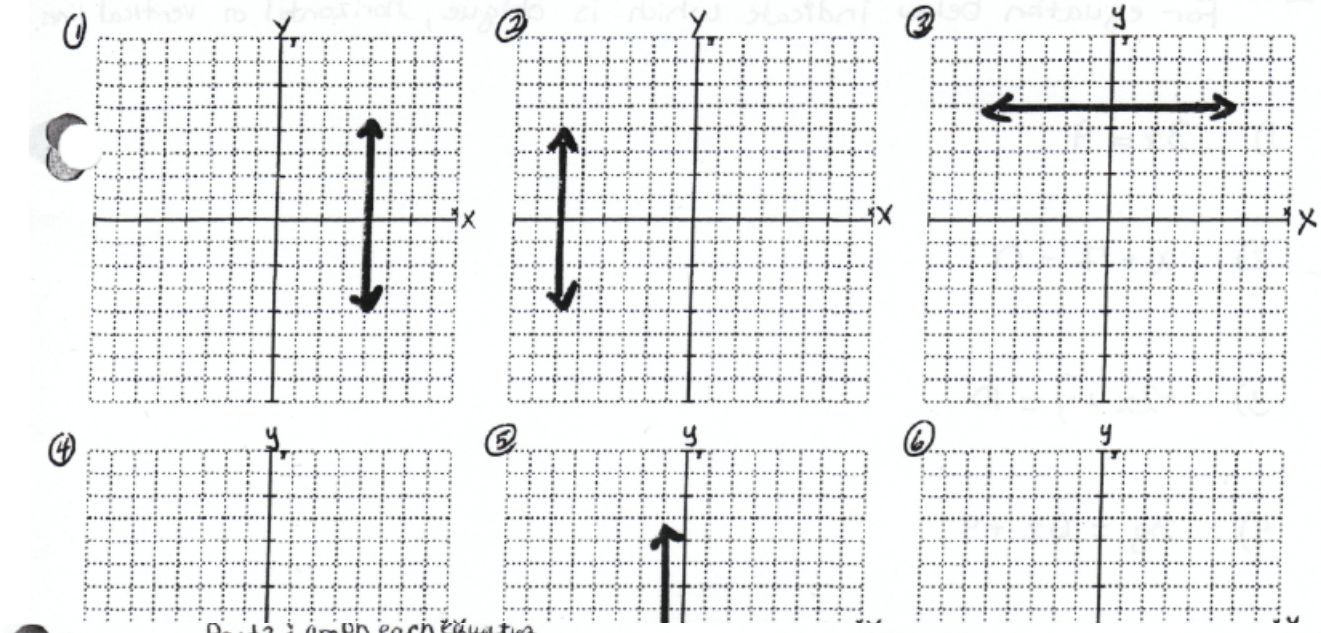
Worksheet

Questions 1 to 8

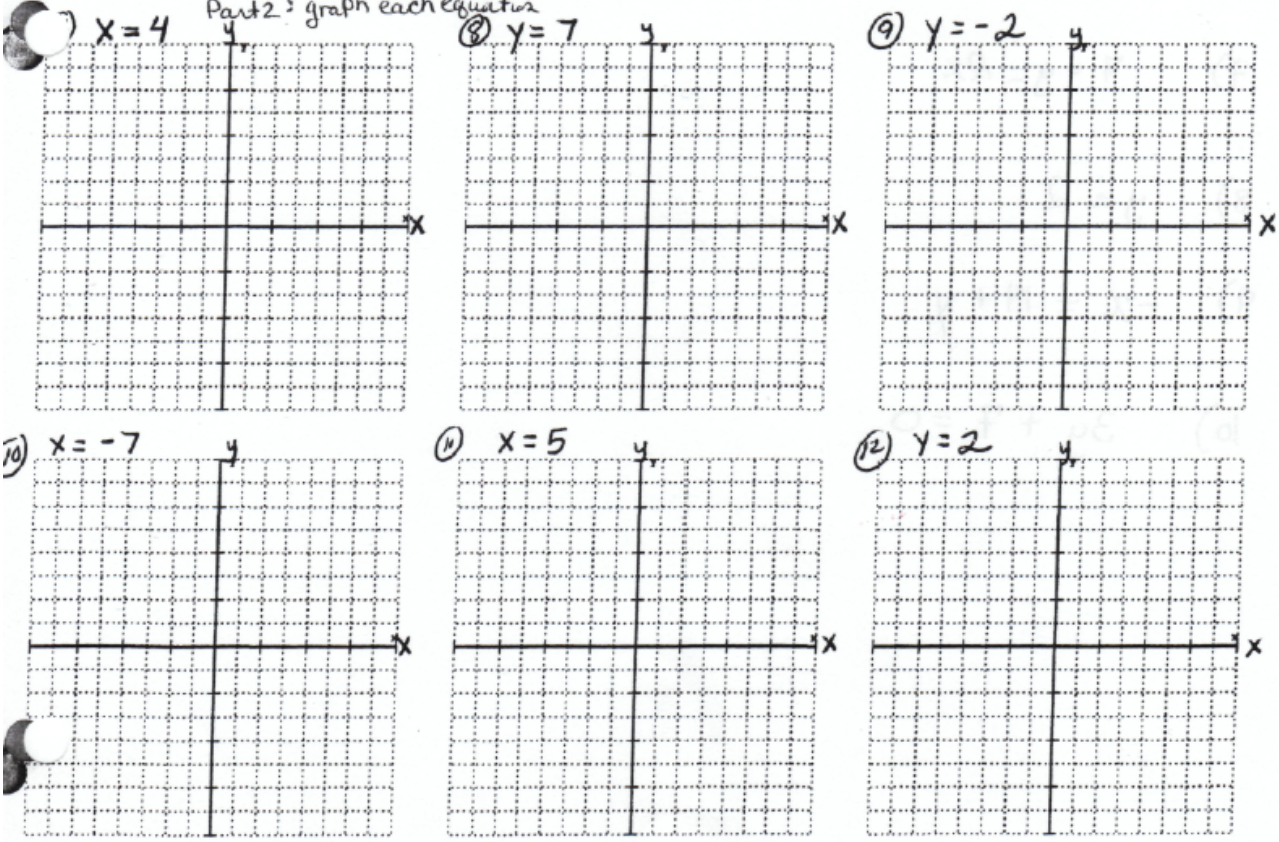
Worksheet

Part 1: Write the equation for each line

Section 4.3



Part 2: graph each equation



Part 3

For equation below indicate which is oblique, horizontal or vertical lines.

1) $3x = 9$

2) $x + 7 = 0$

3) $-2x + y = 10$

4) $3y = 6x + 9$

5) $-x + 3 = 5$

6) $2y = 18$

7) $7 + y = 2x$

8) $y = 2$

9) $-x = 14 + y$

10) $3y + 7 = 0$

Attachments

Section 4.3 Worksheet.pdf

Assignment 4.3.pdf