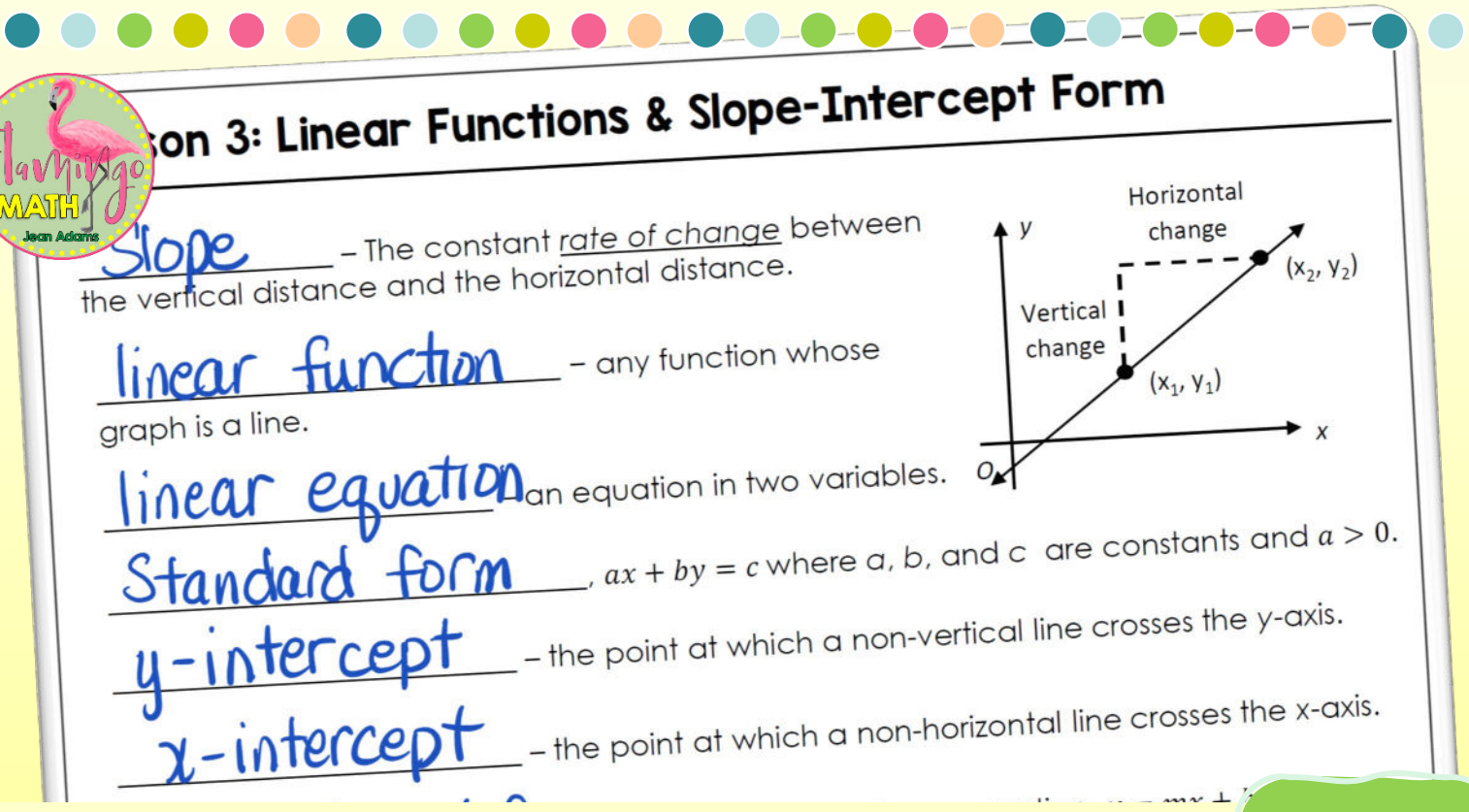
Algebra 2 Honors

Slope-Intercept Form



...son 3: Linear Functions & Slope-Intercept Form

Slope – The constant rate of change between the vertical distance and the horizontal distance.

linear function – any function whose graph is a line.

linear equation – an equation in two variables.

Standard form, $ax + by = c$ where a, b, and c are constants and $a > 0$.

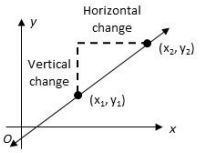
y-intercept – the point at which a non-vertical line crosses the y-axis.

x-intercept – the point at which a non-horizontal line crosses the x-axis.

Completely Editable 2.3

Lesson 3: Linear Functions & Slope-Intercept Form

_____ – The constant *rate of change* between the vertical distance and the horizontal distance.



_____ – any function whose graph is a line.

_____ – an equation in two variables.

_____, $ax + by = c$ where a, b, and c are constants and $a > 0$.

_____ – the point at which a non-vertical line crosses the y-axis.

_____ – the point at which a non-horizontal line crosses the x-axis.

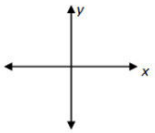
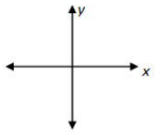
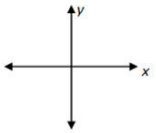
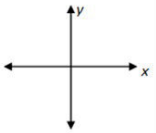
_____ – a special form of a linear equation. $y = mx + b$ where m is the slope of the line and $(0, b)$ is the y-intercept.

Slope Formula

$$slope = \frac{vertical\ change}{horizontal\ change} = \frac{rise}{run} = \frac{y_2 - y_1}{x_2 - x_1}$$

where $x_2 - x_1 \neq 0$

Four Types of Slope of a Line

POSITIVE SLOPE	NEGATIVE SLOPE	ZERO SLOPE	UNDEFINED SLOPE
			
Line rises from left to right	Line falls from left to right	Horizontal Line	Vertical Line

Finding Slope

EX #1: What is the slope of the line that passes through the given points?

A. $(-4,7)$ and $(-3,5)$

B. $(-3,8)$ and $(9,-4)$

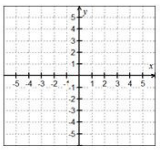
C. $(1,6)$ and $(-5,6)$

D. $(2,8)$ and $(2,7)$

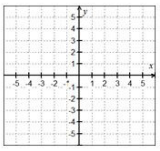
Slope-Intercept Form

EX #2: What is the equation of each line?

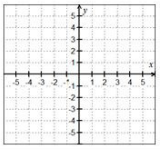
A. $m = -\frac{1}{2}$ and the y-intercept is $(0,3)$



B. $m = 3$ and the y-intercept is $(0,-2)$



C. $m = 0$ and the y-intercept is $(0,4)$



Writing Equations in Slope-Intercept Form

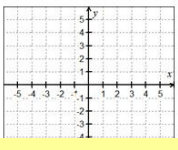
EX #3: Write the equation in slope-intercept form. What are the slope and y-intercept?

A. $3x + 2y = 18$

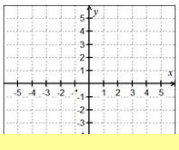
B. $7x - 5y = 35$

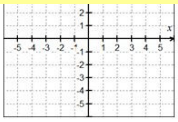
Graphing Linear Equations

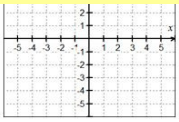
EX #4: Graph $3x - 4y = 8$



EX #5: Graph $4x - 2y = 6$







NOTES

Name _____ Date_____

2.3

Slope-Intercept Form Practice

Problems 1 – 3, find the slope of the line through each pair of points.

1. (7,1) and (−3, −4)

2. (2,5) and (−4,7)

3. $\left(\frac{1}{2}, 0\right)$ and $\left(0, \frac{4}{7}\right)$

Problems 4 – 7, write an equation for each line.

4. $m = -5$ and the y-intercept is 2.

5. $m = \frac{1}{3}$ and the y-intercept is −4.

6. $m = 0$ and the y-intercept is 9.

7. $m = \frac{3}{5}$ and the y-intercept is $\frac{9}{5}$.

Problems 8 - 11, find the slope and the y-intercept for each line.

8. $2x - 5y = -10$

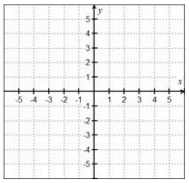
9. $-3x + 4y = -12$

10. $x = -3$

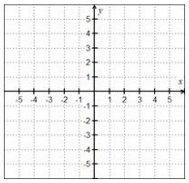
11. $y = 14$

Problems 12 – 15, graph each equation. Then, name the slope and y-intercept for each line.

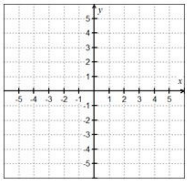
12. $y = -\frac{3}{2}x - 4$



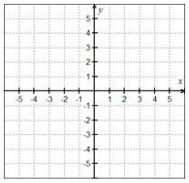
13. $y = 2x + 1$



14. $4x - 3y = 12$

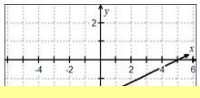


15. $y - \frac{1}{2} = \frac{2}{3}x$

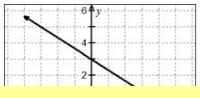


Problems 16 – 18, use the graph to write the slope-intercept form of the equation for each line.

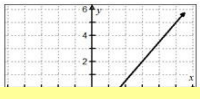
16.



17.



18.



Practice Sets

Lesson Warm-Ups

Name _____ Date _____ Period _____

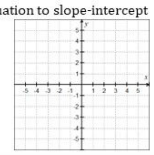
Lesson 2.3: Linear Functions and Slope Intercept Form **Warm-Up #1**

1. Find the slope of the line that passes through the points $(1, 3)$ and $(2, 7)$.

2. Find the slope of the line that passes through the points $(2, 3)$ and $(2, 7)$.

3. What is the equation of the line that has a slope of $\frac{1}{3}$ and a y-intercept of $(0, 3)$?

4. Convert the following equation to slope-intercept form and graph
$2x + 4y = -8$



Name _____ Date _____ Period _____

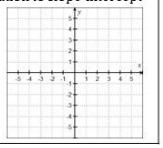
Lesson 2.3: Linear Functions and Slope Intercept Form **Warm-Up #2**

1. Find the slope of the line that passes through the points $(-2, 3)$ and $(5, -7)$.

2. Find the slope of the line that passes through the points $(3, 3)$ and $(3, -1)$.

3. What is the equation of the line that has a slope of $\frac{2}{3}$ and a y-intercept of $(0, -1)$?

4. Convert the following equation to slope-intercept form and graph
$3x + 4y = 4$



2.3 Slope-Intercept Form **Form A**

Name _____

Date _____ Period _____

1. Find the slope of the line through the points $(5, -1)$ and $(-2, -3)$

2. Write an equation in slope intercept form for the line whose slope is 3 and has a y-intercept of $(0, -4)$.

3. Write an equation in slope-intercept form.
$4x - 5y = 25$

4. Find the slope and the intercept for the line $x = -5$. Write the intercept as (x, y).

Slope:

Intercept:

Grade:

2.3 Slope-Intercept Form **Form B**

Name _____

Date _____ Period _____

1. Find the slope of the line through the points $(-6, 3)$ and $(2, -4)$

2. Write an equation in slope intercept form for the line whose slope is -2 and has a y-intercept of $(0, 7)$.

3. Write an equation in slope-intercept form.
$3x + 4y = -24$

4. Find the slope and the intercept for the line $y = 6$. Write the intercept as (x, y).

Slope:

Intercept:

Grade:

Daily Lesson Quiz