



# Math 8 Unit 5 Linear Equations and Inequalities in 2 Variables

Volume 1 Issue 5

## References

### Mathematics Course 3 Text Connection:

Chapter 12 Lessons: 1-3, 6-7

### Holt Mathematics Course 3 Text Online:

[http://go.hrw.com/resources/go\\_mt/hm3/so/c3ch12aso.pdf](http://go.hrw.com/resources/go_mt/hm3/so/c3ch12aso.pdf)

[http://go.hrw.com/resources/go\\_mt/hm3/so/c3ch12bso.pdf](http://go.hrw.com/resources/go_mt/hm3/so/c3ch12bso.pdf)

The information on linear equations from:

[http://go.hrw.com/resources/go\\_mt/hm3/so/c3ch13bso.pdf](http://go.hrw.com/resources/go_mt/hm3/so/c3ch13bso.pdf)

## Dear Parents

Below you will find a list of concepts that your child will use and understand while completing Unit 5 Linear Equations and Inequalities in 2 Variables. Also included are references, vocabulary and examples that will help you assist your child at home.

## Concepts Students will Use and Understand

- Interpret slope as rate of change.
- Determine the meaning of slope and y-intercept in a given situation.
- Graph equations in the form of  $y = mx + b$  and  $Ax + By = C$ .
- Graph the solution set of a linear inequality, identifying whether the solution set is an open or closed half plane.
- Determine the equation of a line given a graph, numerical information that defines the line or a context involving a linear relationship.
- Solve problems involving linear relationships by gathering the data, graphing the data as a scatter plot, determining line of best fit, writing its equation, and interpreting the solution of the equation in the context of the original problem.

## Vocabulary

**Constant Function:** horizontal line ( $y = \#$ )

**Line of best fit:** the line that best represents the trend established by the points in a particular scatter plot.

**Linear Inequality:** an inequality in two variables for which the graph of the solutions form a half-plane on one side of a line and may or may not include the line itself.

**Rate of change (slope):** a ratio that compares the amount of change in a dependent variable to the amount of change in an independent variable.

**Slope:** the steepness of a line represented by the variable  $m$ , which may be calculated by finding the ratio of the difference between the  $y$  values of two points in the line to the difference between the corresponding  $x$  values of those two points.

**Slope-intercept form:** one way to write an equation of a line; uses the form  $y = mx + b$ , where  $m$  is the slope and  $b$  is the  $y$ -intercept.

**Standard Form:** a linear equation in the form  $Ax + By = C$ , where  $A$ ,  $B$ , and  $C$  are constants.

**Y-intercept:** the  $y$  coordinate of a point where a graph crosses the  $y$ -axis. The  $y$ -intercept is represented by the variable  $b$ .

**Undefined Slope:** vertical line ( $x = \#$ )

Try: <http://intermath.coe.uga.edu/>

# Math 8 Unit 5

## Formulas

**Slope (m)**

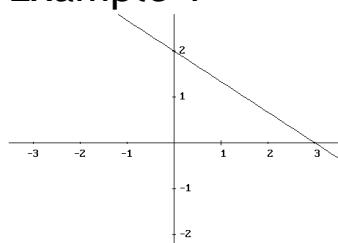
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

**Slope-Intercept Form**

$$y = mx + b$$

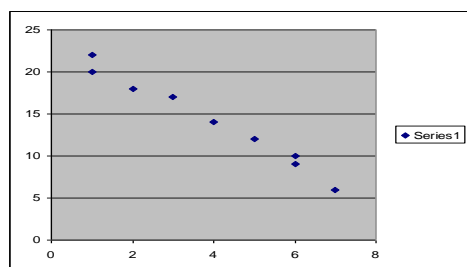
**Y-intercept (b); (0,b)**

## Example 1



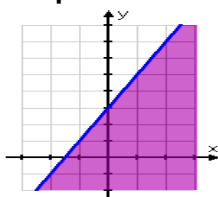
What is the slope of the function? What is the y-intercept? Write the equation of the line in slope-intercept form.

## Example 2



Determine the line of best fit. Write the equation of the line in slope-intercept form.

## Example 3



Determine the inequality given by the graph.

## Links:

<http://argyll.epsb.ca/jreed/math9/strand4/scatterPlot.htm>

<http://regentsprep.org/Regents/Math/data/linefit.htm>

<http://www.purplemath.com/modules/ineqgrph.htm>

<http://www.gomath.com/exercises/SlopeEquationYintercept.php>

## Key

### Example 1

Slope (m) =  $-\frac{2}{3}$       Y-intercept (b) = 2

Equation of the line:  $y = -\frac{2}{3}x + 2$

### Example 2

Several possible answers:  $y = -2x + 24$

### Example 3

$y \leq 2x + 3$