Mohawk Local Schools Algebra 1

Quarter-2 Curriculum Guide

Mathematical Practices

1. Make Sense of Problems and Persevere in Solving them
2. Reasoning Abstractly & Quantitatively
3. Construct Viable Arguments and Critique the Reasoning of Others
4. Model with Mathematics
5. Use Appropriate Tools Strategically
6. Attend to Precision
7. Look for and Make use of Structure
8. Look for and Express Regularity in Repeated Reasoning

Critical Areas of Focus Being Addressed:

- Numbers, Quantities, Equations and Expressions
- Functions
- Statistics

Content Statements Addressed and Whether they are Knowledge, Reasoning, Performance Skill, or Product: (DOK1) (DOK2) (DOK3) (DOK4)	Underpinning Targets Corresponding with Standards and Whether they are Knowledge, Reasoning, Performance Skill, or Product: "I can…..", "Students Will Be Able To……."
A.CED.1 (DOK2) Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions	(DOK 1) I can… • Solve linear and exponential equations in one variable. • Solve inequalities in one variable. • Describe the relationships between the quantities in the problem (for example, how the quantities are changing or growing with respect to each other); express these relationships using mathematical operations to create an appropriate equation or inequality to solve. (DOK 2) I can… • Create equations (linear and exponential) and inequalities in one variable and use them to solve problems. • Create equations and inequalities in one variable to model real-world situations. • Compare and contrast problems that can be solved by different types of

	equations (linear & exponential).
A.CED.2 (DOK 2) Create equations in two or more variables to represent relationships between quantities, graph equations on a coordinate axes with labels and scales.	(DOK 1) I can… • Identify the quantities in a mathematical problem or realworld situation that should be represented by distinct variables and describe what quantities the variables represent. • Graph one or more created equation on a coordinate axes with appropriate labels and scales (DOK 2) I can… • Create at least two equations in two or more variables to represent relationships between quantities • Justify which quantities in a mathematical problem or real-world situation are dependent and independent of one another and which operations represent those relationships. • Determine appropriate units for the labels and scale of a graph depicting the relationship between equations created in two or more variables.
A.REI.1 (DOK 2) Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	(DOK 1) I can • Know that solving an equation means that the equation remains balanced during each step. • Recall the properties of equality. • Explain why, when solving equations, it is assumed that the original equation is equal. (DOK 2) I can … • Determine if an equation has a solution. • Choose an appropriate method for solving the equation. • Justify solution(s) to equations by explaining each step in solving a simple equation using the properties of equality, beginning with the assumption that the original equation is equal. • Construct a mathematically viable argument justifying a given, or self-generated, solution method.
A.REI.3 (DOK 2) Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	(DOK 1) I can … • Recall properties of equality • Solve multi-step equations in one variable • Solve multi-step inequalities in one variable (DOK 2) I can … • Determine the effect that rational coefficients have on the inequality symbol and use this to find the solution set. • Solve equations and inequalities with coefficients represented by letters.
A.REI.10 (DOK 1) Understand that the graph of an equation in two variables is the set of all its	(DOK 1) I can… • Recognize that the graphical representation of an equation in two

solutions plotted in the coordinate plane, often forming a curve (which could be a line).	variables is a curve, which may be a straight line. • Explain why each point on a curve is a solution to its equation.
S.ID.6a (DOK 2) Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear and exponential models. (Statistics and Probability is a Modeling Conceptual Category.)	(DOK 1) I can… • Represent data on a scatter plot (2 quantitative variables). • Fit a given function class (e.g. linear, exponential) to data. (DOK 2) I can… • Using given scatter plot data represented on the coordinate plane, informally describe how the two quantitative variables are related. • Determine which function best models scatter plot data represented on the coordinate plane, and describe how the two quantitative variables are related. • Use functions fitted to data to solve problems in the context of the data.
S.ID.6c (DOK 2) Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. c. Fit a linear function for a scatter plot that suggests a linear association. (Statistics and Probability is a Modeling Conceptual Category.)	(DOK 2) I can… • Fit a linear function for a scatter plot that suggests a linear association.
S.ID.7 (DOK 2) Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. (Statistics and Probability is a Modeling Conceptual Category.)	(DOK 2) I can… • Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
S.ID.8 (DOK 2) Compute (using technology) and interpret the correlation coefficient of a linear fit. (Statistics and Probability is a Modeling Conceptual Category.)	(DOK 1) I can… • Compute (using technology) the correlation coefficient of a linear fit. • Define the correlation coefficient (DOK 2) I can… • Interpret the correlation coefficient of a linear fit as a measure of how well the data fit the relationship.
F.IF.2 (DOK 2) Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context	(DOK 1) I can… • Identify mathematical relationships and express them using function notation. • Define a reasonable domain, which depends on the context and/or mathematical situation, for a function focusing on linear and exponential functions. • Evaluate functions at a given input in the domain, focusing on linear and exponential functions. (DOK 2) I can… • Interpret statements that use functions in terms of real world situations, focusing on linear and exponential functions.
F.IF.4 (DOK 2) For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs	(DOK 1) I can… • Define and recognize the key features in tables and graphs of linear and exponential functions: intercepts; intervals where the function is

showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*(*Modeling standard)	increasing, decreasing, positive, or negative, and end behavior. • Identify whether the function is linear or exponential, given its table or graph. (DOK 2) I can… • Interpret key features of graphs and tables of functions in the terms of the contextual quantities the function represents. • Sketch graphs showing key features of a function that models a relationship between two quantities from a given verbal description of the relationship.
F.IF.5 (DOK 2) Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*(*Modeling standard)	(DOK 1) I can… • Given the graph or a verbal/written description of a function, identify and describe the domain of the function. • Identify an appropriate domain based on the unit, quantity, and type of function it describes. (DOK 2) I can… • Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. • Explain why a domain is appropriate for a given real-world situation.
F.IF.6 (DOK 2) Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.*(Modeling standard)	(DOK 1) I can… • Recognize slope as an average rate of change. • Calculate the average rate of change of a function (presented symbolically or as a table) over a specified interval. • Estimate the rate of change from a linear or exponential graph (DOK 2) I can… • Interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval.
F.IF.7a (DOK 1) Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*(Modeling standard) a. Graph linear and quadratic functions and show intercepts, maxima, and minima	(DOK 1) I can… • Graph linear functions by hand in simple cases or using technology for more complicated cases and show/label intercepts of the graph.
F.LE.1a (DOK 2) Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals; and that exponential functions grow by equal factors over equal intervals.	(DOK 1) I can… • Recognize that linear functions grow by equal differences over equal intervals. • Recognize that exponential functions grow by equal factors over equal intervals. (DOK 2) I can… • Distinguish between situations that can be modeled with linear functions and with exponential functions to solve mathematical and real-world problems. • Prove that linear functions grow by equal differences over equal

	intervals. • Prove that exponential functions grow by equal factors over equal intervals.
F.LE.1b (DOK 1) Distinguish between situations that can be modeled with linear functions and with exponential functions. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	(DOK 1) I can… • Recognize situations in which one quantity changes at a constant rate per unit (equal differences) interval relative to another to solve mathematical and real-world problems.
F.LE.2 (DOK 2) Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table)	(DOK 1) I can… • Recognize arithmetic sequences can be expressed as linear functions. • Recognize geometric sequences can be expressed as exponential functions. • Construct linear functions, including arithmetic sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). • Construct exponential functions, including geometric sequences, given a graph, a description of a relationship, or two input output pairs (include reading these from a table).