

**Richmond Public Schools**  
**Department of Curriculum and Instruction**  
**Curriculum Pacing And Resource Guide – Unit Plan**



**Course Title/ Course #: Algebra 1**

**Unit Title/ Marking Period # (MP#2): Linear Equations: Slope & Writing the Equation of Lines**

**Start day:**

**Meetings (Length of Unit): 7**

***Desired Results ~ What will students be learning?***

**Standards of Learning/ Standards**

A.6 The student will graph linear equations and linear inequalities in two variables, including

- a) determining the slope of a line when given an equation of the line, the graph of the line, or two points on the line. Slope will be described as rate of change and will be positive, negative, zero, or undefined; and
- b) writing the equation of a line when given the graph of the line, two points on the line, or the slope and a point on the line.

**Essential Understandings/ Big Ideas**

- Changes in slope may be described by dilations or reflections or both.
- Changes in the y-intercept may be described by translations.
- Linear equations can be graphed using slope, x- and y-intercepts, and/or transformations of the parent function.
- The slope of a line represents a constant rate of change in the dependent variable when the independent variable changes by a constant amount.
- The equation of a line defines the relationship between two variables.
- The graph of a line represents the set of points that satisfies the equation of a line.
- A line can be represented by its graph or by an equation.
- The graph of the solutions of a linear inequality is a half-plane bounded by the graph of its related linear equation. Points on the boundary are included unless it is a strict inequality.
- Parallel lines have equal slopes.
- The product of the slopes of perpendicular lines is -1 unless one of the lines has an undefined slope.

### **Key Essential Skills and Knowledge**

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Graph linear equations and inequalities in two variables, including those that arise from a variety of real-world situations.

- Use the parent function  $y = x$  and describe transformations defined by changes in the slope or y-intercept.
- Find the slope of the line, given the equation of a linear function.
- Find the slope of a line, given the coordinates of two points on the line.
- Find the slope of a line, given the graph of a line.
- Recognize and describe a line with a slope that is positive, negative, zero, or undefined.
- Use transformational graphing to investigate effects of changes in equation parameters on the graph of the equation.
- Write an equation of a line when given the graph of a line.

### **Vocabulary**

Linear Equation  
Slope: Positive, Negative, Undefined, Zero  
Standard Form of a Linear Equation  
Slope Intercept Form of a Linear Equation  
Point-Slope Form of a Linear Equation  
Transformations: Translation, Reflection and Dilation  
Parent Function  
Independent Variable  
Dependent Variable  
Parallel Lines  
Perpendicular Lines

***Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?***

### **Assessment/ Evidence**

**PowerSchool**

***Learning Plan ~ What are the strategies and activities you plan to use?***

### **Learning Experiences/ Best Practice**

Create a foldable for the following topics:

- Slope: Positive, Negative, Undefined, Zero

- Include graphs and equations of lines
- Parallel vs. Perpendicular
  - Include graphs, slope and equation of lines
- Writing the equation of a line
  - From two points
  - Given a graph
  - Given a point and slope

All Things Algebra → Linear Equations

- Gone Fishin' with Linear Equations
- Graphing Linear Equations Bingo
- Linear Equations Fly-Swatter Bingo
- Linear Equations Review Book & Stations
- Parallel & Perpendicular Lines Math Lib
- Two Points Math Lib
- Linear Equations Bullseyes
- Graphing Linear Equations Line-Up
- Graphing Linear Equations Choice Board
- Linear Equations Performance Task
- Linear Equations Round Table Activity
- Matching Graphs & Equations (Cut & Paste)
- Point-Slope & Two Point Relay Races
- Point-Slope & Two Point Task Cards
- Point-Slope & Two Point Partner Activity
- Slope and Graphing Find Someone Who
- Slope Formula Holiday Coloring Activity
- Slope Task Cards with QR Codes
- Slope Triples Activity
- Writing Linear Equations Find Someone Who
- Writing Linear Equations Given Two Points Holiday Coloring Activity

**Technology Integrations**

Gizmo  
Khan Academy

Virtual Nerd  
Discovery Streaming

## Resources

A.6a

### **Text**

Virginia Glencoe, Algebra I, ©2012, Carter, et al,  
McGraw-Hill School Education Group, page(s) 170 - 178

Coach book, Virginia edition, page(s) 72 – 93, 120 - 127

Mulligan Math in Minutes A.6

### **Technology**

- Gizmo
  - [Distance – Time and Velocity – Time Graph](#)
  - [Function Machines 2 \(Functions, Tables, and Graphs\)](#)
  - [Cat and Mouse \(Modeling Linear Systems\) – Activity B](#)
  - [Slope – Activity B](#)
- Khan Academy
  - [Functions](#)
- Virtual Nerd
  - [Rate of Change and Slope](#)
- Discovery Streaming
  - [Graphing Linear Relations - Elevators](#)

### **Virginia Department of Education**

[Slope-2-Slope](#)

[Slippery Slope](#)

[The Submarine](#)

[Equations of Lines](#)

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Virginia Glencoe, Algebra I, ©2012, Carter, et al,  
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Mulligan Math in Minutes A.6

**Technology**

- Gizmo
  - [Distance-Time Graphs](#)
  - [Cat and Mouse \(Modeling Linear Systems\) – Activity B](#)
- Khan Academy
  - [Functions](#)
- Virtual Nerd
  - [Analyzing Linear Equations](#)

**Virginia Department of Education**

[Slope-2-Slope](#)

[Transformationally Speaking](#)

[Transformation Investigation](#)

[Equations of Lines](#)

**Cross Curricular Connection****History/Economics:**

- In order to calculate the rate profit is earned, a linear equation can be used. For example, when  $x$  amount of computers are sold,  $d$  dollars are profits.

\*\*Any situation where a linear equation or quadratic equation can be used to model the situation, the slope and equation can be found and used in context.