WAKE COUNTY
PUBLIC SCHOOL SYSTEM

8ᵗʰ Grade UNIT 10 OVERVIEW: Linear Functions - Slope

Unit Outcomes	Key Vocabulary
At the end of this unit, your student should be able to:	Terms to deepen the student's understanding
✓ Make tables and graphs to represent data ✓ Describe relationships between variables ✓ Use data patterns to make predictions ✓ Compare and contrast linear and nonlinear relationships ✓ Show how similar triangles can be used to prove that the slope between any two points on a line is the same ✓ Determine the slope from a graph ✓ Use the formula for slope to determine the slope of a line given two points on the line ✓ Conclude that the slope of a line is the "m" in the equation of a line in $y = mx$ form ✓ Understand the proportional relationship that exists when a line goes through the origin ✓ Explain how the slope effects the graph of an equation in $y = mx$ form	✓ Coefficient ✓ Function ✓ Linear Equation ✓ Linear Function ✓ Linear Relationship ✓ Non-Linear Function ✓ Proportional Relationship ✓ Rate of Change ✓ Similar Triangles ✓ Slope ✓ Slope-Intercept Form ✓ Standard Form ✓ Unit Rate ✓ x-intercept ✓ x-value ✓ y-intercept ✓ y-value

Key Standards Addressed	Where This Unit Fits
Connections to Common Core/NC Essential Standards	Connections to prior and future learning
8.EE.5 - Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.* 8.EE.6 - Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b. 8.F.5 - Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	**Coming into this unit, students should have a strong foundation in:** ✓ Computing unit rates ✓ Recognizing and representing proportional relationships between quantities ✓ Identifying the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships ✓ Representing proportional relationships with equations ✓ Identifying relations and functions by graphs, tables/ordered pairs, and equations ✓ Determining constant rate of change given a graph, table or equation **This unit builds to the following future skills and concepts:** ✓ More complex equations and inequalities in Math I ✓ Systems of Linear Equations and Inequalities ✓ Functions in Math I

8th Grade UNIT 10 OVERVIEW: Linear Functions - Slope

Additional Resources Materials to support understanding and enrichment	**"Learning Checks"** Questions Parents Can Use to Assess Understanding
✓ Teaching videos made by Wake County teachers ✓ WCPSS YouTube Channel – Math Playlist ✓ Slope From Two Points Overview ✓ Slope Overview ✓ Slope and Similar Triangles Video ✓ Slope Video ✓ Horizontal and Vertical Lines Video ✓ Slope From a Graph Practice - Kuta Software ✓ Slope from Two Points Practice - Kuta Software ✓ Horizontal and Vertical Lines Practice ✓ Slope Practice	✓ Where are linear and nonlinear relationships represented with the building of structures? ✓ How can you use equations to answer questions about a relationship? ✓ Does finding the rate of change for just one pair of points mean that the rate of change is the same for all of the data? ✓ The grade of a road is the ratio of rise to run expressed as a percent. As a road gets steeper, what happens to the rate of change? ✓ What is the slope of a horizontal and vertical line? What are examples of these in everyday life? ✓ What are some examples of objects that move at a constant rate in the real world? ✓ How can knowing the constant rate of an object be useful in the real world?

* **Please note**, the unit guides are a work in progress. If you have feedback or suggestions on improvement, please feel free to contact wakemiddle@wcpss.net.