

Unit Title: "The Big Race: Slopes and Rates of Change"

Course: Algebra I (Middle School)

Subject Area: Mathematics

Time Frame: 13 days

Standards

Algebra I Standards	Sunshine State Standards Benchmarks	NCEE New Standards
<p>The student will:</p> <p>7.4 Graph sets of ordered pairs, linear equations in two variables by using intercepts, slope and points, and point-plotting.</p> <p>7.6 Determine the slope of a line when given two points on a line or an equation of a line.</p>	<p>MA.C.3.3.2 The student identifies and plots ordered pairs in all four quadrants of a rectangular coordinate system and applies simple properties of lines.</p> <p><i>Expectations</i> The student:</p> <ul style="list-style-type: none">• When given an equations or its graph, find ordered-pair solutions.• When given the graph of a line, identifies the slope of the line (including the slope of vertical and horizontal lines).• When given the graph of a linear relationship, determine the x- and y-intercepts of the line.• When given the graph of a linear relationship, applies and explains the properties of lines on a graph.	<p>The student:</p> <p>M3a Discovers, describes, and generalizes patterns, including linear, exponential, and simple quadratic relationships, i.e., those of the form $f(n) = n^2$ or $f(n) = cn^2$ for constant c, including $A = \pi r^2$, and represent them with variables and expressions.</p> <p>M3b Represent relationships with tables, graphs in the coordinate plane, and verbal or symbolic rules.</p>

Desired Results

Enduring Understanding	Essential Questions	Knowledge and Skills
<p>Students will understand:</p> <ul style="list-style-type: none"> One of the most important ideas in the study of algebra is the relationship between two variables and how one can be used to predict values of the other. A linear relationship is one in which there is a constant rate of change between the two variables; the change in y that is associated with a particular change in x will remain the same over the range of the function. The rate of change is the <i>slope</i> of the line that represents the relationship. 	<ul style="list-style-type: none"> How is a point on a graph related to a table, an equation, or the context? How does a solution to an equation relate to a graph, a table, or the context? Can graphs help us predict changes between related variables if the variables are not related in a linear way? What kind of everyday problems can be solved by using mathematical tables and equations? 	<p>Students will know</p> <ul style="list-style-type: none"> Key terms (i.e., coefficient, coordinate pair, linear relationship, point of intersection, rise, run, slope, y-intercept). <p>Students will be able to</p> <ul style="list-style-type: none"> Graph sets of ordered pairs, linear equations in two variables by using intercepts, slope and points, and point-plotting. Determine the slope of a line when given two points on a line or an equation of a line.

Acceptable Evidence

Performance Tasks	Quizzes, Test, and Work Samples	Observations and Dialogues
<ul style="list-style-type: none"> Sleepy Time Students explore constant rate of change and its effects on various representations. Money Matters Students continue to develop their understanding of what it means for a situation to be linear; there must be a constant rate of change between the two variables: for each unit change in x, there must be a constant rate of change in y. Students determine whether a line is increasing (has a positive slope), decreasing (has a negative slope), or neither (has slope of 0). Graphing Linear Equations Students graph linear equations in two variables by using 	<p>Check-Up 1 Quiz A Check-Up 2 Quiz B Unit Test</p>	<p>Teacher observations of students during work on performance tasks. Accountable talk during work on performance tasks.</p>

Performance Tasks	Quizzes, Test, and Work Samples	Observations and Dialogues
<p>intercepts, slope and a points, and point-plotting.</p> <ul style="list-style-type: none"> • The Big Race The game is intended to be the culminating activity involving graphing with slope and y-intercept. 		