

Standard Course of Study Alignment

Mathematics (2017)



Legend

•	The standard is clearly addressed by program activities.
-	This standard potentially could be addressed as part of FIRST® LEGO® League Discover either by actions that the coach or teacher takes when working with the students or by conditions established by the program.

Grade 4

Standard	Addressed
Operations and Algebraic Thinking	
Represent and solve problems involving multiplication and division.	-
Use the four operations with whole numbers to solve problems.	-
Gain familiarity with factors and multiples.	-
Generate and analyze patterns.	-
Number and Operations in Base Ten	
Generalize place value understanding for multi-digit whole numbers.	-
Use place value understanding and properties of operations to perform multi-digit arithmetic.	-
Number and Operations – Fractions	
Extend understanding of fractions.	-
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	-
Use unit fractions to understand operations of fractions.	-
Understand decimal notation for fractions, and compare decimal fractions.	-
Measurement and Data	
Solve problems involving measurement.	-
Solve problems involving area and perimeter.	-
Represent and interpret data.	•
NC.4.MD.4 Represent and interpret data using whole numbers. <ul style="list-style-type: none"> • Collect data by asking a question that yields numerical data. • Make a representation of data and interpret data in a frequency table, scaled bar graph, and/or line plot. • Determine whether a survey question will yield categorical or numerical data. 	•
Understand concepts of angle and measure angles.	-
Geometry	
Classify shapes based on lines and angles in two-dimensional figures.	-

Grade 5

Standard	Addressed
Operations and Algebraic Thinking	
Write and interpret numerical expressions.	-
Analyze patterns and relationships.	-
Number and Operations in Base Ten	
Understand the place value system.	-
Perform operations with multi-digit whole numbers.	-
Perform operations with decimals.	-
Number and Operations – Fractions	
Use equivalent fractions as a strategy to add and subtract fractions.	-

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	-
Measurement and Data	
Convert like measurement units within a given measurement system.	-
Represent and interpret data.	•
NC.5.MD.2 Represent and interpret data. <ul style="list-style-type: none"> • Collect data by asking a question that yields data that changes over time. • Make and interpret a representation of data using a line graph. • Determine whether a survey question will yield categorical or numerical data, or data that changes over time. 	•
Understand concepts of volume.	-
Geometry	
Understand the coordinate plane.	-
Classify quadrilaterals.	-

Grade 6

Standard	Addressed
Ratio and Proportional Relationships	
Understand ratio concepts and use ratio reasoning to solve problems.	-
The Number System	
Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	-
Compute fluently with multi-digit numbers and find common factors and multiples.	-
Apply and extend previous understandings of numbers to the system of rational numbers.	-
Expressions and Equations	
Apply and extend previous understandings of arithmetic to algebraic expressions.	-
Reason about and solve one-variable equations.	-
Reason about one variable inequalities.	-
Represent and analyze quantitative relationships between dependent and independent variables.	-
Statistics and Probability	
Develop understanding of statistical variability.	-
Summarize and describe distributions.	-
Geometry	
Solve real-world and mathematical problems involving area, surface area, and volume.	-

Grade 7

Standard	Addressed
Ratio and Proportional Relationships	
Analyze proportional relationships and use them to solve real-world and mathematical problems.	-
The Number System	
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	-
Expressions and Equations	
Use properties of operations to generate equivalent expressions.	-
Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.	-
Statistics and Probability	
Use random sampling to draw inferences about a population.	-
Make informal inferences to compare two populations.	-
Investigate chance processes and develop, use, and evaluate probability models.	-
Geometry	
Draw, construct, and describe geometrical figures and describe the relationships between them.	-
Solve real-world and mathematical problems involving angle measure, area, surface area, and volume.	-

Grade 8

Standard	Addressed
The Number System	
Know that there are numbers that are not rational, and approximate them by rational numbers.	-
Expressions and Equations	
Work with radicals and integer exponents.	-
Analyze and solve linear equations and inequalities.	-
Analyze and solve pairs of simultaneous linear equations.	-
Functions	
Define, evaluate, and compare functions.	-
Use functions to model relationships between quantities.	
Geometry	
Understand congruence and similarity using physical models, transparencies, or geometry software.	-
Analyze angle relationships.	-
Understand and apply the Pythagorean Theorem.	-
Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	-
Statistics and Probability	
Investigate patterns of association in bivariate data.	-