Objective:
You will be able to find the slope and y-intercept of an equation.

Slope-Intercept Form

Agenda

Warm-Up
HW Check
Notes p.53 & 54
Homework

Warm-Up

Fill in the table using the equation 10x + 2y = 2. Then find the slope.

x	y
-1	6
0	1
2	-9
5	-24
7.5	-36.5

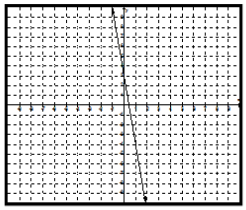
$10x + 2y = 2$
$-10x \quad -10x$
$\frac{2y}{2} = \frac{-10x+2}{2} \quad \frac{2}{2}$
$y = -5x + 1$

$m = -\frac{5}{1}$

14. #12
15. #10 and #11
16. #10 and #11
17. #12

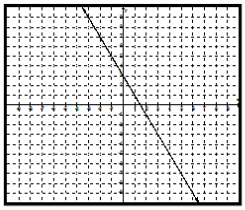
10. $y = 3 - 7x$

x	y
-1	10
0	3
1	-4
2	-11



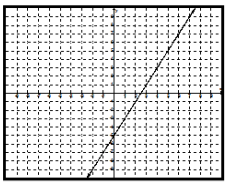
11. $y = -2x + 3$

x	y
-2	7
-1	5
0	3
1	1
2	-1



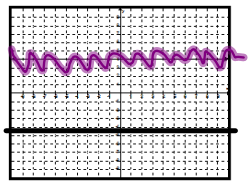
12. $y = 2x - 5$

x	y
-1	-7
0	-5
1	-3
2	-1
3	1



13. $y = -4$

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



Algebra 1 Unit 3: Solving for *y*

Practice – Solving for *y*

Name: _____ Date: _____ Period: _____

Solve each of the following problems for y. Next to each number is a color and below is a safari scene. As you answer each problem, color the picture appropriately!

1. (orange) $x + y = 4$

$-x \quad -x$

$y = 4 - x$

$y = -x + 4$

2. (brown) $x - 2y = 8$

$-x \quad -x$

$\frac{-2y}{-2} = \frac{-1x}{-2} + \frac{8}{-2}$

3. (pink) $6x + 2y = 12$

4. (blue) $6x - 3y = 9$

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

5. (yellow) $5(x - y) = 20$

6. (green) $-x + 6y - 12 = 2x$

7. (red) $-2(x + 3y) = 18$

8. (purple) $5y + 9 = 2y - 3x$

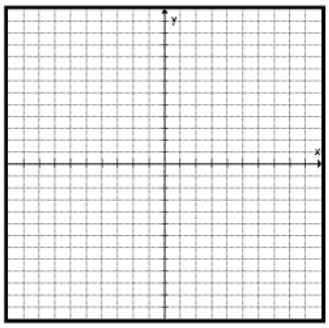
9. (black) $2x - y = 4$

Algebra 1 Unit 3: Solving for y

Enter the following equations into the calculator to complete the table and graph.

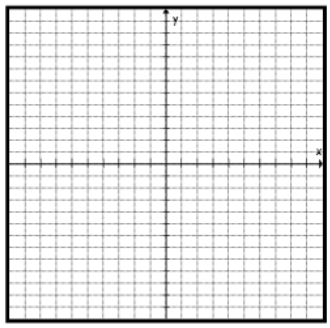
10. $7x + y = 3$

x	y
-1	
0	
1	
2	



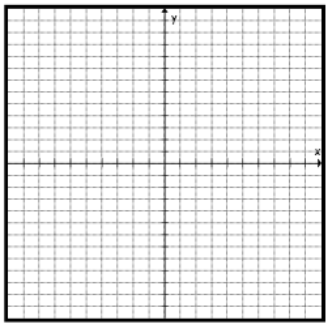
11. $4x + 2y = 6$

x	y
-2	
-1	
0	
1	
2	



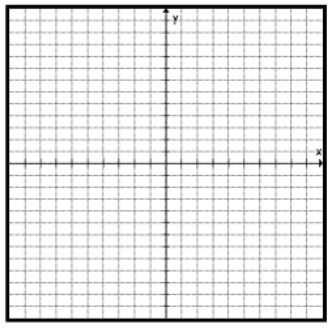
12. $2x - y = 5$

x	y
-1	
0	
1	
2	
3	



13. $y + 4 = 0$

x	y
-2	
-1	
0	
1	
2	
3	



Look at questions 10-13 to answer the following questions.

14. Which graphs are increasing from left to right?

15.Which graphs are decreasing from left to right?

16. Which tables, if any, hold this statement true, "as x increases, y decreases"?

17. Which tables, if any, hold this statement true, "as x increases, y increases"?

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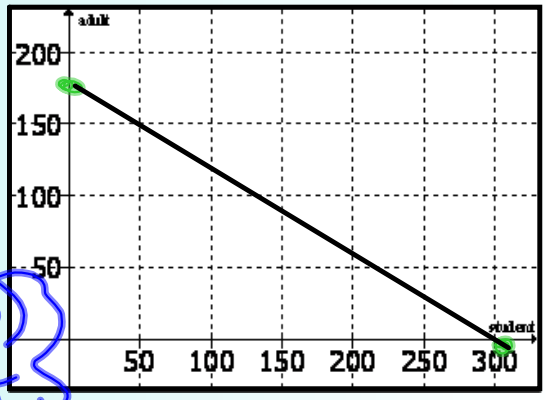
A group of actors need to have $915 in ticket sales to meet expenses for each performance of a play. The combined number of $3 student tickets, x, and $5 adult tickets, y, needed can be represented by the equation

$$3x + 5y = 915$$



- If no student tickets are sold, how many adult tickets must be sold to meet expenses? What does this amount represent?

$x=0$

$\frac{3(0)}{5} + \frac{5y}{5} = \frac{915}{5}$

$y = 183$ adult tickets

(0, 183) y-int

- If no adult tickets are sold, how many student tickets must be sold to meet expenses? What does this amount represent?

x-int.

(305, 0)

- Graph these two points

- Algebraically find the rate of change of the line.

SLOPE

x	y
0	183
305	0

-183 -183

$m = \frac{-183}{305} = \frac{-3}{5}$

- Solve the equation for y.

$$3x + 5y = 915$$

$-3x \quad -3x$

$$\frac{5y}{5} = \frac{-3x}{5} + \frac{915}{5}$$

$$y = \frac{-3}{5}x + 183$$

- What two numbers do you see in this new equation?

SLOPE & y-int.

Slope Intercept Form of a Linear Equation

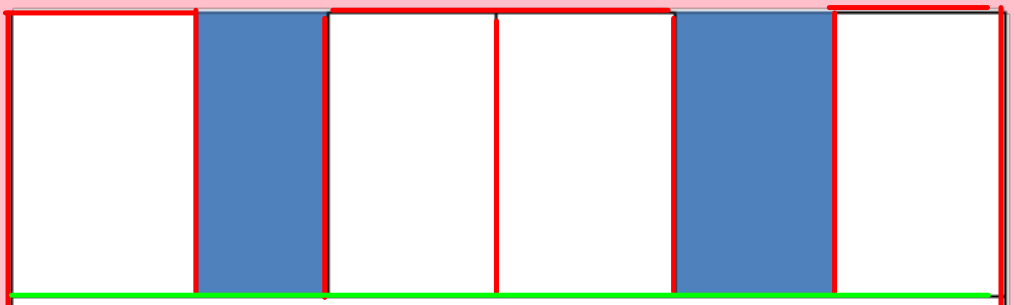
A line can be described by $y = mx + b$

where

m represents the SLOPE

and

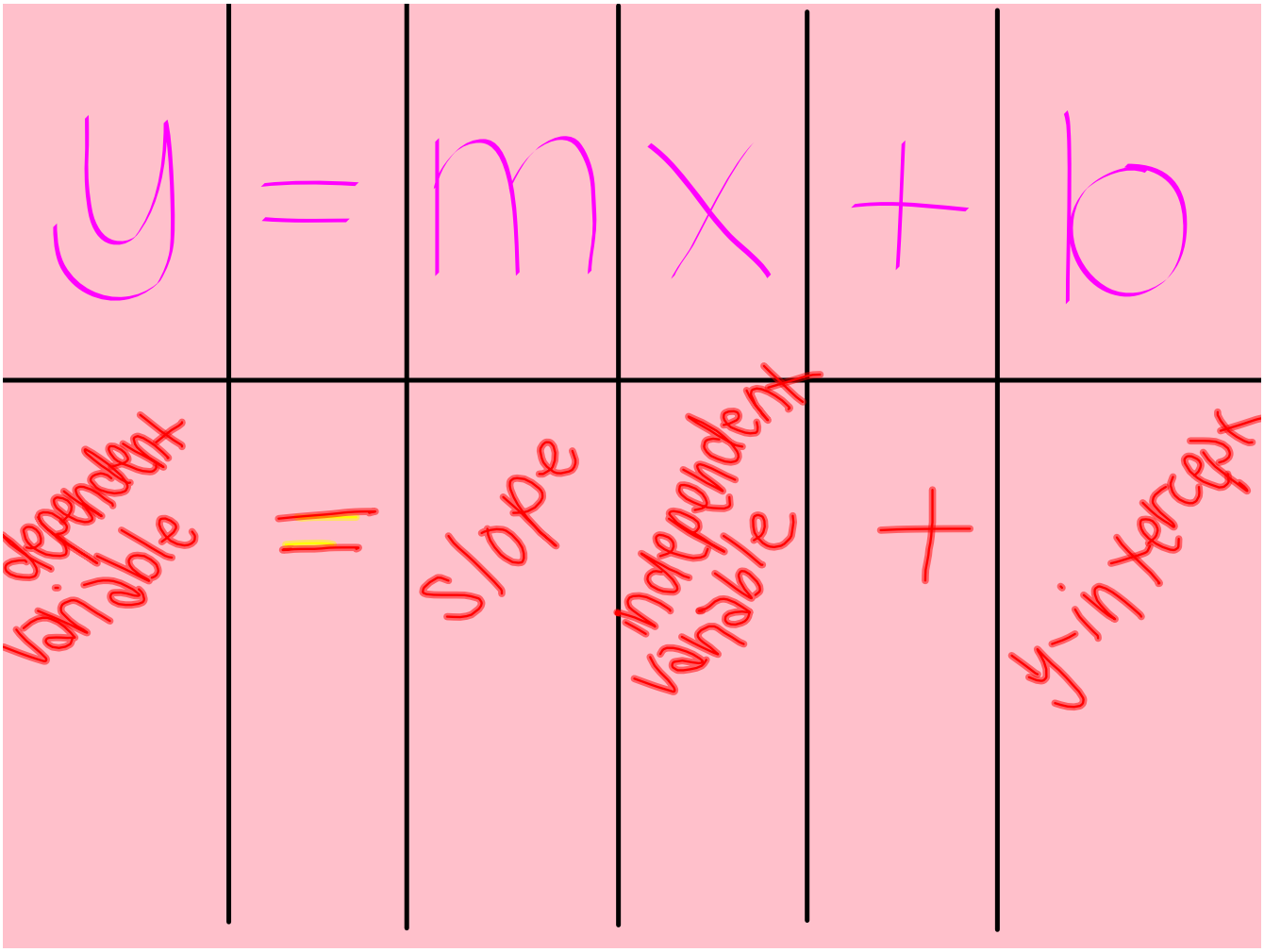
b represents y-intercept.



Cut along the lines highlighted in red

Fold along the lines highlighted in green

$y = mx + b$


y = mx + b
dependent variable
=
slope
independent variable
+
y-intercept

Glue your foldable on page 44...near the edge!!

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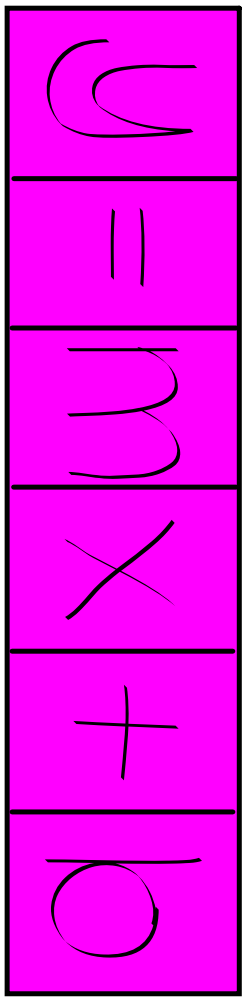

Write the equation of the line with the following characteristics in slope-intercept form.

1. slope = $\frac{1}{3}$ y-intercept: (0,6)

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

2. m = -12 and b = $\frac{1}{2}$

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

3. slope is 1 and the y-intercept is (0,0)

b=0

$y = 1x + 0 \rightarrow y = x$

Linear P.F.

4. m = 0 and b = -5

$y = 0x + -5 \rightarrow y = -5$

H04

Solve for y, then state the slope and y-intercept.

5. $5y - 10x = 20$

$+10x \quad +10x$

$\frac{5y}{5} = \frac{10x}{5} + \frac{20}{5}$

$y = 2x + 4$

slope: 2

y-intercept: (0,4)

b=4

Exit Ticket

On a notecard, answer both questions.

1. Which equation describes a line that has a slope of $\frac{1}{4}$ and a y-intercept of 2?

A. $y = \frac{1}{4}x - 2$ B. $y = \frac{1}{4}x + 2$ C. $y = \frac{1}{4}(x + 2)$ D. $y = \frac{1}{4} + 2x$

2. Write an equation of a line with a y-intercept of (0, 3) and a slope of $-\frac{4}{5}$: _____

Algebra I - Unit 3: Topic 2

Practice – Slope-Intercept Form

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Name _____ Date _____ Per _____

Write the equation (function rule) that describes each line in slope-intercept form.

1. Slope $= \frac{1}{3}$ and y-intercept: -3

2. y-intercept: 2 and m: 8

3. Slope = 0.5 and y-intercept: 3.5

4. $b = -3$ and slope = 0

5. $m = 5$ and y-intercept: 0

6. Slope $= \frac{1}{4}$ and y-intercept: 7

7. $m = -2$ and $b = 2$

8. $b = 6$ and $m = \frac{-4}{5}$

Solve the following for y then identify the slope and the y-intercept

9. $-3y = 9x - 6$

m (slope) =
b (y-intercept) =

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

m (slope) =
b (y-intercept)=

11. $4x - y = -5$

m (slope) =
b (y-intercept) =

12. $2x - 3y = 12$

m (slope) =
b (y-intercept)

13. What is the slope of the function $-6x - 2y = 8$?

14. What is the rate of change of the function $y = 7$?