

Course Title:	Accelerated 7 Math
Grade(s):	7

Course Description
In Accelerated 7 Math, instructional time focuses on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and formulating and reasoning about expressions and linear equations, and solving linear equations and systems of linear equations; (3) solving problems involving scale drawings and informal geometric constructions, working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume, and analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence; and (4) drawing inferences about populations based on samples. Course Units: 1. Rigid Transformations & Congruence 2. Scale Drawings, Similarity & Slope 3. Proportional Relationships 4. Proportional Relationships & Percent Increase / Percent Decrease 5. Rational Numbers 6. Expressions, Equations, & Inequalities 7. Expressions and more Equations 8. Data Sets, Distributions, & Sampling 9. Linear Relationships 10. Functions and Volume 11. Exponents and Scientific Notation
Approved Curricular Materials/Textbook(s)
IM 360 Online Resource

Unit Title	Unit Description (Include Unit Objectives)	Unit Pacing
Unit 1: RIGID TRANSFORMATIONS & CONGRUENCE	In this unit, students learn to understand and use the terms “reflection,” “rotation,” “translation,” recognizing what determines each type of transformation, e.g., two points determine a translation. They learn to understand and use the terms “transformation” and “rigid transformation.” They identify and describe translations, rotations, and reflections, and sequences of these, using the terms “corresponding sides” and “corresponding angles,” and recognizing that lengths and angle measures are preserved. They draw images of figures under rigid transformations on and off square grids and the coordinate plane. They use rigid transformations to generate shapes and to reason about measurements of figures. They learn to understand congruence of plane figures in terms of rigid transformations. They recognize when one plane figure is congruent or not congruent to another. Students use the definition of “congruent” and properties of congruent figures to justify claims of congruence or non-congruence. • Rigid Transformations • Properties of Rigid Transformations • Congruence • Angles in a Triangle	21 Days (September)
Unit 2: SCALE DRAWINGS, SIMILARITY & SLOPE	In this unit, students learn to understand and use the terms “scaled copy,” “to scale,” “scale factor,” “scale drawing,” and “scale,” and recognize when two pictures or plane figures are or are not scaled copies of each other. They use tables to reason about measurements in scaled copies. They make, interpret, and reason about scale drawings. These include maps and floor plans that have scales with and without units. Students then refine their thinking about scaled copies as they learn to understand and use the term “dilation” and to recognize that a dilation is determined by a point called the “center” and a number called the “scale factor.” They learn that under a dilation, the image of a circle is a circle and the image of a line is a line parallel to the original. They draw images of figures under dilations on and off the coordinate plane. They describe correspondences between a figure and its dilated image, and recognize that angle measures are preserved, but lengths are multiplied by the scale factor. They learn to understand similarity of plane figures in terms of rigid transformations and dilations. They learn to recognize when one plane figure is similar or not similar to another. They use the definition of “similar” and properties of	22 Days (October)

	similar figures to justify claims of similarity or non-similarity. Students learn the terms “slope” and “slope triangle,” and use the similarity of slope triangles on the same line to understand that any two distinct points on a line determine the same slope. • Scaled Copies • Scale Drawings • Dilations • Similarity • Slope	
Unit 3: PROPORTIONAL RELATIONSHIPS	In this unit, students learn to understand and use the terms “proportional,” “constant of proportionality,” and “proportional relationship,” and recognize when a relationship is or is not proportional. They represent proportional relationships with tables, equations, and graphs. Students use these terms and representations in reasoning about situations that involve constant speed, unit pricing, and measurement conversions. • Representing Proportional Relationships with Tables • Representing Proportional Relationships with Equations • Comparing Proportional Relationships and Non-Proportional Relationships • Representing Proportional Relationships with Graphs	22 Days (November)
Unit 4: PROPORTIONAL RELATIONSHIPS & PERCENT INCREASE/DECREASE	In this unit, students use ratios, scale factors, unit rates (also called constants of proportionality), and proportional relationships to solve multi-step, real-world problems that involve fractions and percentages. They use long division to write fractions presented in the form $\frac{a}{b}$ as decimals, e.g., $\frac{11}{30} = 0.3\overline{6}$. They learn to understand and use the terms “repeating decimal,” “terminating decimal,” “percent increase,” “percent decrease,” “percent error,” and “measurement error.” They represent amounts and corresponding percent rates with double number line diagrams and tables. They use these terms and representations in reasoning about situations involving sales taxes, tips, markdowns, markups, sales commissions, interest, depreciation, and scaling a picture. Students use equations to represent proportional relationships in which the constant of proportionality arises from a percentage, e.g., relationship between price paid and amount of sales tax paid.	15 Days (December)

	• Proportional Relationships with Fractions • Percent Increase and Decrease • Applying Percentages	
Unit 5: RATIONAL NUMBERS	In this unit, students interpret signed numbers in contexts (e.g., temperature, elevation, deposit and withdrawal, position, direction, speed and velocity, percent change) together with their sums, differences, products, and quotients. ("Signed numbers" include all rational numbers, written as decimals or in the form $\frac{a}{b}$). Students use tables and number line diagrams to represent sums and differences of signed numbers or changes in quantities represented by signed numbers such as temperature or elevation, becoming more fluent in writing different numerical addition and subtraction equations that express the same relationship. They compute sums and differences of signed numbers. They plot points in the plane with signed number coordinates, representing and interpreting sums and differences of coordinates. They view situations in which objects are traveling at constant speed (familiar from previous units) as proportional relationships. For these situations, students use multiplication equations to represent changes in position on number line diagrams or distance traveled, and interpret positive and negative velocities in context. They become more fluent in writing different numerical multiplication and division equations for the same relationship. • Interpreting Negative Numbers • Adding and Subtracting Rational Numbers • Multiplying and Dividing Rational Numbers • Four Operations with Rational Numbers • Solving Equations when there are Negative Numbers	20 Days (January)
Unit 6: EXPRESSIONS, EQUATIONS & INEQUALITIES	In this unit, students expand on their previous work writing and solving equations of the form $px + q = r$ and $p(x + q) = r$ where p, q, and r are rational numbers. They solve linear inequalities in one variable and represent their solutions on the number line, understanding that there may be infinitely many solutions, and show solutions symbolically and on the number line. They understand and use the terms "less than or equal to" and "greater than or equal to," and the corresponding symbols. They generate expressions that are equivalent to a given numerical or linear expression. Students also write and solve linear equations in one variable. These include equations in which the variable occurs on each side of the equal sign, and equations	20 Days (January - February)

	with no solutions, exactly one solution, and infinitely many solutions. They learn that any one such equation is false, true for one value of the variable, or true for all values of the variable. They interpret solutions in the contexts from which the equations arose. • Inequalities • Writing Equivalent Expressions • Equations in One Variable	
Unit 7: EXPRESSIONS & MORE EQUATIONS	In this unit, students work with writing equivalent expressions and use reasoning to solve equations, including equations that have a variable on both sides of the equal sign. This builds on students' previous work solving equations of the form $px + q = r$ or $p(x + q) = r$. Students will build on this work in future units when they solve systems of linear equations.	14 Days (February - March)
Unit 8: DATA SETS, DISTRIBUTIONS, & SAMPLING	In this unit, students begin to quantify their understanding of center and spread by finding values for the mean and mean absolute deviation (MAD). The mean is explained as a way of fairly sharing as well as a balance point to give additional intuition into the measure of center. Students are then introduced to probability, where they learn how to quantify the likelihood of events. First, they list the sample space for a chance experiment and use it to assign values to the likelihood, such as 50% or $\frac{1}{2}$. Then students recognize these values as the fraction of times an event is likely to happen after many repeated trials of the chance experiment.	20 Days (March)
Unit 9: LINEAR RELATIONSHIPS	This unit introduces students to nonproportional linear relationships by building on earlier work around similarity and slope. Then students solve systems of linear equations using graphic and algebraic methods. Students advance their understanding of lines by examining slopes in the context of data. Lastly, they use scatter plots and fitted lines to analyze numerical data.	30 Days (April)
Unit 10: FUNCTIONS & VOLUME	In this unit, students are introduced to the concept of a function. They learn to understand and use the terms "input," "output," and "function," e.g., "temperature is a function of time." They describe functions as increasing or decreasing between specific numerical inputs, and they consider the inputs of a function to be values of its independent variable and its outputs to be values of its dependent variable. (The terms "Independent variable" and "dependent variable" were introduced in grade 6.)	26 Days (May)

	They use tables, equations, and graphs to represent functions, and describe information presented in tables, equations, or graphs in terms of functions. In working with linear functions, students coordinate and synthesize their understanding of “constant of proportionality”, “rate of change” and “slope”, and increasing and decreasing. Students perceive similarities in structure between pairs of known and new volume formulas: for a rectangular prism and a cylinder; and for a cylinder and a cone. Students rearrange these formulas to show functional relationships and use them to reason about how the volume of a figure changes as another measurement changes, e.g., the height of a cylinder is proportional to its volume; if the radius of a cylinder triples, its volume becomes nine times larger. Students analyze and describe cross-sections of prisms, pyramids, and polyhedra. They understand and use the formula for the volume of a right rectangular prism and solve problems involving area, surface area, and volume. • Inputs and Outputs • Representing and Interpreting Functions • Linear Functions and Rates of Change • Cylinders and Cones • Spheres and Dimensions	
Unit 11: EXPONENTS & SCIENTIFIC NOTATION	In grade 6, students studied whole-number exponents. In this unit, they extend the definition of exponents to include all integers, and in the process codify the properties of exponents. They apply these concepts to the base-ten system, and learn about orders of magnitude and scientific notation in order to represent and compute with very large and very small quantities. • Exponent Review • Exponent Rules • Scientific Notation	16 Days (June)