

# Math MS Accelerated Level 2/3 (9165) Course Overview Curriculum Document

## Course Description

Math MS Accelerated Level 2/3 is a rigorous and fast-paced course that serve as an advanced mathematics pathway for 7th grade students who have met the 6th Grade Math Acceleration Placement criteria of consistently earning 4's on the progress report for essential math standards and scoring in the mid to late grade range on the math iReady. Students in this pathway will have the opportunity to demonstrate proficiency in 7th and 8th grade mathematics standards as well as grade Algebra 1 standards. In this course, students are introduced to equations and expressions including finding solutions for linear equations in one variable and basic equations involving exponents. Student understanding of ratios and rates combined with a basic understanding of equations leads students to study proportional relationships with special emphasis on circumference and area of a circle as an example and nonexample of proportional relationships. This is followed by looking at percentage concepts and applications such as sales tax, tipping, and markup. They learn about rational numbers less than zero expanding their understanding of arithmetic to negative numbers. A brief study of data and statistics provide transition to rigid transformation. They study rigid transformations and congruence, then scale drawings, dilations, and similarity (this provides background for understanding the slope of a line in the coordinate plane). Next, they expand their ability to work with linear equations in one and two variables and deepen their understanding of equivalent expressions. They then build on their understanding of proportional relationships from the previous course to study linear relationships. They express linear relationships using equations, tables, and graphs, and make connections across these representations. Building on their understanding of a solution to an equation in one or two variables, they understand what is meant by a solution to a system of equations in two variables. In this course, students will review essential 6th grade standards and be introduced to both 7th and 8th grade content standards to prepare for Algebra in 8th grade.

Credits	Prerequisites
N.A.	6th grade Math Acceleration Placement
Board Approved	Revised
June 2013	May 2019, June 2023

## Required Assessments

District-wide, standards-based common summative assessments

## Textbooks/Resources

Illustrative Mathematics. (2020). *Middle School Math: Accelerated Grade 6*. Kendall Hunt. [Unit 4 to 8]  
 Illustrative Mathematics. (2020). *Middle School Math: Accelerated Grade 7*. Kendall Hunt. [Unit 1 to 5]

## Course Essential Understandings

- As a result of successfully completing this course, students will understand that:*
- All rational numbers, with a strong emphasis on positives and negatives, are used to solve problems, and can be explained on a number line.
  - The ratios of circle measurements can be rewritten into equations. Working simple equations forwards and backwards solve different problems.
  - The graphs, tables, and equations of proportional relationships are all used to solve problems.
  - Numbers in a variety of forms, percentage, fractions, and decimals can be used to solve different problems.
  - Variable expressions can be written in different but equal ways to help make calculations faster. Equal sides of equations can be changed together to solve more complex equations and inequalities.
  - Angles, surface area, and volume can be measured and calculated in different ways.
  - Prediction and comparison is a purpose of probability and statistics by evaluating samples, averages, and probability ratios.

## Course Relevance Questions

- What thought-provoking questions will foster inquiry, meaning-making, and transfer?*
- How can the relationship between quantities, how one number compares to another, be used to solve problems?
  - When are variables used to stand for numbers that can change or used to stand for a single unknown number?

## Unit Overviews

Unit Name	Unit Description	Unit Relevance Question	Instructional Standards	Assessed Standards
Unit 1 Equations and Expressions	<b>(Accelerated Grade 6: Unit 4 Equations and Expressions)</b> This unit is a review of Grade 6 concepts. Students begin the unit by working with linear equations that have single occurrences of one variable. They represent relationships with tape diagrams and with linear equations, explaining correspondences between these representations. They examine values that make a given linear equation true or false, and what it means for a number to be a solution to an equation. Lessons included: equations in one variable, equal and equivalent, expressions with exponents, and relationships between quantities.	What are equations and expressions, and how are they used to reason about real-world situations?	M.6.EE.B M.6.EE.B.5 M.6.EE.B.6 M.6.EE.B.7 M.6.NS.B.3 M.6.EE.A.2.a M.6.EE.A.2.c M.6.RP.A.3.c M.6.EE.A.2 M.6.EE.A.3 M.6.EE.A.4 M.6.EE.A M.6.EE.A.1 M.6.EE.A.2.a M.6.G.A.4 M.6.EE.C.9 M.6.RP.A.1 M.6.RP.A.3.a M.6.RP.A.3.b	M.6.EE.B M.6.EE.C
Unit 2 Proportional Relationships	<b>(Accelerated Grade 6: Unit 5 Proportional Relationship)</b> In this unit, students develop the idea of a proportional relationship based on the idea of equivalent ratios in an earlier unit. Proportional relationships prepare the way for the study of linear functions in later courses. This unit focuses on	What is proportional relationship and how is it represented?	M.7.RP.A.2 M.7.RP.A.2.c M.7.RP.A M.7.RP.A.2.b M.7.G.B.6	M.7.RP.A

	understanding what a proportional relationship is, how it is represented, and what types of contexts give rise to proportional relationships. Lessons included: representing proportional relationships with equations, comparing proportional and nonproportional relationships, representing proportional relationships with graphs, circumference of a circle, and area of a circle.		M.7.RP.A.1 M.7.RP.A.2.a M.7.G.A M.7.G.A.1 M.7.G.A.2 M.7.G.B.4	
Unit 3 Percentage Increase and Decrease	<b>(Accelerated Grade 6: Unit 6 Percentage Increase and Decrease)</b> In this unit, students deepen their understanding of ratios, unit rates (also called constants of proportionality), and proportional relationships; using them to solve multi-step problems that are set in a wide variety of contexts that involve fractions and percentages. Lessons included: proportional relationships with fractions, percent increase and decrease, and applying percentages.	How does percent increase and decrease apply to everyday situations?	M.7.RP.A.2 M.7.NS.A.2.d M.7.RP.A.3	M.7.RP.A
Unit 4 Rational Numbers	<b>(Accelerated Grade 6: Unit 7 Rational Numbers)</b> In this unit, students are introduced to signed numbers and plot points in all four quadrants of the coordinate plane for the first time. They extend the operations of addition, subtraction, multiplication, and division from fractions to all rational numbers, written as decimals or in the form $\frac{a}{b}$ . Lessons included: negative numbers and absolute value, adding and subtracting rational numbers, the coordinate plane, multiplying and dividing rational numbers, and equations with rational numbers.	What are signed numbers and how are they used to denote changes in the environment (temperature, elevation, sea level, etc)?	M.6.NS.C M.6.NS.C.5 M.6.NS.C.6 M.7.NS.A.1 M.6.NS.C.7.a M.6.NS.C.7.b M.6.NS.C.6.a M.6.NS.C.6.b M.6.NS.C.6.c M.6.NS.C.7 M.6.NS.C.7.c M.6.NS.C.7.d M.6.NS.C.8 M.7.NS.A.1 M.7.NS.A.1.a M.7.NS.A.1.b M.7.NS.A.1.c M.7.NS.A.1.d M.7.NS.A.3 M.6.G.A.3 M.7.NS.A.2.a M.7.RP.A M.7.NS.A.2.c M.7.NS.A.2 M.7.NS.A.2.b M.7.EE.B.3 M.7.RP.A.2 M.7.EE.B.4 M.7.EE.B.4.a M.7.NS.A.3	M.7.NS.A
Unit 5 Data Sets and Distributions	<b>(Accelerated Grade 6: Unit 8 Data Sets and Distributions)</b> This unit is an overview of some key statistical concepts. Students are introduced to visual representations of data and their distributions, ways to quantify measures of center and measures of variability, and sampling from a population when access to all of the relevant data is not possible. Lessons included: dot plot and histograms, measures of center and variability, sampling, and probabilities of single step events.		M.6.SP.A.1 M.6.SP.B.4 M.6.SP.B.5.a M.6.SP.B.5.b M.6.SP.A.2 M.6.SP.B M.6.SP.A.2 M.6.SP.A.3 M.6.SP.B.5.c M.6.SP.B.5.d M.7.SP.A.1 M.7.SP.B M.7.SP.A M.7.SP.A.2 M.7.SP.C.7 M.7.SP.B.4 M.7.SP.C.5 M.7.SP.C.6 M.7.SP.C.7.a M.7.RP.A M.7.SP.C.8.a M.7.SP.C.8.b M.7.SP.C.8.c	M.7.SP.C
Unit 6 Rigid Transformations	<b>(Accelerated Grade 7: Unit 1 Rigid Transformations)</b> In this unit, students look at pairs of cartoons, each of which illustrates a translation, rotation, or reflection. Students describe in their own words how to move one cartoon figure onto another. As the unit progresses, they solidify their understanding of these transformations, increase the precision of their descriptions, and begin to use associated terminology and recognize what determines each type of transformation. Lessons included: rigid	What patterns can we find between pre-images and their images formed through rigid transformations?  How does knowing two figures are congruent or similar help one to solve problems?	M.8.G.A.1 M.8.G.A.3 M.8.G.A.1.a M.8.G.A.1.b M.8.G.A.1.c M.8.G.A.2 M.7.G.B.5 M.8.G.A.5 M.8.G.A	M.8.G.A M.7.G.B

	transformations, properties of rigid transformations, congruence, angles in a triangle, and drawing polygons with given conditions.			
Unit 7 Scale Drawings, Similarity, and Slope	<p><b>(Accelerated Grade 7: Unit 2 Scale Drawings, Similarity, and Slope)</b></p> <p>In this unit, students study scaled copies of pictures and plane figures, then apply what they have learned to scale drawings, such as maps and floor plans. This work leads to making scaled copies using a dilation given a center of dilation and a scale factor. Combining dilations with transformations leads students to defining similarity and determining if two shapes are similar to one another through a series of transformations and a dilation. Lessons included: scaled drawings, dilations, similarity, and slope.</p>	What is a scaled copy and how do you identify a scaled copy of a figure?	M.7.G.A.1 M.8.G.A M.8.G.A.3 M.8.G.A.2 M.8.G.A.4 M.8.G.A.5 M.8.EE.B.6	M.7.G.A M.8.EE.B
Unit 8 Writing and Solving Equations	<p><b>(Accelerated Grade 7: Unit 3 Writing and Solving Equations)</b></p> <p>In this unit, students solve equations of the forms <math>px + q = r</math> and <math>p(x + q) = r</math> where <math>p</math>, <math>q</math>, and <math>r</math> are rational numbers. The unit starts with students representing relationships of two quantities with tape diagrams and with equations, and explaining correspondences between the two types of representations. They begin by examining correspondences between descriptions of situations and tape diagrams, then draw tape diagrams to represent situations in which the variable representing the unknown is specified. Next, they examine correspondences between equations and tape diagrams, then draw tape diagrams to represent equations, noticing that one tape diagram can be described by different (but related) equations. At the end of the section, they draw tape diagrams to represent situations in which the variable representing the unknown is not specified, then match the diagrams with equations. Lessons included: representing situations of the form <math>px + q = r</math> and <math>p(x + q) = r</math> and solving equations of the form <math>px + q = r</math> and <math>p(x + q) = r</math> and problems that lead to those equations.</p>	What is a tape diagram? How do you represent and solve equations? How do you use equations to solve problems?	M.7.EE.B.3 M.7.EE.B.4.a M.7.EE.B.4 M.7.EE.A.2 M.7.G.B.5	
Unit 9 Inequalities, Expressions, and Equations	<p><b>(Accelerated Grade 7: Unit 4 Inequalities, Expressions, and Equations)</b></p> <p>In this unit, students expand on their previous work writing and solving equations of the form <math>px + q = r</math> and <math>p(x + q) = r</math> in three directions: inequalities, equivalent expressions, and solving equations with a variable on each side. They gain greater fluency working with more complicated expressions and refine their understanding about what it means to be a solution to an inequality or equation. The work in this unit leads directly into work in a future unit on linear relationships, and, in particular, systems of equations. Lessons included: inequalities, writing equivalent expressions, and equations in one variable.</p>	Equivalent fractions and ratios are used to solve problems, what about equivalent expressions, equations, and inequalities?	M.6.EE.B.6 M.6.EE.B.8 M.6.NS.C.7.b M.6.EE.B.5 M.6.EE.B.8 M.6.NS.C.7.a M.6.EE.A.2.b M.7.EE.B.4.b M.7.EE.B.4 M.7.EE.A.1 M.7.NS.A.1 M.7.NS.A.1.c M.8.EE.C M.8.EE.C.7 M.8.EE.C.7.b M.8.EE.C.7.a M.8.EE.C.8	
Unit 10 Linear Relationships	<p><b>(Accelerated Grade 7: Unit 5 Linear Relationships)</b></p> <p>In this unit, students gain experience with linear relationships and their representations as graphs, tables, and equations through activities designed and sequenced to allow them to make sense of problems and persevere in solving them. They revisit earlier work with equations as they study systems of linear equations. The final sections of this unit ask students to examine bivariate data where they use scatter plots and fitted lines to analyze numerical data. Lessons included: proportional relationships, representing linear relationships, finding slopes and linear equations, systems of linear equations, associations in numerical data, and associations in categorical data.</p>	How does representing relationships between variables in more than one way deepen our understanding of linear relationships?  How is understanding the key characteristics of a linear relationship helpful?	M.8.EE.B M.8.EE.B.5 M.8.EE.B.6 M.8.G.A.1 M.8.EE.C M.8.EE.C.8 M.8.EE.C.8.a M.8.EE.C.8.b M.8.SP.A.1 M.8.SP.A.2 M.8.SP.A.3 M.8.SP.A.4	