FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT

Integrated Math 1

Board Approval Date: May 20, 2021	**Course Length: 2 Semesters**
Grading: A-F	**Credits: 5 Credits per Semester**
Proposed Grade Level(s): 9, 10, 11, 12	**Subject Area: Mathematics** **Elective Area (if applicable):**
Prerequisite(s): **"C" or better in Course 3** **Diagnostic scores 6th grade or higher**	**Corequisite(s):** **N/A**
CTE Sector/Pathway: N/A	
Intent to Pursue 'A-G' College Prep Status: Yes	
A-G Course Identifier: (c) Mathematics	
Graduation Requirement: Yes	
Course Intent: District Course **Program (if applicable):**	
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COURSE DESCRIPTION: (Online Course)

Mathematics I is an integrated math course designed to formalize and extend the mathematics that students learned in the middle grades. The standards are based on the Common Core State Standards for Mathematics and include topics from the conceptual categories: Number and Quantity, Algebra, Functions, Geometry, and Statistics and Probability. Instructional time will focus on six critical areas: (1) extend understanding of numerical manipulation to algebraic manipulation; (2) synthesize

understanding of function; (3) deepen and extend understanding of linear relationships; (4) apply linear models to data that exhibit a linear trend; (5) establish criteria for congruence based on rigid motions; and (6) apply the Pythagorean Theorem to the coordinate plane.

DETAILED UNITS OF INSTRUCTION:

Unit Number/Title	Unit Essential Questions	Examples of Formative Assessments	Examples of Summative Assessment
1. Solving Equations and Inequalities	Why are the properties of real numbers important when solving equations and inequalities? What is the first step when converting real world situations into equations? What is an inequality? How should we apply inverse operations to solve equations and or inequalities? How should we deal with negative coefficients, when solving inequalities? How can we graph solutions to multi-step inequalities?	*Journal (Algebraic Properties and Expressions) *Journal (Measurement and Units) *Modeling (Solving Linear Equations) *Modeling (Multistep Linear Equations)	*Performance Task: A Trade Show Booth *Unit Test
2. Functions	When do relations represent functions? What is function notation? What are the key features of a function and how are they identified? How are linear functions graphed? Why are linear equations represented in more than one form? What information does the equation of a line give? How can you make predictions based on a scatter plot?	*Journal (Domain and Range) *Modeling (Graphs of Functions)	*Discuss (Relating to Functions) *Unit Test
3. Linear Equations	How do linear equations, slopes, intercepts, and points on a line help us	*Journal (Slope) *Modeling (Slope-Intercept Equation of a Line)	*Discuss: A Slippery Slope *Unit Test

	solve relevant problems and make predictions?		
4. Systems of Linear Equations	What does the number of solutions (none, one or infinite) of a system of linear equations represent? What are the advantages and disadvantages of solving a system of linear equations graphically versus algebraically? How can systems of equations be used to represent situations and solve problems?	*Journal (Two-Variable Systems: Elimination) * Modeling (Two-Variable Systems of Inequalities)	*Discuss: What's the Solution? *Unit Test
5. Exponents and Exponential Functions	How can you simplify expressions involving exponents? What characterizes exponential growth and decay? What are real world models of exponential growth and decay? How can one differentiate an exponential model from a linear model given a real world set of data?	*Modeling (Exponential Functions) *Journal (Graphs of Exponential Functions)	*Discuss: Exponential Potential *Unit Test
6. Sequences and Functions	What is a sequence? How can patterns be represented? What are the advantages and disadvantages of a recursive rule compared to an explicit rule?	*Journal (Arithmetic Sequences) *Modeling (Geometric Sequences)	*Discuss: What's the Difference? *Unit Test
7. Foundations of Geometry	How can you represent a three-dimensional figure with a two-dimensional drawing? How can you find the lengths and midpoints of segments and the measures of angles?	*Modeling (Logo Design) *Journal (Consecutive Angle Theorem)	*Unit Test

8. Triangles	How can you describe the relationships among the angles of a triangle? How can you find the sum of the interior angle measures and the sum of the exterior angle measures of a polygon? How can you use angles to tell whether triangles are similar?	*Modeling (Similarity Theorems)	*Performance Task: The Parallax Problem *Unit Test
9. Coordinate Geometry	How do the tools of geometry such as definitions, theorems, and properties foster an increasing ability to spatially visualize and logically deduce conclusions? What is the relationship between units and physical quantity?	*Journal (The Distance Formula) *Modeling (The Rescue Ship)	*Discuss: Graph Paper Puzzles *Unit Test
10. Constructions and Transformations	How can you change a figure's position without changing its size and shape? How do you use and apply properties of triangles to solve problems?	*Modeling (Constructing a Square) *Journal (Transformations)	*Unit Test
11. Descriptive Statistics	How can you tell when to use each measure of central tendency to represent a data set? What influences our decision when choosing the best graph for a data set? How can we make sure a sample is valid and does not display bias? How can we make generalizations from a sample to a population? In what ways can we describe the spread of data?	*Modeling (Dot Plots, Box Plots, and Histograms) *Journal (Describing Distributions)	*Discuss: Not All Plots Are Suspicious *Unit Test

12. Data and Mathematical Modeling	What types of questions can be answered by analyzing data? When is data analysis valid and what is its purpose? How can I become a critical interpreter of data? How does probability relate to the real world?	*Modeling (Fitting Linear Models to Data) *Journal (Nonlinear Models)	*Discuss: The Latest Model *Unit Test

ESSENTIAL STANDARDS:

Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. (N.Q.1)
Interpret parts of an expression, such as terms, factors, and coefficients (A.SSE.1a)
Create equations and inequalities in one variable including ones with absolute value and use them to solve problems (A.CED.1)
Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. (A.CED.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. (A.REI.1)
Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. (A.REI.6)
Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality) and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. (A.ERI.12)
Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input. The graph of is the graph of the equation y=f(x). (F.IF.1)
Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. (F.IF.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 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. (F.IF.4)
Supporting: Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h 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. (F.IF.5)
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. (F.IF.6)
Graph linear and quadratic functions and show intercepts, maxima, and minima. (F.IF.7a)
Supporting: Graph exponential functions (F.IF.7e)

Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). (F.IF.9)
Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms. (F.BF.2)
Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. (F.LE.1a)
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). (F.LE.2)
Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. (F.LE.3)
Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc. (G.CO.1)
Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another. (G.CO.5)
Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent. (G.CO.7)
Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point). (G.GPE.5)
Represent data on two quantitative variables on a scatter plot and describe how the variables are related. (S.ID.6)
Supporting: Represent data with plots on the real number line (dot plots, histograms, and box plots). (S.ID.1)
Supporting: Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. (S.ID.2)
Supporting: Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). (S.ID.3)
Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. (S.ID.7)

RELEVANT STANDARDS AND FRAMEWORKS, CONTENT/PROGRAM SPECIFIC STANDARDS:

Link to Common Core Standards (if applicable):
Educational standards describe what students should know and be able to do in each subject in each grade. In California, the State Board of Education decides on the standards for all students, from kindergarten through high school.
https://www.cde.ca.gov/be/st/ss/documents/ccssmathstandardaug2013.pdf

Link to Framework (if applicable):
Curriculum frameworks provide guidance for implementing the content standards adopted by the State Board of Education (SBE). Frameworks are developed by the Instructional Quality Commission, formerly known as the Curriculum Development and Supplemental Materials Commission, which also reviews and recommends textbooks and other instructional materials to be adopted by the SBE.
https://www.cde.ca.gov/ci/ma/cf/documents/mathfwmathematics1jl.pdf

Link to Subject Area Content Standards (if applicable):
Content standards were designed to encourage the highest achievement of every student, by defining the knowledge, concepts, and skills that students should acquire at each grade level.

Link to Program Content Area Standards (if applicable):
Program Content Area Standards applies to programs such as International Baccalaureate, Advanced Placement, Career and Technical Education, etc.

TEXTBOOKS AND RESOURCE MATERIALS:

Textbooks

Board Approved	Pilot Completion Date (If applicable)	Textbook Title	Author(s)	Publisher	Edition	Date
Yes		*Apex: Mathematics I*		Apex Online courses	2019	

Other Resource Materials
N/A

Supplemental Materials

Board approved supplemental materials (Including but not limited to: Film Clips, Digital Resources, Supplemental texts, DVDs, Programs (Pebble Creek, DBQ, etc.):
N/A