			New York State P-12 Learning Standards for Mathematics (Revised 2017)	

Grade 7
Ratios and Proportional Relationships

Clusters		Standard Code	Standard	Additional Clarification/Examples
Clusters	A. Analyze proportional relationships and use them to solve real-world and mathematical problems.	7.RP.A.1	1. Compute unit rates associated with ratios of fractions.	Note: Problems may include ratios of lengths, areas and other quantities measured in like or different units, including across measurement systems. e.g., if a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the rate as the complex fraction $\frac{\frac{1}{2}}{\frac{1}{4}}$ miles per hour, equivalently 2 miles per hour with 2 being the unit rate.
		7.RP.A.2	2. Recognize and represent proportional relationships between quantities.	

Grade 7
Ratios and Proportional Relationships

		Standard Code	Standard	Additional Clarification/Examples
Clusters	**A. Analyze proportional relationships and use them to solve real-world and mathematical problems.**	7.RP.A.2a	2a. Decide whether two quantities are in a proportional relationship.	Note: Strategies include but are not limited to the following: testing for equivalent ratios in a table and/or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
		7.RP.A.2b	2b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	
		7.RP.A.2c	2c. Represent a proportional relationship using an equation.	e.g., if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.
		7.RP.A.2d	2d. 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.	
		7.RP.A.3	3. Use proportional relationships to solve multistep ratio and percent problems.	Note: Examples of percent problems include: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.

		Standard Code	Standard	Additional Clarification/Examples
Clusters	A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.A.1	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.	
		7.NS.A.1a	1a. Describe situations in which opposite quantities combine to make 0.	
		7.NS.A.1b	1b. Understand addition of rational numbers; $p + q$ is 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.	

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Grade 7
The Number System

Grade 7
The Number System

		Standard Code	Standard	Additional Clarification/Examples
Clusters	A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.A.1c	1c. 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.1d	1d. Apply properties of operations as strategies to add and subtract rational numbers.	
		7.NS.A.2	2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	

Clusters		Standard Code	Standard	Additional Clarification/Examples
Clusters	A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.A.2a	2a. 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 describing real-world contexts.	
		7.NS.A.2b	2b. 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 $-\left(\frac{p}{q}\right) = \frac{-p}{q} = \frac{p}{-q}$. Interpret quotients of rational numbers by describing real-world contexts.	
		7.NS.A.2c	2c. Apply properties of operations as strategies to multiply and divide rational numbers.	

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	Grade 7 **The Number System**			
		Standard Code	**Standard**	**Additional Clarification/Examples**
Clusters	**A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.**	7.NS.A.2d	2d. Convert a fraction 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	3. Solve real-world and mathematical problems involving the four operations with rational numbers.	Note: Computations with rational numbers extend the rules for manipulating fractions to complex fractions limited to $\frac{\frac{a}{b}}{\frac{c}{d}}$ where a, b, c and d are integers and b, c and d$\neq$ 0.

		Standard Code	Standard	Additional Clarification/Examples
Clusters	**A. Use properties of operations to generate equivalent expressions.**	7.EE.A.1	1. Add, subtract, factor, and expand linear expressions with rational coefficients by applying the properties of operations.	
		7.EE.A.2	2. Understand that rewriting an expression in different forms in real-world and mathematical problems can reveal and explain how the quantities are related.	e.g., a + 0.05a and 1.05a are equivalent expressions meaning that "increase by 5%" is the same as "multiply by 1.05."
	B. Solve real-life and mathematical problems using numerical and algebraic expressions, equations and inequalities.	7.EE.B.3	3. Solve multi-step real-world 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. Assess the reasonableness of answers using mental computation and estimation strategies.	e.g., If a woman making $25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.

		Standard Code	Standard	Additional Clarification/Examples

New York State P-12 Learning Standards for Mathematics (Revised 2017)

Grade 7
Expressions, Equations and Inequalities

		Standard Code	Standard	Additional Clarification/Examples
Clusters	B. Solve real-life and mathematical problems using numerical and algebraic expressions, equations and inequalities.	7.EE.B.4	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 the quantities.	Note: Solving equations that contain variables on both sides is not an expectation in grade 7.
		7.EE.B.4a	4a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are rational numbers and x represents the unknown quantity. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	Notes: The words *leading to* in the standard may require students to simplify or combine like terms on the same side of the equation before it is in the form stated in the standard. The terms additive inverse and multiplicative inverse should be discussed. This standard is a fluency expectation for grade 7. For more guidance, see Fluency in the Glossary of Verbs Associated with the New York State Math Standards. e.g., the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?
		7.EE.B.4b	4b. Solve word problems leading to inequalities of the form $px + q > r$, $px + q \geq r$, $px + q \leq r$, or $px + q < r$, where p, q, and r are rational numbers and x represents the unknown quantity. Graph the solution set of the inequality on the number line and interpret it in the context of the problem.	Note: The words *leading to* in the standard may require students to simplify or combine like terms on the same side of the equation before it is in the form stated in the standard. e.g., As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.

Grade 7
Geometry

		Standard Code	Standard	Additional Clarification/Examples
Clusters	A. Draw, construct and describe geometrical figures and describe the relationships between them.	7.G.A.1	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.	
		7.G.A.2	2. Draw triangles when given measures of angles and/or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	Note: Create triangles through the use of freehand drawings, materials (scaffolds include: pipe cleaners, Legos®, and toothpicks), rulers, protractors, and/or technology.
		7.G.A.3	3. Describe the two-dimensional shapes that result from slicing three-dimensional solids parallel or perpendicular to the base.	Note: Focus of standard is on plane sections resulting from the slicing of right rectangular prisms and right rectangular pyramids.

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Grade 7
Geometry

		Standard Code	Standard	Additional Clarification/Examples
Clusters	**B. Solve real-life and mathematical problems involving angle measure, area, surface area and volume.**	7.G.B.4	4. Apply the formulas for the area and circumference of a circle to solve problems.	<u>Note</u>: Calculating the radius of a circle given its area is not expected.
		7.G.B.5	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.	<u>Note</u>: Students in Grade 7 are limited to solving equations that do not involve linear expressions on both sides of the equations.
		7.G.B.6	6. Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, trapezoids, parallelograms, cubes, and right rectangular prisms.	

		Standard Code	Standard	Additional Clarification/Examples
Clusters	B. Draw informal comparative inferences about two populations.	7.SP.B.1	1. Construct and interpret box-plots, find the interquartile range and determine if a data point is an outlier.	<u>Note</u>: Provided box-plots can include outliers. Students will not construct box plots with outliers.
		7.SP.B.3	2. Informally assess the degree of visual overlap of two quantitative data distributions.	
		7.SP.B.4	3. Use measures of center and measures of variability for quantitative data from random samples or populations to draw informal comparative inferences about the populations.	<u>Note</u>: Measures of location for describing a center are mean, median and mode. The measures of variation include range and the inter quartile range.

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Grade 7
Statistics and Probability

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Statistics and Probability

		Standard Code	Standard	Additional Clarification/Examples
Clusters	C. Investigate chance processes and develop, use and evaluate probability models.	7.SP.C.8	8. Find probabilities of compound events using organized lists, sample space tables, tree diagrams, and simulation.	
		7.SP.C.8a	8a. 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.8b	8b. Represent sample spaces for compound events using methods such as organized lists, sample space tables and tree diagrams. For an event described in everyday language, identify the outcomes in the sample space which compose the event.	e.g., "rolling double sixes".
		7.SP.C.8c	8c. Design and use a simulation to generate frequencies for compound events.	