

**MOORESTOWN TOWNSHIP PUBLIC SCHOOLS
MOORESTOWN, NEW JERSEY**

**Moorestown Upper Elementary School
Mathematics**

**Mathematics Accelerated
*Grade 6***

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Course Description and Fundamental Concepts

The Grade 6 Accelerated Mathematics course is designed to teach and to focus on applying mathematical concepts in real-world situations using higher order thinking skills while implementing the sixth grade NJ Student Learning Standards (NJSLS). This course also includes several seventh grade mathematics NJSLS standards.

(1) Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.

(2) Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understanding of numbers and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.

(3) Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as $3x = y$) to describe relationships between quantities.

(4) Building on and reinforcing their understanding of numbers, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.

(5) Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and

surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.

(6) Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

(7) Students develop a unified understanding of numbers, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.

Math 6 Accelerated Overview

1. Ratios and Proportional Relationships

- Understand ratio concepts and use ratio reasoning to solve problems.
- Analyze proportional relationships and use them to solve real-world and mathematical problems.

2. 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.
- Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

3. Expressions and Equations

- Apply and extend previous understandings of arithmetic to algebraic expressions.
- Reason about and solve one-variable equations and inequalities.
- Represent and analyze quantitative relationships between dependent and independent variables.
- Use properties of operations to generate equivalent expressions.
- Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

4. Geometry

- Solve real-world and mathematical problems involving area, surface area, and volume.

5. Statistics and Probability

- Develop understanding of statistical variability.
- Summarize and describe distributions.

Mathematical Practice Standards

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

New Jersey Student Learning Standards (NJSLs)

Subject/Content Standards

Include grade appropriate subject/content standards that will be addressed

6.RP Ratios and Proportional Relationships

- A. Understand ratio concepts and use ratio reasoning to solve problems.
1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”
 2. Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar.” “We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.”
 3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
 - a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
 - b. Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?
 - c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
 - d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

6.NS The Number System

- A. Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$). How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $3/4$ -cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?
- B. Compute fluently with multi-digit numbers and find common factors and multiples.
2. Fluently divide multi-digit numbers using the standard algorithm.
 3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
 4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property

to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express $36 + 8$ as $4(9 + 2)$.

- C. Apply and extend previous understandings of numbers to the system of rational numbers.
5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
 6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
 - a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
 - b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
 - c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
 7. Understand ordering and absolute value of rational numbers.
 - a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.
 - b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write $-3\text{ }^{\circ}\text{C} > -7\text{ }^{\circ}\text{C}$ to express the fact that $-3\text{ }^{\circ}\text{C}$ is warmer than $-7\text{ }^{\circ}\text{C}$.
 - c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. For example, for an account balance of -30 dollars, write $|-30| = 30$ to describe the size of the debt in dollars.
 - d. Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.
 8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

6.EE Expressions and Equations

- A. Apply and extend previous understandings of arithmetic to algebraic expressions.
1. Write and evaluate numerical expressions involving whole-number exponents.
 2. Write, read, and evaluate expressions in which letters stand for numbers.
 - a. Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation “Subtract y from 5” as $5 - y$.
 - b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. For example, describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms.
 - c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations,

including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.

3. Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.
 4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for.
- B. Reason about and solve one-variable equations and inequalities.
5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
 6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
 7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.
 8. Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
- C. Represent and analyze quantitative relationships between dependent and independent variables.
9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

6.G Geometry

- A. Solve real-world and mathematical problems involving area, surface area, and volume.
1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
 2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
 3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second

coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

6.SP Statistics and Probability

A. Develop understanding of statistical variability.

1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.
2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

B. Summarize and describe distributions.

4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
5. Summarize numerical data sets in relation to their context, such as by:
 - a. Reporting the number of observations.
 - b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
 - c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
 - d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

7.RP Ratios and Proportional Relationships

A. Analyze proportional relationships and use them to solve real-world and mathematical problems.

2. Recognize and represent proportional relationships between quantities.
 - 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.
 - b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
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.

7.NS The Number System

A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

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.
 - a. Describe situations in which opposite quantities combine to make 0. For example, in the first round of a game, Maria scored 20 points. In the second round of the same game, she lost 20 points. What is her score at the end of the second round?
 - 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.
 - 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.
 - d. Apply properties of operations as strategies to add and subtract rational numbers.
2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
 - 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 describing real-world contexts.
 - 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.
 - c. Apply properties of operations as strategies to multiply and divide rational numbers.
 - d. 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.
3. Solve real-world and mathematical problems involving the four operations with rational numbers.

7.EE Expressions and Equations

- A. Use properties of operations to generate equivalent expressions.
 1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
 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. For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”
- B. Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
 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. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $1/10$ 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.

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.
 - 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. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?
 - 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. For example: 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.

Mathematical Practice Standards

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Career Awareness, Exploration, Preparation, and Training ([Standard 9.2](#))

List appropriate units below for which standards will be addressed

By Grade 8

Unit Addressed	Core Idea	Standard / Description
Unit 3, 9	An individual's strengths, lifestyle goals, choices, and interests affect employment and income	<p>9.2.8.CAP.1: Identify offerings such as high school and county career and technical school courses, apprenticeships, military programs, and dual enrollment courses that support career or occupational areas of interest.</p> <p>9.2.8.CAP.2: Develop a plan that includes information about career areas of interest.</p> <p>9.2.8.CAP.3: Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income.</p>

		9.2.8.CAP.4: Explain how an individual's online behavior (e.g., social networking, photo exchanges, video postings) may impact opportunities for employment or advancement.
Unit 3, 6, 9	Developing and implementing an action plan is an essential step for achieving one's personal and professional goals.	9.2.8.CAP.5: Develop a personal plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan.
Unit 3, 6, 7, 9	Early planning can provide more options to pay for postsecondary training and employment.	9.2.8.CAP.6: Compare the costs of postsecondary education with the potential increase in income from a career of choice. 9.2.8.CAP.7: Devise a strategy to minimize costs of postsecondary education. 9.2.8.CAP.8: Compare education and training requirements, income potential, and primary duties of at least two jobs of interest. 9.2.8.CAP.9: Analyze how a variety of activities related to career preparation (e.g., volunteering, apprenticeships, structured learning experiences, dual enrollment, job search, scholarships) impacts postsecondary options.
Unit 8	There are a variety of resources available to help navigate the career planning process.	9.2.8.CAP.10: Evaluate how careers have evolved regionally, nationally, and globally. 9.2.8.CAP.11: Analyze potential career opportunities by considering different types of resources, including occupation databases, and state and national labor market statistics. 9.2.8.CAP.12: Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.
Unit 8, 9	Employee benefits can influence your employment choices.	9.2.8.CAP.13: Compare employee benefits when evaluating employment interests and explain the possible impact on personal finances. 9.2.8.CAP.14: Evaluate sources of income and alternative resources to accurately compare employment options.
Units 1-9	Communication skills and responsible behavior in addition to education, experience, certifications, and skills are all factors that affect employment and income	9.2.8.CAP.15: Present how the demand for certain skills, the job market, and credentials can determine an individual's earning power. 9.2.8.CAP.16: Research different ways workers/ employees improve their earning power through education and the acquisition of new knowledge and skills.

		<p>9.2.8.CAP.17: Prepare a sample resume and cover letter as part of an application process.</p> <p>9.2.8.CAP.18: Explain how personal behavior, appearance, attitudes, and other choices may impact the job application process.</p> <p>9.2.8.CAP.19: Relate academic achievement, as represented by high school diplomas, college degrees, and industry credentials, to employability and to potential level</p>
Units 3, 6, 9	There are resources to help an individual create a business plan to start or expand a business.	9.2.8.CAP.20: Identify the items to consider when estimating the cost of funding a business.

Life Literacies and Key Skills ([Standard 9.4](#))

List appropriate units below for which standards will be addressed

By Grade 8		
Unit Addressed	Core Idea	Standard / Description
Units 2- 9	Creativity and Innovation: Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking.	<p>9.4.8.CI.1: Assess data gathered on varying perspectives on causes of climate change (e.g., cross cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4).</p> <p>9.4.8.CI.2: Repurpose an existing resource in an innovative way (e.g., 8.2.8.NT.3).</p> <p>9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2).</p> <p>9.4.8.CI.4: Explore the role of creativity and innovation in career pathways and industries</p>
Units 1-9	Critical Thinking and Problem-solving: Multiple solutions often exist to solve a problem.	<p>9.4.8.CT.1: Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2).</p> <p>9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine</p>

		<i>the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1).</i>
Units 6, 8	Critical Thinking and Problem-solving: An essential aspect of problem solving is being able to self-reflect on why possible solutions for solving problems were or were not successful.	<i>9.4.8.CT.3: Compare past problem-solving solutions to local, national, or global issues and analyze the factors that led to a positive or negative outcome.</i>
Units 2, 4, 5, 6, 8	Digital Citizenship: Detailed examples exist to illustrate crediting others when incorporating their digital artifacts in one’s own work.	<i>9.4.8.DC.1: Analyze the resource citations in online materials for proper use. 9.4.8.DC.2: Provide appropriate citation and attribution elements when creating media products (e.g., W.6.8).</i>
Units 2-9	Digital Citizenship: There are tradeoffs between allowing information to be public and keeping information private and secure.	<i>9.4.8.DC.3: Describe tradeoffs between allowing information to be public (e.g., within online games) versus keeping information private and secure.</i>
Units 1-9	Digital Citizenship: Digital footprints are publicly accessible, even if only shared with a select group. Appropriate measures such as proper interactions can protect online reputations.	<i>9.4.8.DC.4: Explain how information shared digitally is public and can be searched, copied, and potentially seen by public audiences. 9.4.8.DC.5: Manage digital identity and practice positive online behavior to avoid inappropriate forms of self-disclosure. 9.4.8.DC.6: Analyze online information to distinguish whether it is helpful or harmful to reputation.</i>
Units 1-9	Digital Citizenship: Digital communities are used by individuals to share information, organize, and engage around issues and topics of interest.	<i>9.4.8.DC.7: Collaborate within a digital community to create a digital artifact using strategies such as crowdsourcing or digital surveys.</i>
Units 4, 6, 8	Digital Citizenship: Digital technology and data can be leveraged by communities to address effects of climate change.	<i>9.4.8.DC.8: Explain how communities use data and technology to develop measures to respond to effects of climate change (e.g., smart cities).</i>
Units 4, 6, 8	Global and Cultural Awareness: Awareness of and appreciation for cultural differences is critical to avoid	<i>9.4.8.GCA.1: Model how to navigate cultural differences with sensitivity and respect (e.g., 1.5.8.C1a).</i>

	barriers to productive and positive interaction.	9.4.8.GCA.2: <i>Demonstrate openness to diverse ideas and perspectives through active discussions to achieve a group goal.</i>
Unit 8	Information and Media Literacy: Increases in the quantity of information available through electronic means have heightened the need to check sources for possible distortion, exaggeration, or misrepresentation.	9.4.8.IML.1: <i>Critically curate multiple resources to assess the credibility of sources when searching for information.</i> 9.4.8.IML.2: <i>Identify specific examples of distortion, exaggeration, or misrepresentation of information.</i>
Unit 8	Information and Media Literacy: Digital tools make it possible to analyze and interpret data, including text, images, and sound. These tools allow for broad concepts and data to be more effectively communicated.	9.4.8.IML.3: <i>Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).</i> 9.4.8.IML.4: <i>Ask insightful questions to organize different types of data and create meaningful visualizations.</i> 9.4.8.IML.5: <i>Analyze and interpret local or public data sets to summarize and effectively communicate the data.</i>
Units 1-9	Information and Media Literacy: The mode of information can convey a message to consumers or an audience.	9.4.8.IML.6: <i>Identify subtle and overt messages based on the method of communication.</i>
Units 4, 6, 8	Information and Media Literacy: Sources of information are evaluated for accuracy and relevance when considering the use of information.	9.4.8.IML.7: <i>Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose (e.g., 1.2.8.C2a, 1.4.8.CR2a, 2.1.8.CHSS/IV.8.AI.1, W.5.8, 6.1.8.GeoSV.3.a, 6.1.8.CivicsDP.4.b, 7.1.NH. IPRET.8).</i> 9.4.8.IML.8: <i>Apply deliberate and thoughtful search strategies to access high-quality information on climate change (e.g., 1.1.8.C1b).</i>
Units 1-9	Information and Media Literacy: There are ethical and unethical uses of information and media.	9.4.8.IML.9: <i>Distinguish between ethical and unethical uses of information and media (e.g., 1.5.8.CR3b, 8.2.8.EC.2).</i> 9.4.8.IML.10: <i>Examine the consequences of the uses of media (e.g., RI.8.7).</i>

		<i>9.4.8.IML.11: Predict the personal and community impact of online and social media activities</i>
Units 1-9	Information and Media Literacy: There is a need to produce and publish media that has information supported with quality evidence and is intended for authentic audiences.	<p><i>9.4.8.IML.12: Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.</i></p> <p><i>9.4.8.IML.13: Identify the impact of the creator on the content, production, and delivery of information (e.g., 8.2.8.ED.1).</i></p> <p><i>9.4.8.IML.14: Analyze the role of media in delivering cultural, political, and other societal messages.</i></p> <p><i>9.4.8.IML.15: Explain ways that individuals may experience the same media message differently.</i></p>
Units 3, 6, 8, 9	Technology Literacy: Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others.	<p><i>9.4.8.TL.1: Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.</i></p> <p><i>9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).</i></p> <p><i>9.4.8.TL.3: Select appropriate tools to organize and present information digitally.</i></p> <p><i>9.4.8.TL.4: Synthesize and publish information about a local or global issue or event (e.g., MSLS4-5, 6.1.8.CivicsPI.3).</i></p>
Units 1-9	Technology Literacy: Digital tools allow for remote collaboration and rapid sharing of ideas unrestricted by geographic location or time.	<p><i>9.4.8.TL.5: Compare the process and effectiveness of synchronous collaboration and asynchronous collaboration.</i></p> <p><i>9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem.</i></p>

Interdisciplinary Connections ([2020 NJSLs](#))

List any other content standards addressed as well as appropriate units. All arts integration connections may be listed within this chart.

Visual & Performing Arts Integration ([Standard 1](#))

List appropriate units below for which standards (1.1 through 1.5) may be addressed

Unit Addressed	Artistic Process	Anchor Standard
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Units 1-9	Creating	<i>Anchor Standard 1: Generating and conceptualizing ideas. Anchor Standard 2: Organizing and developing ideas. Anchor Standard 3: Refining and completing products.</i>
Unit 4,6, 8	Connecting	<i>Anchor Standard 10: Synthesizing and relating knowledge and personal experiences to create products. Anchor Standard 11: Relating artistic ideas and works within societal, cultural, and historical contexts to deepen understanding.</i>
Units 1-9	Performing/ Presenting/ Producing	<i>Anchor Standard 4: Selecting, analyzing, and interpreting work. Anchor Standard 5: Developing and refining techniques and models or steps needed to create products. Anchor Standard 6: Conveying meaning through art.</i>
Units 1-9	Responding	<i>Anchor Standard 7: Perceiving and analyzing products. Anchor Standard 8: Applying criteria to evaluate products. Anchor Standard 9: Interpreting intent and meaning.</i>

Other Interdisciplinary Content Standards

List appropriate units below for any other content/standards that may be addressed

Unit Addressed	Content / Standard #	Standard Description
Units 1-9	RI.6.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.
Units 1-9	W.6.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
Units 2, 3, 4, 6, 9	1.3.8.D.2	Apply various art media, art mediums, technologies, and processes in the creation of allegorical, theme-based, two- and three-dimensional works of art, using tools and technologies that are appropriate to the theme and goals.
Units 2, 5, 6, 7, 8	MS-ESS2-3	Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions

Units 3, 6, 8	MS-PS2-2	Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object
Units 2, 3, 6	MS-PS4-1	Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.
Units 2, 3, 5, 8	MS-LS2-1	Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem

Pacing Guide (All Dates are approximate based on the school calendar)

Unit/ Topic	Month (w/Approx number of Teaching Days)
Unit 1 Number Systems	September (~14 days)
Unit 2 Integers	October (~19 days)
Unit 3 Algebra Part I: Introduction Expressions and Equations	November (~16 days)
Unit 3 (continued) Algebra Part I: Introduction Expressions and Equations	December (~15 days)
Unit 4 Geometry: 2- and 3-Dimensional	January (~18 days)
Unit 5 Operations with Rational Numbers	February (~20 days)
Unit 6 Ratios, Proportional Relationships and Percent	March (~20 days)
Unit 7 Inequalities	April (~15-20 days)
Unit 8 (7th Grade topics) Statistical Measures and Displays	May (~18 days)
Unit 9 (continued - 7th Grade topics) Algebra Part II: Expressions, Equations and Inequalities	June (~15 days)

Units Scope and Sequence

Unit 1: Review Number System and Prepare for Ratios and Proportions

Course 1 Chapter 3: Compute with Multi-Digit Numbers

Course 1 Chapter 4: Multiply and Divide Fractions

Course 1 Chapter 1: Ratios and Rates

Step 1 – Desired Results: What do I want my students to learn?

Standards

[NJSLs](#) - 6.NS.1, 6.NS.3, 6.NS.4, MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

[NJSLs Career Awareness, Exploration, Preparation, and Training](#)

[NJSLs Life Literacies and Key Skills](#)

[NJSLs Interdisciplinary Connections](#)

Unit Big Ideas:

(What Fundamental Concepts Should be Learned during this Unit?)

- Division by Decimals
- Multiplication of mixed numbers.
- How do you add and subtract mixed numbers?
- What are prime and composite numbers?
- How do you find and write the prime factorization of a whole number?
- How can you write a power as a product and evaluate?
- How can you write a product in exponential form?
- How do you determine the Greatest Common Factor and Least Common Multiple of two or three whole numbers?
- How can I use GCF and LCM in problem solving?

Objectives

Students will be able to...

- demonstrate mastery of addition and subtraction of fractions and mixed numbers.
- demonstrate mastery of multiplication of mixed numbers.
- solve Real-World Mathematical Problems with fractions and mixed numbers.
- evaluate multiplication of fractions with visual models.
- analyze the significance of being able to multiply fractions and mixed numbers in the real world.
- collaborate to create word problems, solve through visual representations and the standard algorithm.
- solve Real-World Mathematical Problems with fractions and mixed numbers.
- find the GCF and LCM of two whole numbers using a variety of methodologies.
- solve Real-World Mathematical Problems with GCF and LCM concepts.
- analyze whole numbers to determine if they are prime or composite.
- determine the prime factorization of a whole number.

Unit 2: Integers

Course 1 Chapter 5: Integers and the Coordinate Plane

Course 2 Chapter 3: Integers

Step 1 – Desired Results: What do I want my students to learn?

Standards

[NJSLs](#) - 6.NS.5, 6.NS.6, 6.NS.6a, 6.NS.6b, 6.NS.6c, 6.NS.7, 6.NS.7a, 6.NS.7b, 6.NS.7c, 6.NS.7d, 6.NS.8.; 7.NS.1, 7.NS.1a, 7.NS.1b, 7.NS.1c, 7.NS.1d, 7.NS.2, 7.NS.2a, 7.NS.2b, 7.NS.2c, 7.NS.3, 7.EE.3., MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

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Unit Big Ideas:

(What Fundamental Concepts Should be Learned during this Unit?)

- What happens when you add, subtract, multiply and divide integers?
- When is the product/quotient of two integers a positive number? A negative number?
- How is the distance between two integers related to their difference?
- Visual representation of integer operations with models.
- How can properties be used to prove rules for multiplying integers?
- What are the four quadrants on the coordinate plane?
- How do you plot points within the four quadrants of the coordinate plane?
- What are some examples of how integer computation is used in the real world?

Objectives

Students will be able to...

- demonstrate mastery of addition, subtraction, multiplication, and division of integers.
- solve Real-World Mathematical Problems with integers.
- solve addition, subtraction, multiplication, and division of integers with visual models.
- analyze the significance of mathematical properties in integer computation.
- identify the four quadrants of the coordinate plane and recognize the positive and negative values for x and y .
- plot points in the four quadrants of the coordinate plane.
- determine the absolute value of rational numbers and model on a number line.
- collaborate to create word problems using the standard algorithm and sharing with classmates.

Unit 3: Algebra Part I: Introduction Expressions and Equations

Course 1 Chapter 6: Expressions

Course 1 Chapter 7: Equations

Course 2 Chapter 5: Expressions

Course 2 Chapter 6: Equations and Inequalities

Step 1 – Desired Results: What do I want my students to learn?

Standards

[NJSLs](#) - 6.EE.1, 6.EE.2, 6.EE.2a, 6.EE.2b, 6.EE.2c, 6.EE.3, 6.EE.4, 6.EE.6, 6.EE.5, 6.EE.7, 6.NS.3, 6.NS.4., 6.RP.3; 7.EE.A, 7.EE.1a, 7.EE.2a, 7.EE.4 7.EE.4a, MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

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Unit Big Ideas:

(What Fundamental Concepts Should be Learned during this Unit?)

- How can you write a power as a product and evaluate?
- How can you write a product in exponential form?
- What is a numerical expression?
- How do you evaluate numerical expressions using the order of operations?
- How to write and evaluate variable expressions?
- What are some of the unique vocabulary terms used in algebra?
- How do you use mathematical properties to simplify expressions?
- How do you rewrite algebraic expressions using the distributive property?
- What are equivalent expressions?
- How do we model one step equations with algebraic tiles?
- How do you find the greatest common factor of monomials?
- How do you factor linear expressions?
- How do you solve one-step equations and inequalities with rational coefficients?
- How do you graph inequalities on a number line?
- Solve Real World Problems with algebraic equations/inequalities.
- Construction of Input /Output Tables.
- What are the dependent and independent variables in the input/output table?
- How do you graph the ordered pairs of the input/output table on the coordinate plane?

Objectives

Students will be able to...

- write a power as a product and evaluate.
- write a product in exponential form.
- write and evaluate numerical expressions with rational numbers.
- multiply and divide whole numbers and decimals by powers of ten.
- evaluate numerical expressions according to the order of operations.
- identify parts of an expression using the appropriate mathematical terms.
- rewrite expressions using the distributive property.
- simplify algebraic expressions.
- find the greatest common factor of monomials.
- factor linear expressions.

- use algebraic tiles to solve one step equations.
- apply the properties of operations to create equivalent expressions.
- solve real world mathematical problems by writing and solving one step equations/inequalities.
- solve one step equations with rational coefficients using inverse operations.
- graph one step inequalities on a number line.
- create and solve word problems using one step equations.
- create input/output tables to solve for x and y.
- distinguish the dependent variable from the independent variable.
- graph the values for the input/out table on the coordinate plane.

Unit 4: Geometry - 2 and 3 Dimensional

Course 1 Chapter 9: Area

Course 1 Chapter 10: Volume and Surface Area

Step 1 – Desired Results: What do I want my students to learn?

Standards

[NJSLs](#) - 6.G.A, 6.G.A.1, 6.G.A.2, 6.G.A.3, 6.G.A.4, MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

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Unit Big Ideas:

(What Fundamental Concepts Should be Learned during this Unit?)

- How does finding the area of a parallelogram relate to finding the area of a rectangle?
- If I have the area of a parallelogram can I find the other dimensions of the parallelogram?
- How can you use the area of a parallelogram to find the area of a triangle?
- If I have the area of a triangle can I find the other dimensions of the triangle?
- How can you use the area of a parallelogram to find the area of a corresponding triangle?
- If I have the area of a trapezoid can I find the other dimensions of the trapezoid?
- How will the changes in dimension effect the perimeter and area of two dimensional figures?
- How can I use the coordinates of a polygon to find the length of its side?
- How can you estimate the area of irregular figures?
- How do I find the area of a composite figure?
- Solve Real World Problems that require the area of parallelograms, triangles, trapezoids, and composite figures.
- What is a prism, what is a pyramid?
- How are they alike and different?
- What are the characteristics of a rectangular prism?
- How can you use models to find volume?
- When would you use volume?
- How is shape important when measuring a figure?
- What is a triangular prism?
- What are the characteristics of a triangular prism?
- How can I find the missing dimensions of prisms? What is Surface Area?
- How can you use nets to find the surface area of rectangular prisms and triangular prisms?
- How is the area of a triangle related to the surface area of a square pyramid?

Objectives

Students will be able to...

- find the areas and missing dimensions of parallelograms, triangles, and trapezoids.
- derive the formula for the area of a parallelogram, a triangle, and a trapezoid.
- solve real world problems with the area of a parallelogram, triangle, and trapezoids.
- use models to find the area of parallelograms, triangles, and trapezoids.
- identify the base and height of the parallelogram, triangle, and trapezoid.
- determine the effects of changing dimensions on perimeter and area.
- construct polygons in the coordinate plane and use the coordinates to determine length.
- find and estimate the area of an irregular figure by counting squares.

- solve real world problems where the area of a composite figure is required.
- use models to find the volume of rectangular prisms.
- find the volume of rectangular prisms and triangular prisms.
- find the missing dimensions of rectangular prisms and triangular prisms.
- solve real world problems with rectangular and triangular prisms.
- find the surface area of rectangular prisms, and triangular prisms using models and nets.

Unit 5: Operations with Rational Numbers

Course 1 Chapter 2: Fractions, Decimals and Percents

Course 1 Chapter 4: Multiply and Divide Fractions

Course 2 Chapter 4: Rational Numbers

Step 1 – Desired Results: What do I want my students to learn?

Standards

[NJSLS](#) - 6.NS.1, 6.NS.3, 6.RP.3c, 7.NS.1, 7.NS.1d, 7.NS.2, 7.NS.2a, 7.NS.2c, 7.NS.2d, 7.NS.3, 7.EE.3, MP1, MP2, MP3, MP4, MP5, MP 6, MP7

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Unit Big Ideas:

(What Fundamental Concepts Should be Learned during this Unit?)

- Different representation of Equivalent Values
- Division of Mixed Numbers.
- Real Life Application of Multiplication and Division of Mixed Numbers.
- Visual representation of Multiplication and Division of Mixed Numbers.

Objectives

Students will be able to...

- demonstrate mastery of multiplication and division of mixed numbers.
- solve Real-World Mathematical Problems with fractions and mixed numbers.
- evaluate multiplication and division of fractions with visual models.
- analyze the significance of being able to multiply and divide fractions and mixed numbers in the real world.
- collaborate to create word problems, solve through visual representations and the standard algorithm.
- analyze the relationship of the reciprocal/ multiplicative inverse, in dividing fractions.
- analyze the connections between fractions, decimals and percent.
- determine when to use fractions, decimals and percent in real world mathematical problems.
- demonstrate mastery of division of mixed numbers.
- evaluate the division of fractions with visual models.
- analyze the significance of being able to divide fractions and mixed numbers in the real world.
- collaborate to create word problems, solve through visual representations and the standard algorithm.
- analyze the relationship of the reciprocal/ multiplicative inverse, in dividing fractions.
- identify the subsets of rational numbers.
- demonstrate mastery of addition, subtraction, multiplication and division of rational numbers.
- solve Real-World Mathematical Problems with rational numbers.
- determine the absolute value of rational numbers and model on a number line.
- plot rational numbers on a number line.
- compare and order rational numbers.
- collaborate to create word problems using the standard algorithm and sharing with classmates.

Unit 6: Ratios / Proportional Relationships and Percent

Course 1 Chapter 1: Ratios and Rates

Course 1 Chapter 2: Fractions, Decimals and Percents

Course 1 Chapter 1: Ratios and Proportions

Course 2 Chapter 2: Percents

Step 1 – Desired Results: What do I want my students to learn?

Standards

[NJSLs](#) - 6.RP.A, 6.RP.A.1, 6.RP.A.2, 6.RP.A.3, 6.RP.A.3a, 6.RP.A.3b, 6.RP.A.3c, 6.RP.A.3d, 6.EE.2, 6.EE.2c, 6.EE.6, 6.EE.B.7, 6.EE.9, 7.RP.2, 7.RP.2a, 7.RP.2b, 7.RP.3, 7.NS.3, 7.EE.2, 7.EE.3, MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

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Unit Big Ideas:

(What Fundamental Concepts Should be Learned during this Unit?)

- What is a ratio?
- What is a rate, as compared to a unit rate?
- Create ratio tables to solve problems involving equivalent ratios.
- Graph ordered pairs in ratio tables to solve problems.
- What are equivalent ratios?
- How do I determine if two ratios are equivalent?
- Solving ratio and rate real world mathematical problems.
- Construction of Input /Output Tables.
- What are the dependent and independent variables in the input/output table?
- How do you graph the ordered pairs of the input/output table on the coordinate plane?
- What are the connections between fractions, decimals and percent?
- How can I model percent?
- What is a proportion?
- How do I solve?
- What is the percent proportion?
- How do I find the percent change and the percent error?
- How do I find sales tax, simple interest, and tip? w/ proportion
- What is a complex fraction and how do I simplify?

Objectives

Students will be able to...

- compare and contrast ratios and rates.
- use models to demonstrate ratios.
- determine if two ratios are equivalent.
- determine the unit rates and unit prices in real world problems.
- convert rates between systems of measurement.
- construct ratio tables.
- graph ordered pairs from ratio tables to solve real world problems.
- create input/output tables to solve for x and y.
- distinguish the dependent variable from the independent variable.

- graph the values for the input/out table on the coordinate plane.
- find the percent of a number.
- use cross products to solve proportions.
- use and apply the percent proportion to solve problems.
- use and apply the percent equation to solve problems.
- find the percent increase, decrease, and find the percent error.
- solve real world problems with sales discounts and mark ups.
- solve real world problems with simple interest.
- solve real world problems with sales tax.
- solve real world problems with tip and gratuity.
- model percent through diagrams.
- simplify complex fractions.

Unit 7: Inequalities

Course 1 Chapter 8: Functions & Inequalities

Course 2 Chapter 6: Equations & Inequalities

Step 1 – Desired Results: What do I want my students to learn?

Standards

[NJSLs](#) - 6.EE.5, 6.EE.6, 6.EE.8; 7.EE.4, 7.EE.4b, MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8
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[NJSLs Interdisciplinary Connections](#)

Unit Big Ideas:

(What Fundamental Concepts Should be Learned during this Unit?)

- How do you rewrite algebraic inequalities using the distributive property?
- How do you graph inequalities on a number line?
- How do you solve one-step inequalities with integers and rational coefficients?
- How do you solve two-step inequalities with integers and rational coefficients?
- Solve Real World Problems with algebraic inequalities.

Objectives

Students will be able to...

- apply the properties of operations to create equivalent inequalities.
- solve real world mathematical problems by writing and solving one step inequalities.
- solve one step inequalities with rational coefficients using inverse operations.
- graph one step inequalities on a number line.
- solve and graph two step inequalities with rational coefficients using inverse operations.

Unit 8: *Statistical Measures and Displays*

Course 1 Chapter 11: Statistical Measures

Course 1 Chapter 12: Statistical Displays

Step 1 – Desired Results: What do I want my students to learn?

Standards

[NJSLs](#) - 6.SP.A, 6.SP.A.1, 6.SP.A.2, 6.SP.A.3, 6.SP.B, 6.SP.B.4, 6.SP.B.5, 6.SP.B.5a, 6.SP.B.5b, 6.SP.B.5c, 6.SP.B.5d, MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

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Unit Big Ideas:

(What Fundamental Concepts Should be Learned during this Unit?)

- What is a statistical question?
- How are mean, median, mode helpful in describing data?
- How are surveys created to collect and analyze data?
- What is an outlier in a data set?
- How do you choose an appropriate measure of central tendency?
- What are measures of variation?
- Why is it important to carefully evaluate graphs?
- How do you choose an appropriate display for a set of data?
- What is the mean absolute deviation for a data set?

Objectives

Students will be able to...

- find and compare the mean, median, and mode of a data set.
- analyze data from pictographs, dot plots, bar graphs, and histograms to find the mean, median, and mode.
- create a survey, analyze the data from the survey, graph the data from the survey, and find the mean, median, mode and range.
- analyze categorical data from real world problems.
- explain how mean, median, and mode are helpful in describing data.
- find measures of variation within a data set.
- find outliers within a data set.
- find and interpret the mean absolute deviation for a data set.
- choose an appropriate measure of central tendency.
- construct and analyze line plots/dot plots, histograms, and box plots.
- describe a data distribution by its center, spread, and overall shape.
- draw and interpret line graphs.

Unit 9: Complex Equations and Inequalities

Course 2 Chapter 6: Equations and Inequalities

Step 1 – Desired Results: What do I want my students to learn?

Standards

[NJSLs](#) - 7.EE.4, 7.EE.4a, 7.EE.4b, MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

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Unit Big Ideas:

(What Fundamental Concepts Should be Learned during this Unit?)

- How do I solve two step equations with rational numbers?
- Writing and solving two step equations to solve real word problems.
- Writing and solving two step inequalities to solve world problems.
- What does it mean to say two quantities are equal?
- What are the Properties of Equality?
- What are the Properties of Inequality?
- How do I solve equations with variables on each side?
- How do I solve and graph inequalities?

Objectives

Students will be able to...

- explain how to find the greatest common factor of monomials. (review and continued practice)
- factor monomials. (review and continued practice)
- factor linear expressions. (review and continued practice)
- simplify linear expressions. (review and continued practice)
- identify equivalent expressions. (review and continued practice)
- solve **two step** equations with rational numbers using inverse operations.
- use the distributive property to solve two step equations.
- solve real world problems by writing and solving two step equations.
- solve inequalities requiring addition, subtraction, multiplication and division of rational numbers using inverse operations.
- solve two-step inequalities requiring addition, subtraction, multiplication and division of rational numbers using inverse operations.
- identify the Properties of Equality used to solve two step equations.
- create authentic word problems which require two step equations to solve.
- create authentic word problems which require two step inequalities to solve.
- solve equations with variables on each side of the equation.
- solve real world problems with variables on each side of the equation.

Please contact content supervisor for any questions.