

Year at a Glance - Math 7

What Students Learn

In seventh grade, students begin the year by developing an understanding of operations with rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers by applying these operations to both positive and negative numbers. Students build on this understanding and use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve real-world and mathematical problems. A critical area of instruction in Math 7 is developing an understanding and application of proportional relationships, including percentages. Students extend their reasoning about ratios and proportional relationships in several ways. Students use ratios that involve pairs of rational numbers to compute associated rates. They identify unit rates in representations of proportional relationships and work with equations in two variables to represent and analyze proportional relationships. They also solve multi-step ratio and percent problems, such as problems involving percent increase and decrease. Students extend their study of geometry as they solve problems involving scale drawings and informal geometric constructions. Students also work with two- and three-dimensional shapes to solve problems involving area, surface area, and volume. Students interpret, develop, and understand probability models. They extend their work with single data distributions to compare two different data distributions and address questions about differences between populations and also begin informal work with random sampling.

Unit Titles (Time Frame*)	Overview of Depth of Mastery
1. Integers and Operations with Rational Numbers (6 weeks)	<p><u>Math 7 students work towards mastery:</u></p> <ul style="list-style-type: none"> ● Building fluency in arithmetic with rational numbers ● Solving 2-step equations ($px + q = r$ and $p(x + q) = r$, where p, q, and r are rational numbers) using properties ● Understanding and analyzing the constant of proportionality and understanding proportional relationships in multiple representations (table, graph, equation, and scenario) ● Applying proportional reasoning to percent application scenarios ● Knowing and applying the formulas for area and perimeter of 2-D figures (including circles) ● Using random sampling to draw inferences about a population <p><u>Math 7 students work towards fluency:</u></p> <ul style="list-style-type: none"> ● Manipulating algebraic and numeric expressions by applying order of operations ● Solving multi-step equations using properties of rational numbers (Distributive Property, combine like terms) ● Knowing and applying the formulas for volume/surface area of prisms ● Interpreting, developing, and understanding probability models ● Applying statistical models to samples in order to generalize their properties to a population
2. Expressions, Equations, and Inequalities (6 weeks)	
3. Ratio and Proportional Reasoning (8 weeks)	
4. Percents (4 weeks)	
5. Geometry: Angles (3 weeks)	
6. Geometry: 2D & 3D Figures (3 weeks)	
7. Probability (3 weeks)	
8. Statistics and Comparing Distribution (3 weeks)	

*All time frames are approximations based on student progress and understanding.