

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.