

Kindergarten Math at TCPS

Course Description

By the end of kindergarten students deepen their conceptual understanding of ones and tens. The concepts of number value, addition and subtraction are introduced and integrated daily. The objectives of the kindergarten curriculum include mastery or understanding of the following:

- To count by rote at least to 100
- The concepts of equality, more, and less
- To count backwards from 10 to 0
- To recognize numbers 1-100 and understand their value
- To be able to write numbers 1-20 using correct formation
- To recognize basic 2-D and 3-D shapes
- To understand up, down, under, near, on the side, etc. (basic directions)
- To understand the concepts of addition and subtraction and use fluent operations between 1-10

Major Units/Themes

Writing Numbers and Daily Practice

- Learn and practice the correct formation of numerals 0-9.
- Write numbers from 0-20
- Understand time concepts (morning, week, tomorrow)
- Name the days of the week
- Begin ordinal number counting (1st, 2nd...)

Counting Collections

- Accurately count 0-20 objects
- Utilize one-to-one correspondence
- Verbally compare groups of objects as greater, less than, or equal to
- Verbally describe several measurable attributes
- Classify objects into given categories
- Count objects into given categories
- Sort categories of objects by quantities less than one
- Name the days of the week

Shapes and Patterns

- Describe measurable attributes (length, weight) of 2- dimensional shapes
- Compare two objects with a common attribute.
- Identify common 2-D shapes by size and orientation.
- Distinguish between 2-D (flat) and 3-D (solid) shapes.
- Describe objects in their environment using 2-D shape names.
- Describe the position of objects in relation to situation (above, below, next to, etc.)
- Verbally analyze and describe similarities/attributes of 2-D shapes.
- Combine simple shapes to form larger shapes.

Counting Collections

- Count to 100 by 1's
- Count to 100 by 10's
- Count on starting at any number within 100

- Represent 0-20 objects with a written number
- Understand that the next number in a sequence is larger
- Compare numbers to 20 as greater than, less than, or equal to using symbols

Addition and Subtraction

- Represent addition and subtraction in multiple ways
- Fluently add and subtract within 5
- Begin adding and subtracting within 10
- Decompose numbers within 10
- Use the language join together, separate, the same as
- Use the language add, subtract, equal to or the same as
- Recognize math symbols +, -, =

Money

- Recognize and name a penny, nickel, dime, quarter
- Know the worth of a penny, nickel, dime, quarter
- Compare numbers to 20 (or 25) as greater than, less than, or the same as (equal to) using words and symbols.

3-D Tricky Teens

- Decompose numbers within 10
- Compose/decompose numbers 11-19 into tens and ones

3-D Shapes

- Identify common 3-D shapes by size and orientation- sphere, cylinder, cube, cone, rectangular prism, triangular prism, pyramid (extra: triangular pyramid)
- Model shapes in the world by building and drawing
- Recognize the dimensions of 3-D Shapes (height, length, width)
- Recognize what 3-D shapes can “do” (stack, slide, and/or roll)

Time

- Recognize that an (analog) clock has 12 numbers
- Tell time to the hour using only the hour hand
- Tell time to the half hour using the hour and minute hands
- Write the time to the hour and half hour
- Draw clock hands for the hour and half hour

Fractional Parts

- Understand that fractions represent a part of a whole
- Understand that parts must be equal
- Recognize that halves are two parts of one whole
- Recognize that quarters are four parts of one whole
- Recognize the symbol for $\frac{1}{2}$
- Recognize the symbol for $\frac{1}{4}$

Grade 1 Math at TCPS

Course Description

In first grade, students develop number sense by comparing, ordering, and understanding whole numbers to 120. In addition, they understand the concept of tens and ones, supporting their learning with use of place value manipulatives. They develop an understanding of the relationship between addition and subtraction and develop efficient strategies for adding, subtracting, and comparing within 120. Students explore measurement using non-standard and standard units. Students explore geometric ideas by distinguishing plane and 3-D shapes by defining attributes. They also compose plane and 3-D shapes to create composite shapes. First graders can organize, represent, and interpret data and graphs. They can tell time and understand elapsed time.

Major Units/Themes

Place Value Whole Numbers

- Count, compare, and order numbers to 120
- Use $>$ and $<$ symbols
- Read, write, and represent numbers to 120 in standard form and in word form
- Represent numbers to 120 by using manipulatives, and by using pictures
- Understand a “ten” is a bundle of ten ones
- Understand decade numbers refer to number of tens

Addition and Subtraction up to 100

- Learn strategies to add and subtract within 20
- Add and subtract numbers up to 100 with or without regrouping
- Use manipulatives, place value charts, pictorial representations, and the standard algorithm to represent addition and subtraction problems
- Understand the meaning of equal sign as “same as”

Mental Math and Estimation

- Add and subtract mentally by using doubles facts, place value, number bonds, fact families
- Make the “Number of the Day” with addition or subtraction, following teacher parameters

Patterns and Readiness for Addition and Subtraction

- Counting forward and backward by ones, fives, tens
- Reading and writing numbers to 120 in standard form
- Using ten and twenty frames
- Identifying one more and one less, ten more and ten less
- Solving for missing numbers in a pattern
- Pattern recognition and extension
- Composing and decomposing numbers to 20

Money

- Count the value of coins (quarter, dime, nickel, penny)
- Exchange coins for amounts that represent an equal value
- Use different combinations of coins to “buy” things
- Make the “Number of the Day” using coins and dollars
- Add and subtract money using real-world problems
- Write “Number of the Day” using cents and \$0.00 formats

Calendar and Time

- Read a calendar, know the days of the week and months of the year
- Write the date

- Know the seasons and how they affect activities of people and animals
- Order events by time and determine elapsed time (hour and half hour)
- Read digital and analog clocks to five minutes

Measurement, Data, and Graphing

- Collect and organize data in up to 3 categories
- Interpret data in picture graphs, tally charts, and bar graphs
- Measure and express the length of an object to the inch and $\frac{1}{2}$ inch
- Order up to 3 objects by length

Geometry: Shapes and Patterns

- Explore, identify, and compare plane and solid shapes in patterns and in the real world
- Distinguish shapes by defining (# of sides) and non-defining attributes (color)

Fractions

- Understand that fractions are part of a whole
- Partition flat shapes into equal shares (link to division)
- Describe equal shares using halves, fourths/quarters
- Describe a whole as two halves or four quarters

Grade 2 Math at TCPS

Course Description

By the end of second grade, students understand place value (to the hundreds) and number relationships in addition and subtraction as well as simple multiplication and division. They apply strategies for addition and subtraction they developed in earlier grades to larger numbers. They can fluently add and subtract within 20. They learn to use standard units of measure (metric and customary) and they continue to compose and decompose shapes with a new focus on examining sides and angles. Students use geometric representations to model and solve a variety of problems involving shapes and figures. They partition shapes into equal parts to introduce the concept of fractions. Students tell time to the minute and understand how to calculate elapsed time. They collect, organize and interpret data using critical thinking skills.

Major Units/Themes

Place Value Whole Numbers

- Count, compare and order numbers to 1,000
- Read, write and represent numbers to 1,000 in standard form, word form and expanded form
- Use the symbols *more than* $>$ and *less than* $<$

Understanding Addition and Subtraction and Addition and Subtraction Fact Strategies

- Understand and apply the inverse operations in addition and subtraction
- Recognize fact families
- Understand properties of addition (Commutative Property, Associative Property, Zero Property)
- Use multiple mental math strategies, including counting up, counting back, making tens, etc. to solve math fact problems within 20, with the goal of memorization

Addition and Subtraction up to 100

- Add and subtract numbers up to 100 with or without regrouping to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem
- Subtract with regrouping across zeros
- Apply inverse operations in addition and subtraction
- Use visual representations to solve one and two step real world addition and subtraction problems
- Use flexible strategies with increasing sophistication and efficiency to solve 2-3 digit addition and subtraction problems
- Compare and contrast efficiency of addition and subtraction strategies
- Engage in mathematical arguments to defend one's thinking
- Use a number line to round to the nearest 10
- Use rounding to estimate sums and differences to determine the reasonableness of answers

Money

- Recognize bills and coins and their respective values
- Use the decimal point to separate dollars and cents
- Exchange dollars for cents and vice versa
- Use visual representations to solve problems involving money

Time, Temperature, & Calendar

- Read time to the minute on an analog clock
- Order events by time and determine elapsed time (hour and half hour)

Graphs & Measurement: Metric and Customary

- Read, analyze and interpret picture and bar graphs

- Collect data with tally marks using a polling questions
- Create bar graphs and pictographs using data collected with tally marks
- Use meters, centimeters, and inches to the $\frac{1}{4}$ inch as units to measure length
- Estimate metric length, mass and volume
- Use kilograms and grams to measure mass and read scales
- Find the volume and capacity of a container using milliliters and liters
- Convert units of metric measurement
- Use a scale to measure mass in kilograms and grams
- Compare and order masses
- Explore volume using liters to estimate, measure and compare
- Use visual representations to solve real-world problems relating to length, mass and volume
- Use a ruler to estimate, measure and compare lengths of objects in customary units yards, feet and inches

Fractions

- Identify shapes divided into equal fractional parts
- Read, write and identify unit fractions for halves, thirds and fourths
- Use models to represent and compare fractions
- Add two and subtract like fractions using models

Geometry: Lines and Surfaces, Shapes and Patterns

- Recognize, draw, identify and describe parts of lines and curves
- Identify, classify and count flat and curved surfaces
- Identify solids that can stack, slide and/or roll
- Identify, classify and combine plane and solid shapes
- Draw shapes and figures on dot paper and square grid paper
- Identify, describe, extend and create patterns using different sizes, shapes, colors and positions

Multiplication and Division

- Learn that multiplication and division involve the concept of equal groups
- Create multiplication and division stories and sentences about pictures Tables 0-10
- Master multiplication by 2's, 5's, and 10's
- Multiply using different models (skip counting, repeated addition, arrays, area model)
- Identify related multiplication facts
- Divide using related multiplication facts and repeated subtraction
- Divide to share equally

Grade 3 Math at TCPS

Course Description

By the end of third grade, students deepen their understanding of place value to the thousands. The concepts of multiplication, division, measurement and fractions are critical areas introduced in the third grade year. Throughout the year students will develop multiplication and division strategies and relate multiplication to division. By the end of the year students should recall all products of two one-digit numbers. Students compare, order and make equivalent fractions. Describing and analyzing shapes by their sides, angles and definitions is the geometric focus in third grade.

Major Units/Themes

Place Value and Money

Place Value

- Count, compare and order numbers to 10,000
- Read, write and represent numbers to 10,000 in standard form, word form and expanded form

Money

- Recognize bills and coins and their respective values
- Use the decimal point to separate dollars and cents
- Exchange dollars for cents and vice versa
- Use visual representations to solve problems involving money
- Make change from \$1 and \$5

Addition and Subtraction Number Sense (Mental Math and Estimation)

- Use strategies such as number bonds, estimation, compensation and rounding to add and subtract with or without regrouping
- Add or subtract numbers close to tens, hundreds or thousands to check if answers are reasonable

Addition and Subtraction up to 10,000

Adding and Subtracting

- Add and subtract numbers up to 10,000 with or without regrouping
- Subtract with regrouping across zeros
- Use bar models to solve 2-step real world addition and subtraction problems
- Apply part-whole concept in addition and subtraction to numbers to 10,000
- Use strategies such as adding on and taking away sets represented visually, by chunking, or standard algorithms

Decimals: Money

- Add and subtract money in different ways with and without regrouping (strategies: number bonds, break apart numbers, compensation)
- Solve up to two-step real-world problems involving addition and subtraction of money

Time, Data, & Graphs

Bar Graphs and Line Plots

- Use bar graphs and line plots to organize and compare data
- Read and interpret data from bar graphs, line graphs and line plots

Time

- Read time to the minute on an analog clock
- Convert hours to minutes and vice versa
- Determine elapsed time

Multiplication and Division (taught together, not as separate units)

Multiplication

- Tables 0-10
- Multiply using different models (skip counting, arrays, area model)
- Use known multiplication facts and number properties to find other unknown multiplication facts
- Apply the inverse relationship of multiplication and division to write division statements
- Multiplying up to three digit by one digit number
- Multiply ones, tens and hundreds using mental math
- Use partial products and traditional algorithm to multiply ones, tens and hundreds with or without regrouping

Division

- Divide using related multiplication facts
- Use patterns to divide multiples of 10 and 100
- Divide a one-digit or two-digit number by a one-digit number with or without a remainder
- Practice the partial quotient strategy and traditional algorithm

Modeling Multiplication and Division Problems

- Solve one-step and two-step word problems involving multiplication and division using multiple representations, such as visually and symbolically
- Choose the correct operations in two step word problems

Fractions

- Read, write and identify fractions from wholes with more than four parts
- Identify numerator and denominator and understand what they represent in a fraction
- Use models and the number line to identify equivalent fractions
- Use multiplication and division to create equivalent fractions and write fractions in simplest form
- Compare and order fractions on a number line using benchmark fractions ($\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$)
- Add two or three like fractions with sums up to one whole
- Subtract a like fraction from another like fraction or one whole
- Read, write and identify fractions of a set and find the number of items in a fraction of a set

Measurement

Measurement: Metric

- Use kilometers, meters, and centimeters as units to measure length
- Estimate metric length, mass and volume
- Use kilograms and grams to measure mass and read scales
- Find the volume and capacity of a container using milliliters and liters
- Convert units of metric measurement

Measurement: Customary

- Use miles, yards, feet and inches to the $\frac{1}{8}$ " as units to measure length
- Estimate customary length, weight and volume
- Use ounces and pounds to measure mass and read scales
- Find the volume and capacity of a container using cups, pints, quarts and gallons
- Relate units of capacity to one another

Geometry

Angles and Lines

- Find angles in plane shapes and real-world objects
- Compare angles to a right angle and identify right angles in plane shapes
- Define and identify perpendicular and parallel lines

Two-Dimensional & Three-Dimensional Shapes

- Identify special polygons and quadrilaterals

- Classify polygons by the number of sides, vertices and angles
- Classify quadrilaterals by parallel sides, length of sides and angles
- Combine and separate polygons to make other polygons
- Identify a slide, flip and turn
- Identify congruent and symmetric figures
- Identify 3-D shapes and their attributes (cube, rectangular prism, pyramid, sphere, cone)
- Understand the relationship between faces, edges, and vertices

Area and Perimeter

- Explore and understand units used to find perimeter and area of a figure and analyze the relationship between them

Grade 4 Math at TCPS

Course Description

At the fourth grade level, students are working to master the basic operations of math. The mastery of these operations (+ - x /) and math facts are essential building blocks used to prepare students for the next steps in more involved math operations. At this level, a major focus is the study of multiplication, division, how these operations are applied to word problems, and fraction concepts and operations. Students will also learn how to use logic, sequencing, discussion, and explanation to see the value in understanding multiple ways to look at a problem.

Major Units/Themes

Place Value

- Numbers in thousands and greater (millions)
- Place value patterns
- Comparing and ordering numbers
- Rounding numbers
- Counting money and making change
- Introduction to decimals

Adding and Subtracting Whole Numbers

- Mental math: adding and subtracting
- Estimating sums and differences
- Adding and subtracting whole numbers and decimals
- Adding and subtracting money
- Creating and evaluating expressions using algebra

Multiplication and Division

- Master multiplication tables 0-10
- Patterns in multiplying by 0, 1, 2, 5, and 9
- Using known facts to find unknown facts
- Multiplying by 10, 11, and 12
- Making tables
- Division facts
- Multiplication and division stories
- Writing and evaluating expressions with algebra

Time, Data, Graphs

- Units and elapsed time
- Creating different graphs
- Create a Survey
- Interpreting data
- Median, Mode, Range

Multiplying by a One-Digit Number

- Multiply by multiples of 10, 100, or 1,000
- Estimating products
- Using arrays to Multiply
- Multiply 2 by 1 number
- Multiply 3 by 1 number
- Multiply with money

Multiplying Two- Digit Numbers

- Multiplying multiples of 10
- Estimating products
- Using arrays to multiply
- Multiplying 2 digit numbers
- Multiplying greater numbers
- Multiplying money

Long Division

- Using patterns to divide mentally
- Estimating quotients
- Dividing with remainders
- Dividing money amounts
- Dividing 2 digit and 3 digit numbers with one divisor
- Finding averages

Geometry and Measurement

- Relating solids and plane figures
- Polygons, triangles, and quadrilaterals
- Lines, line segments, rays, and angles
- Congruent figures and motions, symmetry, similar figures
- Perimeter, area, and volume

Fractions

- Parts of a region and set
- Fractions, length and number line
- Estimating fractional parts
- Equivalent fractions & fractions in simplest form
- Compare fractions and order fractions
- Mixed and improper fractions & comparing mixed numbers
- Circle graphs

Fraction Operations and Customary Measurement

- Adding and subtracting fractions with like and unlike denominators
- length and customary units
- Fractions of an inch
- Capacity and customary units, weight and customary units
- Changing units and comparing measures

Decimals and Metric Measurements

- Decimals and fractions, decimal place value
- Comparing, ordering, and rounding decimals
- Adding and subtracting decimals- estimating & using grids
- Metric measurement- length, capacity, mass, and changing measures
- Temperature

Grade 5 Math at TCPS

Course Description

At the fifth grade level, students are working to solidify the basic operations of math – those essential to success in the more difficult math that will be introduced in middle school. At this grade level, a major focus is the study of fractions: like and unlike, comparisons, adding, subtracting, simple multiplication and division and changing mixed numbers to improper fractions. Students are also introduced to the relationship of fractions to decimals, to ratios, and percentages. Students should learn how to “talk” about the processes they are going through, and experience multiple ways of thinking about and solving math problems.

Major Units/Themes

Place Value, Adding, and Subtracting

Place Value

- Compare and order numbers whole numbers
- Compare and order decimals
- Learn place value patterns

Adding and Subtracting

- Add and subtract mentally
- Round whole numbers and decimals
- Estimate sums and differences
- Add and subtract whole numbers and decimals

Multiplying Whole Numbers and Decimals

- Multiplication patterns
- Estimate whole number and decimal products
- Multiply whole numbers and decimals
- Learn about variables and expressions

Dividing with One-Digit Divisors

- Estimate quotients
- Divide whole numbers
- Divide money
- Learn about factors and divisibility, prime and composite numbers
- Learn the order of operations
- Graph ordered pairs

Dividing with Two-Digit Divisors

- Divide by multiples of 10
- Estimate two-digit divisors
- Divide decimals by 10, 100, and 1,000
- Divide money by two-digit divisors
- Divide decimals by whole numbers

Data, Graphs, and Probability

Data

- Collect data from a survey
- Mean, median, mode

Graphs

- Bar graphs, line graphs, circle graphs, stem-and-leaf plots
- How to make a graph
- Choose an appropriate graph

Probability

- Predict and listing outcomes
- Express probability as a fraction

Geometry

- Measure and classify angles
- Segments and angles related to circles
- Classify triangles and quadrilaterals
- Congruence and similarity
- Symmetry

Fractions

- Estimate fractional amounts
- Fractions and mixed numbers on the number line
- Find equivalent fractions, greatest common factor, and fractions in simplest form
- Compare and order fractions and mixed numbers
- Find least common denominator
- Add and subtract fractions with like and unlike denominators
- Add and subtract mixed numbers
- Multiply fractions by whole numbers, fractions, and mixed numbers
- Understand division with fractions

Measurement

- Measure with fractions of an inch and in metric units of length
- Convert metric units using decimals
- Find perimeter and circumference
- Find area of squares, rectangles, parallelograms, and triangles
- Measure time, elapsed time, and temperature
- Measure surface area, volume, and weight/mass

Ratio, Proportion, and Percent

Ration and Proportion

- Understand ratios and equal ratios
- Graph equal ration

Percent

- Estimate and find a percent of a number

Algebra: Integers, Equations, and Graphing

Integers

- Understand, add, and subtract

Equations

- Solve addition and subtraction equations
- Solve multiplication and division equations
- Write an equation

Graphing

- Learn the coordinate plane and graphing equations

Grade 6 Math at TCPS

Course Description

Sixth grade math focuses on several concepts: (1) number theory including factors, multiples, divisibility, and prime and composite numbers, (2) rational numbers including operations with fractions and with negative numbers, and the connection between fractions and decimals, (3) ratios, rates, proportions and percents, (4) geometry (angles, constructions, polygons and circles) and measurement using both customary and metric units, including the calculation of area and volume (5) algebraic concepts including expressions and simple equations, and (6) statistics and probability. The focus is on understanding the concepts, developing number sense, developing logical reasoning skills, and being able to apply mathematics to real world situations.

Major Units/Themes

- Numbers, Expressions, and Equations
- Decimals
- Number Theory and Fraction Concepts
- Adding and Subtracting Fractions
- Multiplying and Dividing Fractions
- Ratios, Rates, and Proportion
- Percent
- Algebra: Integers and Rational Numbers
- Geometry
- Measurement
- Data, Graphs, and Probability
- Algebra: Inequalities, Equations, and Graphs

Learning Outcomes

At the conclusion of sixth grade students will be able to: (1) find multiples and factors of numbers, find the least common multiple and greatest common factor of numbers, and identify prime and composite numbers, (2) perform all four operations with fractions and integers, and be able to efficiently convert between fractions, decimals and percents, (3) find ratios and rates and solve problems using proportional reasoning, (4) use the metric and customary systems of units, understand basic geometric concepts and calculate the area, surface area and volume of simple figures, (5) be able to write simple algebraic expressions, solve one-step equations, and make graphs of linear equations from a table, and (6) find the mean, median, mode and range of data, calculate probability and odds, and make frequency tables, line plots, stem and leaf plots, bar graphs, line graphs and circle graphs.

Grade 7 Math at TCPS

Course Description

Seventh grade math at TCPS builds on and expands several concepts explored in sixth grade math. Concepts include (1) algebraic expressions and integers including a firm grounding in integer operations, (2) simplifying variable expressions including combining like terms using the distributive property, and solving one step and multi-step equations and inequalities including those with decimals and fractions, (3) number theory concepts including divisibility and factoring including finding the greatest common factor and least common multiple in expressions that include variables, and simplifying expressions with exponents including multiplying and dividing exponents, (4) fraction operations including fractions involving variables, (5) ratios, proportions and percents, (6) linear functions and graphing including understanding slope and y-intercept, (7) geometry including spatial reasoning, expanding area and volume concepts from prior years, and introducing right triangles in geometry, and (8) data analysis and probability.

Major Units/Themes

- Algebraic Expressions and Integers
- Solving One-Step Equations and Inequalities & Decimals and Equations
- Decimals and Equations
- Factors, Fractions, and Exponents
- Operations with Fractions
- Ratios, Proportions, and Percents
- Solving Equations and Inequalities
- Spatial Thinking
- Area and Volume
- Linear Functions and Graphing & Right Triangles
- Data Analysis and Probability

Learning Outcomes

The end of seventh grade represents a culmination in the development of basic math understandings and skills that will allow the student to understand the more abstract concepts they will tackle in Algebra 1. At the end of 7th grade students can: (1) simplify basic algebraic expressions and perform integer operations, (2) can solve multiple step equations including equations with decimals and fractions, (3) find factors and multiples, and the least common multiple and greatest common factor, of algebraic expressions, and simplify expressions involving exponents including multiplying and dividing exponents, (4) perform all four fraction operations including with fractions involving variables, (5) find ratios, solve proportions and utilize proportional reasoning in a variety of circumstances, as well as solve percent proportions, percent equations, percent of change and mark-up and discount problems, (6) graph linear equations using a table, and find slope and y-intercept, (7) classify polynomials, construct a variety of figures using a compass and straight-edge, find the area, surface area and/or volume of a variety of two and three dimensional figures, use the Pythagorean Theorem and find sine, cosine and tangent ratios, and (8) make histograms, box-and-whisker plots, and stem-and-leaf plots, use tree diagrams and the Counting Principle to find the number of possible outcomes, calculate probabilities of dependent and independent events, and use permutations and combinations.

Grade 8 Math at TCPS

Course Description

Eighth grade Algebra 1 students analyze and solve equations, including linear and quadratic equations, inequalities, and systems of equations and inequalities. Equations are used to model and solve real life problems. Students understand linear, quadratic, inverse and absolute value functions and analyze and graph those functions in a variety of ways. Students factor polynomials using many methods. Students simplify radical and rational expressions. Students understand and apply the Pythagorean theorem and prove simple geometric theorems algebraically.

Major Units/Themes

- Variables, Function Patterns, and Graphs & Rational Numbers
- Solving Equations
- Solving Inequalities
- Graphs and Functions & Linear Equations and Their Graphs
- Systems of Equations and Inequalities
- Exponents and Exponential Functions
- Polynomials and Factoring
- Quadratic Equations and Functions
- Radical and Rational Expressions and Functions

Learning Outcomes

At the end of 8th grade Algebra 1 students can: (1) write and simplify algebraic expressions involving variables and rational numbers, including using the distributive property and combining like terms, (2) solve multiple step linear equations, and use linear equations to solve word problems, (3) solve and graph inequalities including compound inequalities, and solve and graph absolute value equations and inequalities, (4) identify functions, write function rules, and graph linear equations in a variety of ways including using slope intercept form, point slope form, and standard form, (5) solve systems of equations with two variables, (6) simplify exponential expressions, graph simple exponential functions, and solve problems involving exponential growth and decay, (7) factor polynomials using a variety of methods, (8) simplify radical expressions and solve radical equations, and (9) simplify rational expressions and solve rational expressions. The focus is on developing a deep understanding of Algebra 1 concepts providing a firm base in high school in Algebra 2 (or equivalent course integrated course) and later courses.