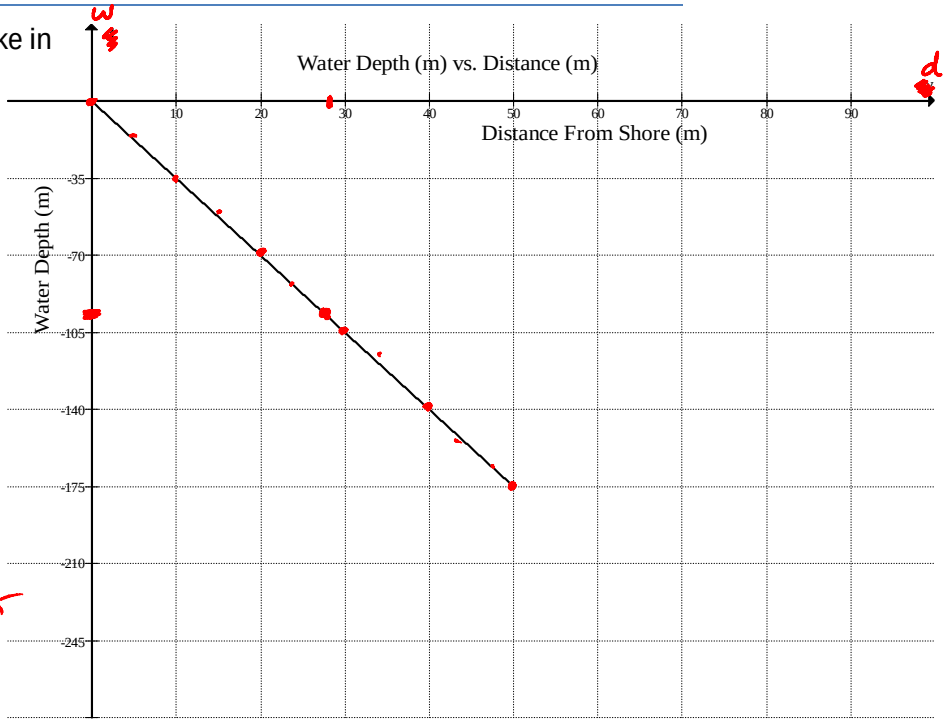
Mathematics9 Date _____

Unit 6 Linear Relations

6.3 Graphing Linear Relationships

Ex. Great Slave Lake is the deepest lake in North America. It has a maximum depth of 614 m. Jill collected data about the depth of the lake from shore to a distance of 50 m from shore, which she then graphed.



a) Determine a linear equation for this graph.

* make a table of values for the data to help identify a pattern

Distance, d (m)	Depth, w (m)
0	0
10	-35
20	-70
30	-105
40	-140
50	-175

+10 -35

$\frac{-35}{+10} = -3.5$

$w = -3.5d$

b) Is it reasonable to interpolate or extrapolate values from this graph?

Yes we can interpolate, data is continuous within her measurements.

Possibly extrapolate assuming the depth change continues, up to a max of 614 m deep.

c) Approximate the depth at 28 m away from shore. Verify your solution.

by interpolate from graph: 28m from shore → ~ -100m deep

use $w = -3.5d$: $w = -3.5(28)$

$= -98$ m deep

d) How far away from shore would you expect to reach the maximum depth of 614 m?

$w = -3.5d$

$\frac{-614}{-3.5} = \frac{-3.5d}{-3.5}$

$d = 175.4$ m from shore

e) At what rate is the depth of the water decreasing?

↑ depth decreases by 35 m for every 10 m away from shore

* rate = slope

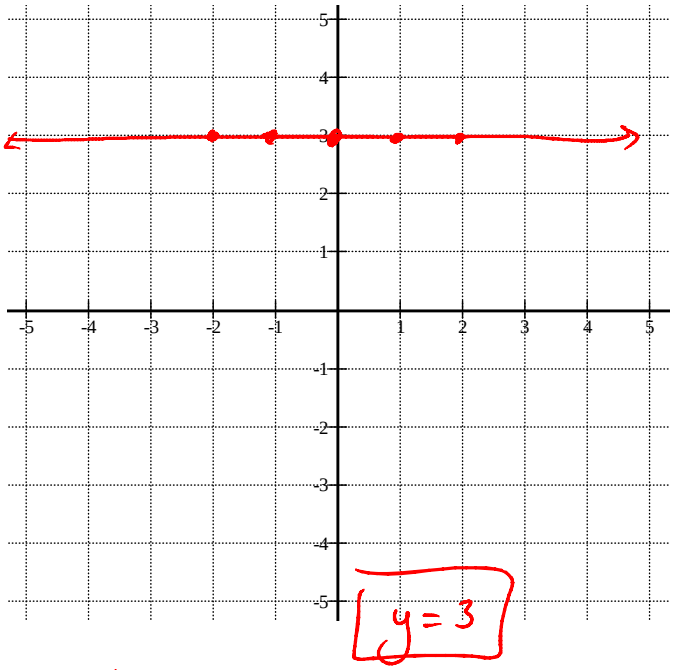
Ex. Graph each table of values and determine the equation that represents each graph.

Table 1

x	*y*
-2	3
-1	3
0	3
1	3
2	3

Table 2

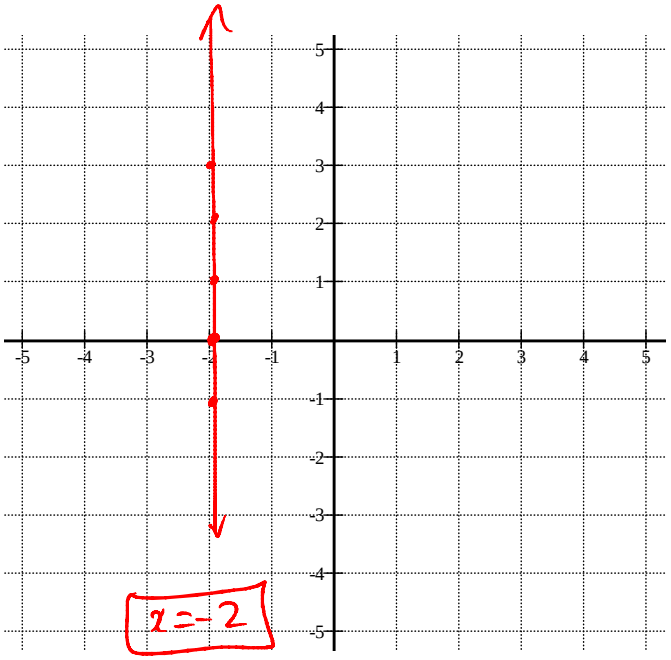
x	*y*
-2	-1
-2	0
-2	1
-2	2
-2	3



$y = 3$

Horizontal lines

$y =$ ____



$x = -2$

Vertical lines

$x =$ ____

Practice: pg. 239/ # 4, 6 – 8, 10a, 11b, 12ac, 13, 20