MFM 2P Mrs. Roen Name: _____

Course: MFM2P Gr. 10 Applied **Lesson: 3 - 4**

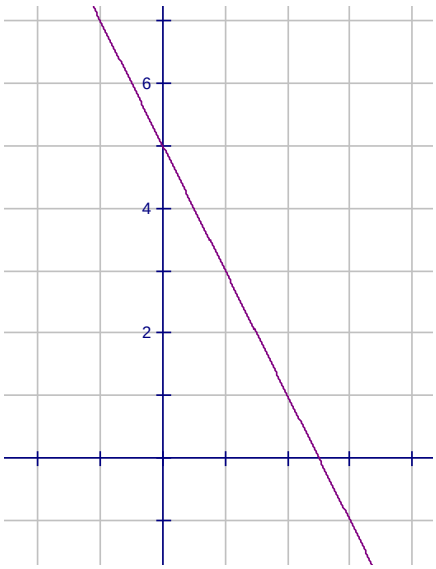
Unit: Linear Relations **Topic: Properties of Slope and Lines**

- ***homework check:*** **Lesson 3 - 3**

- ***note:*** **Properties of Slope and Lines**

We read lines just like we read words in a book, from left to right. A line that goes up to the right has a positive slope and a line that goes down to the right has a negative slope. A horizontal line has a slope of zero because it is flat. For example, write the value of the slope of each of the following.

a)



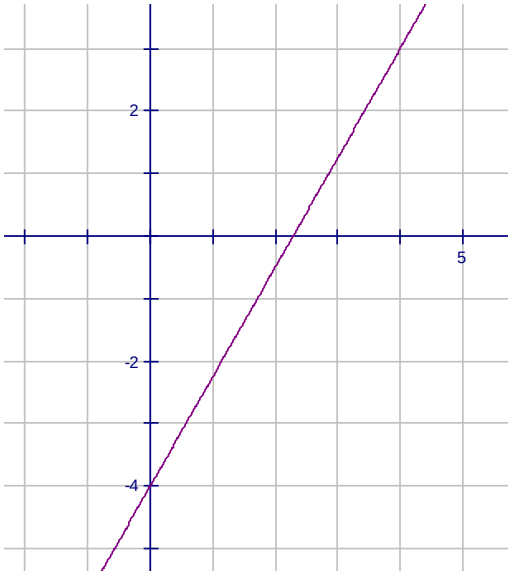
$$m = \frac{rise}{run}$$

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

$$m = -2$$

Remember to include the negative sign because the line falls to the right.

b)



$$slope = \frac{rise}{run}$$

$$m = \frac{7}{4}$$

Slope here is not negative because the line rises to the right.

If we read the positive and negative signs as an indication of direction, the greater the number, the steeper the line, and likewise, the smaller the number, the flatter the line. For example, indicate which line is steeper and why.

a) $m = -3, m = -5$

$m = -5$ has a steeper slope because 5 is greater than 3

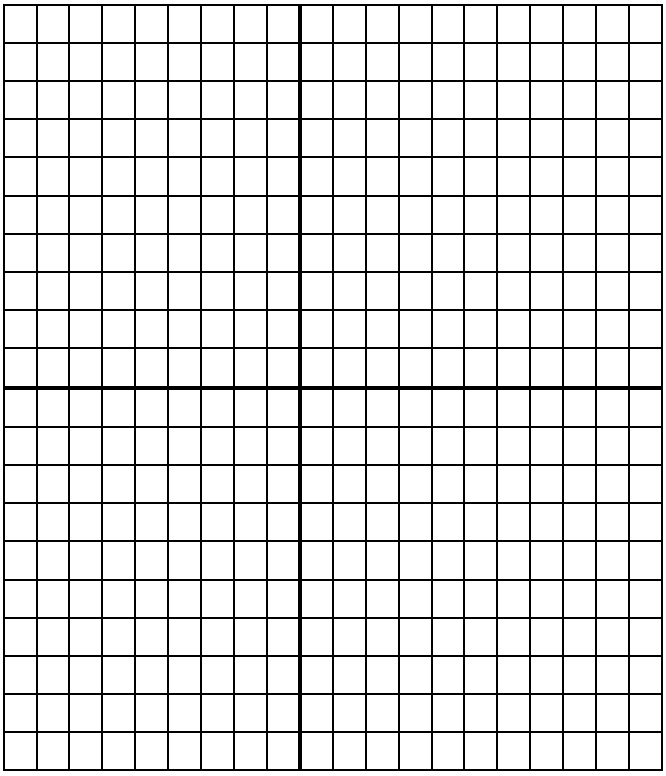
b) $m = \frac{1}{2}, m = \frac{1}{4}$

$m = \frac{1}{2}$ has a steeper slope because $\frac{1}{2}$ is greater than $\frac{1}{4}$

If slopes are the same, the steepness is the same. Therefore lines with the same slope are parallel. For example, graph the lines to see how they are related.

$y = -3x + 5$

$y = -3x - 2$



Note: The only difference is the y-intercept. The lines share the same steepness.

- ***homework assignment:*** **<u>Lesson 3 – 4: Properties of Slope</u>**

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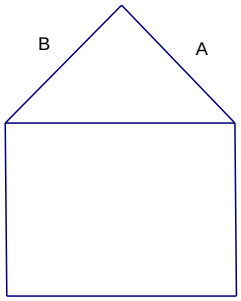
Lesson 3 – 4: Properties of Slope

1. Refer to the diagram given,



a) Which line, A or B, has a positive slope?

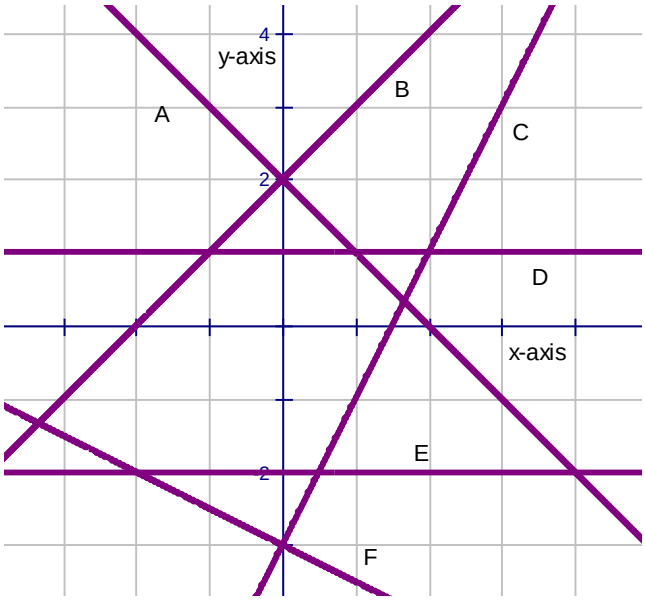
b) Which line, A or B, has a negative slope?

2. State whether the slope for each given relation is positive (P), negative (N), or zero (0).

a) $y = 2x + 5$ **b)** $y = -x + 3$ **c)** $y = 4 - 3x$ **d)** $y = 3$

e) $y = \frac{1}{4}x - 1$ **f)** $y = -0.5x + 0.5$ **g)** $y = -5$ **h)** $y = \frac{1}{2}x$

3. Match the graph and equation by writing the correct letter beside the equation.



$y = -2$ _____

$y = 2x - 3$ _____

$y = x + 2$ _____

$y = 1$ _____

$y = -x + 2$ _____

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

4. Given each pair, circle the equation with the steeper slope.

a) $y = 2x - 1,\ y = -x$ **b)** $y = \frac{1}{2}x + 3,\ y = \frac{1}{3}x - 2$ **c)** $y = 2x - 3, y = \frac{-1}{2}x - 3$

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5. State whether the lines in each pair are parallel or not by writing YES or NO.

a) $y = 3x + 4,\ \ y = -3x + 4$ **b)** $y = x + 6,\ \ y = x - 2$ **c)** $y = -2x + 5,\ \ y = 3 - 2x$

d) $y = \frac{1}{2}x - 1,\ \ y = 0.5x + 3$ **e)** $y = -3x,\ \ y = 2 + 3x$ **f)** $y = 1 - x,\ \ y = -x - 3$

6. Determine whether the table pairs are parallel. Show your work then write YES or NO to show whether the tables are parallel or not.

a)

x	y	first differences
-2	5	
-1	3	
0	1	
1	-1	
2	-3	

x	y	first differences
-2	-3	
-1	-1	
0	1	
1	3	
2	5	

b)

x	y	first differences
-2	-2	
-1	-1	
0	0	
1	1	
2	2	

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

7. Dylan borrowed $1000 from his parents so he could write his G1 and take Driver's Training. He promises to repay $50 a week from his part-time job.

a) Complete the table of values.

Number of Weeks	**0**	**1**	**2**	**3**	**4**
Amount Remaining ($)					

b) What is the slope for this relation?

c) What is the y-intercept?

d) Write an equation for this relation in $y = mx + b$ form.

e) How much does Dylan owe at the end of week 17?