

Unit Plan by Prioritized Standards

Content Area	Math
Grade/Course	Algebra 1
Unit of Study	Unit 2: Reasoning with Linear Equations and Inequalities
Duration of Unit	24 days

Insert priority standards below (include code). **CIRCLE or Highlight** the **SKILLS** that students need to be able to do and **UNDERLINE** the **CONCEPTS** that students need to know. (address “supporting” standards in daily lesson plans)

MGSE9-12.A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear functions.

MGSE9-12.A.CED.2 Create linear equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

MGSE9-12.A.REI.3 Solve linear equations and inequalities in one variable including equations with coefficients represented by letters.

MGSE9-12.F.BF.1 Write a function that describes a relationship between two quantities.

MGSE9-12.F.IF.4 Using tables, graphs, and verbal descriptions, interpret the key characteristics of a function which models the relationship between two quantities. Sketch a graph showing key features including: intercepts; interval where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior.

MGSE9-12.F.IF.7 Graph functions expressed algebraically and show key features of the graph both by hand and by using technology.

Skills (what must be able to do)	Concepts (what students need to know)	DOK Level / Bloom's
<ul style="list-style-type: none"> • Create equations and inequalities in one variable • Use them to solve problems • Create linear equations in two or more variables • Represent relationships between quantities • Graph equations on coordinate axes with labels and scales • Solve linear equations and inequalities in one variable • Write a function • Interpret the key characteristics of a function • Graph functions • Show key features of the graph 	<ul style="list-style-type: none"> • Equations <ul style="list-style-type: none"> ○ Linear Equation • Inequalities • Variable • Function <ul style="list-style-type: none"> ○ Linear Functions • Quantities • Coordinate Axes <ul style="list-style-type: none"> ○ Scales • Coefficients • Tables • Graphs <ul style="list-style-type: none"> ○ Intercepts ○ relative maximums ○ minimums ○ symmetries ○ end behavior • Characteristics • Models • Interval <ul style="list-style-type: none"> ○ Increasing ○ Decreasing ○ Positive ○ negative 	<p>Synthesis (2)</p> <p>Applications (2)</p>

Step 5: Determine BIG Ideas (enduring understandings students will remember long after the unit of study)	Step 6: Write Essential Questions (these guide instruction and assessment for all tasks. The big ideas are answers to the essential questions)
<ul style="list-style-type: none"> • Create linear equations and inequalities in one variable and use them in a contextual situation to solve problems. • Create equations in two or more variables to represent relationships between quantities. • Rearrange formulas to highlight a quantity of interest. • Solve linear equations and inequalities in one variable. • Graph linear equations and inequalities in two variables. • Linear equations and inequalities can be represented graphically and solved using real- world context. • Solve systems of linear equations in two variables exactly and approximately and explain why the elimination method works to solve a system of two-variable equations. • Graph equations in two variables on a coordinate plane and label the axes and scales. • Understand the concept of a function and be able to use function notation. • Understand how to interpret linear functions that arise in applications in terms of the context. • When analyzing linear functions, different representations may be used based on the situation presented. • A function may be built to model a relationship between two quantities. • Understand and interpret key features of functions. • Understand how to interpret expressions for functions in terms of the situation they model. • Understand that sequences are functions. • Write recursive and explicit formulas for arithmetic sequences and understand the appropriateness of the use of each. 	<ul style="list-style-type: none"> • How do I justify the solution to an equation? • How do I solve an equation in one variable? • How do I solve an inequality in one variable? • How do I prove that a system of two equations in two variables can be solved by multiplying and adding to produce a system with the same solutions? • How do I solve a system of linear equations graphically? • How do I graph a linear inequality in two variables? • How do I use graphs to represent and solve real-world equations and inequalities? • Why is the concept of a function important and how do I use function notation to show a variety of situations modeled by functions? • How do I interpret functions that arise in applications in terms of context? • How do I use different representations to analyze linear functions? • How do I build a linear function that models a relationship between two quantities? • How do I interpret expressions for functions in terms of the situation they model? • How do I interpret key features of graphs in context? • Why are sequences functions? • How do I write recursive and explicit formulas for arithmetic sequences?
Essential Unit Vocabulary	
<ul style="list-style-type: none"> • Algebra: The branch of mathematics that deals with relationships between numbers, utilizing letters and other symbols to represent specific sets of numbers, or to describe a pattern of relationships between numbers. • Arithmetic Sequence. A sequence of numbers in which the difference between any two 	

consecutive terms is the same.

- **Average Rate of Change.** The change in the value of a quantity by the elapsed time. For a function, this is the change in the y -value divided by the change in the x -value for two distinct points on the graph.
- **Coefficient.** A number multiplied by a variable in an algebraic expression.
- **Constant Rate of Change.** With respect to the variable x of a linear function $y = f(x)$, the constant rate of change is the slope of its graph.
- **Continuous.** Describes a connected set of numbers, such as an interval.
- **Discrete.** A set with elements that are disconnected.
- **Domain.** The set of x -coordinates of the set of points on a graph; the set of x -coordinates of a given set of ordered pairs. The value that is the input in a function or relation.
- **End Behaviors.** The appearance of a graph as it is followed farther and farther in either direction.
- **Equation:** A number sentence that contains an equals symbol.
- **Explicit Formula.** A formula that allows direct computation of any term
- **Expression:** A mathematical phrase involving at least one variable and sometimes numbers and operation symbols.
- **Expression.** Any mathematical calculation or formula combining numbers and/or variables using sums, differences, products, quotients including fractions, exponents, roots, logarithms, functions, or other mathematical operations.
- **Factor.** For any number x , the numbers that can be evenly divided into x are called factors of x . For example, the number 20 has the factors 1, 2, 4, 5, 10, and 20.
- **Inequality:** Any mathematical sentence that contains the symbols $>$ (greater than), $<$ (less than), \leq (less than or equal to), or \geq (greater than or equal to).
- **Interval Notation.** A notation representing an interval as a pair of numbers. The numbers are the endpoints of the interval. Parentheses and/or brackets are used to show whether the endpoints are excluded or included.
- **Linear Function.** A function with a constant rate of change and a straight line graph.
- **Linear Model.** A linear function representing real-world phenomena. The model also represents patterns found in graphs and/or data.
- **Ordered Pair:** A pair of numbers, (x, y) , that indicate the position of a point on a Cartesian plane.
- **Parameter.** The independent variable or variables in a system of equations with more than one dependent variable.
- **Range.** The set of all possible outputs of a function.
- **Recursive Formula.** A formula that requires the computation of all previous terms
- **Slope.** The ratio of the vertical and horizontal changes between two points on a surface or a line.
- **Substitution:** To replace one element of a mathematical equation or expression with another.
- **Term.** A value in a sequence--the first value in a sequence is the 1st term, the second value is the 2nd term, and so on; a term is also any of the monomials that make up a polynomial.
- **Variable:** A letter or symbol used to represent a number.
- **X-intercept.** The point where a line meets or crosses the x -axis
- **Y-intercept.** The point where a line meets or crosses the y -axis

Next step, create assessments and engaging learning experiences