

Grade 7 Math		
Major Content		Mathematical Practices
Analyze proportional relationships and use them to solve real-world and mathematical problems.		Make sense of problems and persevere in solving them
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.		Reason abstractly and quantitatively
Use properties of operations to generate equivalent expressions.		Construct viable arguments and critique the reasoning of others
Formulating and reasoning about expressions and equations and solving linear equations.		Model with mathematics
		Use appropriate tools strategically
Required Fluencies		Attend to precision
Rational Number Operations		Look for and make use of structure
Solve Linear Equations (Distributive Property and Rational Numbers)		Look for and express regularity in repeated reasoning
Major Content		
Supporting Content		
Additional Content		
Unit 1 Scale Drawings		
Essential Learning	Standards	
In this unit, students study scaled copies of pictures and plane figures, then apply what they have learned to scale drawings, e.g., maps and floor plans.	7.G.A.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	
Unit 2 Introducing Proportional Relationships		
Essential Learning	Standards	
In this unit, students learn to understand and use the terms “proportional,” “constant of proportionality,” and “proportional relationship,” and recognize when a relationship is or is not proportional. They represent proportional relationships with tables, equations, and graphs.	7RP.A Analyze proportional relationships and use them to solve real-world and mathematical problems.	
	7.RP.A.2 Recognize and represent proportional relationships between quantities.	
	7.RP.A.2.A Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	
	7.RP.A.2.B Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	
	7.RP.A.2.C Represent proportional relationships by equations.	
	7.RP.A.2.D Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.	
Unit 3 Measuring Circles		
Essential Learning	Standards	
In this unit, students learn to understand and use the term “circle” to mean the set of points that are equally distant from a point called the “center.” They gain an understanding of why the circumference of a circle is proportional to its diameter, with constant of proportionality. Students select and use formulas for the area and circumference of a circle to solve abstract and real-world problems that involve calculating lengths and areas.	7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	
Unit 4 Proportional Relationships and Percentages		
Essential Learning	Standards	
In this unit, students use ratios, scale factors, unit rates (also called constants of proportionality), and proportional relationships to solve	7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	
	7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	

multi-step, real-world problems that involve fractions and percentages. Students reason about a specified amount and percent change, or with initial and final amounts, using double number line diagrams to find the unknown amount or percent change. Students find percentages and percent rates to solve problems that involve sales tax, tip, discount, markup, markdown, and commission.		
Unit 5 Rational Number Arithmetic		
Essential Learning	Standards	
In this unit, students interpret signed numbers in contexts (e.g., temperature, elevation, deposit and withdrawal, position, direction, speed and velocity, percent change) together with their sums, differences, products, and quotients.	7NS Apply and extend previous understandings of operations with fractions.	
	7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	
	7.NS.A.1.A Describe situations in which opposite quantities combine to make 0.	
	NS.A.1.B Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	
	7.NS.A.1.C Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	
	7.NS.A.1.D Apply properties of operations as strategies to add and subtract rational numbers.	
	7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	
	7.NS.A.2.A Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by	
	7.NS.A.2.B Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.	
	7.NS.A.2.C Apply properties of operations as strategies to multiply and divide rational numbers.	
	7.NS.A.2D Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	
	7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.	
Unit 6 Expressions Equations and Inequalities		
Essential Learning	Standards	
In this unit, students solve linear equations and inequalities. students represent relationships of two quantities with tape diagrams and with equations, and explain correspondences between the two types of representations. They use the distributive property to transform an equation of one form into the other and note how such transformations can be used strategically in solving an equation. They write equations in order to solve problems involving percent increase and decrease.	7EE Use properties of operations to generate equivalent expressions.	
	7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	
	7.EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.	
	7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.	
	7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about them.	
	7.EE.B.4.A Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	
	7.EE.B.4.B Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	
Unit 7 Angles Triangles and Prisms		
Essential Learning	Standards	
In this unit, students investigate whether sets of angle and side length measurements determine unique	7.G.B.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	

<p>triangles or multiple triangles, or fail to determine triangles. Students also study and apply angle relationships, learning to understand and use the terms “complementary,” “supplementary,” “vertical angles,” and “unique”. The work gives them practice working with rational numbers and equations for angle relationships. Students analyze and describe cross-sections of prisms, pyramids, and polyhedra. They understand and use the formula for the volume of a right rectangular prism, and solve problems involving area, surface area, and volume.</p>	7.G.A.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.		
	7.G.A.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.		
	7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.		
Unit 8 Probability and Sampling			
Essential Learning	Standards		
<p>In this unit, students understand and use the terms “event,” “sample space,” “outcome,” “chance experiment,” “probability,” “simulation,” “random,” “sample,” “random sample,” “representative sample,” “overrepresented,” “underrepresented,” “population,” and “proportion.” They design and use simulations to estimate probabilities of outcomes of chance experiments and understand the probability of an outcome as its long-run relative frequency. They represent sample spaces (that is, all possible outcomes of a chance experiment) in tables and tree diagrams and as lists. They calculate the number of outcomes in a given sample space to find the probability of a given event.</p>	7.SP.C Investigate chance processes and develop, use, and evaluate probability models.		
	7.SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely or likely, and a probability near 1 indicates a likely event.		
	7.SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.		
	7.SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.		
	7.SP.C.7.A Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.		
	7.SP.C.7.B Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.		
	7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.		
	7.SP.C.8.A Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.		
	7.SP.C.8.B Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.		
	7.SP.C.8.C Design and use a simulation to generate frequencies for compound events.		
Social and Emotional Standards		ISTE Standards	
Self-Awareness and Self-Management	SEL.7.1B.2 Recognize the outside influences on development of personal characteristics (examples include body image, self-esteem, behavior).	Empowered Learner	Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.
	SEL.7.1C.1 Identify resources to help progress toward a goal (examples include research materials).	Creative Communicator	Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.
	SEL.7.1C.3 Analyze how you might have made better use of supports and overcome obstacles in working on a recent goal.		
	SEL.7.1C.4 Distinguish between a short and long-term goal.	Computational Thinker	Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.
Social-Awareness and Relationship Skills	SEL.7.1C.5 Apply goal-setting skills to develop academic success.		
	SEL.7.2A.2 Recall a situation where your behavior impacted the feelings of others either positively or negatively.	Knowledge Constructor	Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.
	SEL.7.2B.2 Identify negative depictions of differences among people (examples include gender or sexual orientation stereotyping, discrimination against socio economic or culture minorities, prejudices based on misinformation in readings completed for coursework.		
	SEL.7.2B.3 Explain how a lack of understanding of social and cultural differences can contribute to intolerance.	Digital Citizen	Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.
	SEL.7.2B.4 Evaluate ways of overcoming a lack of understanding of those who are different.		
	SEL.7.2B.6 Listen respectfully to opposing points of views on controversial issues.	Global Collaborator	Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.
	SEL.7.2C.5 Demonstrate an ability to both assume leadership and be a team player in achieving group goals.	Assessment	

Responsible Decision-Making	SEL.7.3A.6 Judge the seriousness of unethical behaviors (examples include cheating, lying, stealing, plagiarism, etc).	Innovative Designer	Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.				
	SEL.7.3C.2 Identify responsibilities of citizenship (examples include obeying laws, serving on juries, being informed about issues, being involved in influencing public policy).						