Mathematics Department
Grade 6

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Supported by: Erin Michels
Effective Date: September 2024

Scope and Sequence

Month	Grade 6
September	**Grade 6 Math Baseline Assessment** **Chapter 1: Whole Numbers, Prime Numbers & Prime Factorization**
October	**Chapter 2: Number Lines & Negative Numbers** ● (Practice fact fluency and operations with whole numbers for 5 minutes 3x a week)
November	**Chapter 3 Fractions and Decimals** ● (Practice fact fluency and operations with whole numbers for 5 minutes 3x a week) **Grade 6 Benchmark Assessment 1 (by November 30) (Chapters 1 through 3)**
December	**Chapter 4: Ratio** - Speak to Grade 5 - ask about completion of Chapter 9 (Ratio) Pull from Grade 5 Chapter 9 as needed (for prior knowledge and foundation) **Chapter 5: Rates & Speed** ● First review converting of measurements within systems
January	**Finish Chapter 5** **Chapter 6: Percent** - Speak to Grade 5 - ask about completion of Chapter 10 (Percent) Pull from Grade 5 Chapter 10 as needed (for prior knowledge and foundation)
February	**Grade 6 Benchmark Assessment 2 (by Feb Break) (Chapters 4 through 6)** **Chapter 7: Algebraic Expressions**
March	**Chapter 8: Equations and Inequalities**

	Chapter 9: The Coordinate Plane
April	**Finish Chapter 9**
	Grade 6 Benchmark Assessment 3 (Chapters 7 through 9)
	Chapter 10: Area of a Polygon
May	**Chapter 12: Surface Area and Volume of Solids**
	Grade 6 Math Spring Summative Assessment
June	**Chapter 13: Introduction to Statistics (infuse throughout the year if possible)**
	Chapter 14: Measures of Central Tendency

Unit 1
The Number System
Summary and Rationale
In this unit, students learn that a single number can be represented in many ways. A number line can help students compare and order positive and negative whole numbers by visualizing the relationship among the numbers' positions. Students apply their knowledge of prime factorization to find the greatest common factor and the least common multiple of a set of numbers. They also apply their knowledge of squaring and cubing to evaluate numerical expressions and extend the order of operations to include exponents. Students solve problems involving absolute value and see how it can be used to interpret real-world situations involving positive and negative numbers. Students learn how to divide fractions and to multiply and divide decimals. They apply multiplication skills to real-world problems involving fractions and decimals. Students draw and revise bar models to aid in solving multi-step real-world problems.
Recommended Pacing
September- November
Standards
The Number System

6.NS.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) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because ¾ of 8/9 is 2/3. (In general (a/b) ÷ (c/d) =ad/bc.) How much chocolate will each person get if 3 people share ½ lb of chocolate equally? How many ¾-cup servings are in a 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length ¾ mi and area ½ square mi?*
6.NS.2	With accuracy and efficiency, divide multi-digit numbers using the standard algorithm.
6.NS.3	With accuracy and efficiency, add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

6.NS.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 the two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).*
6.NS.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.NS.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.
6.NS.6a	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.
6.NS.6c	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.
6.NS.7	Understand ordering and absolute value of rational numbers.
6.NS.7a	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 orientated from left to right.*
6.NS.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write -3 °C > -7°C to express the fact that -3°C is warmer than -7 °C.*
6.NS.7c	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, doe an account balance of -30 dollars, write $\lvert -30 \rvert$ = 30 to describe the size of the debt on dollars.*
6.NS.7d	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.*
Expressions and Equations	
6.EE.1	Write and evaluate numerical expressions involving whole number exponents.
6.EE.2	Write, read, and evaluate expressions in which letters stand for numbers.
6.NS.2c	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 formula $V = s^3$ and $A = 6s^2$ to find the volume and surface*

	area of a cube with side lengths s= ½ .

<table>
<tr><td colspan="2" style="background:#d9d9d9">Mathematical Practices</td></tr>
<tr><td>K-12.MP.1</td><td>Make sense of problems and persevere in solving them.</td></tr>
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Interdisciplinary Connections

Math journal, math vocabulary discussions, reading topic-related books, providing explanations

SL.1.1.	Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. A. Follow agreed-upon norms for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion). B. Build on others' talk in conversations by responding to the comments of others through multiple exchanges. C. Ask questions to clear up any confusion about the topics and texts under discussion.
SL.1.3.	Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
SL.1.6.	Produce complete sentences when appropriate to task and situation.

Science

MS-PS1-4	Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
MS-ESS2-5	Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.

Integration of Technology

Use of SmartBoard, playing online games	
8.1.2.A.4	Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
Math journal, math vocabulary discussions, reading topic-related books, providing explanations	
Career Readiness, Life Literacies and Key Skills	
9.1.8.CP.1	Compare prices for the same goods or services.
9.1.8.FP.6	Compare and contrast advertising messages to understand what they are trying to accomplish.
9.1.8.PB.4	Construct a simple personal savings and spending plan based on various sources of income and different stages of life (e.g. teenager, young adult, family)
9.1.8.PB.6	Construct a budget to save for short-term, long term, and charitable goals.
9.2.8.CAP.12	Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.
9.4.8.CT.2	Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option.

Instructional Focus

Enduring Understandings:	Essential Questions:
Whole numbers, fractions, decimals, and positive and negative numbers can be represented in several ways. Negative numbers are the opposites of positive numbers. For every positive number, there is a corresponding negative number. On a horizontal number line, numbers increase in value from left to right. Positive numbers are to the right of 0 and negative numbers are to the left of zero. The number 0 is neither positive nor negative. On a vertical number line, numbers increase from the bottom to the top. Prime numbers are numbers that have exactly two factors, the number itself and one. The first prime number is 2. Composite numbers are numbers greater than one that have more than two factors.	How can we compare and order numbers? How can positive and negative numbers represent real-world quantities? Why is the order of operations necessary? What is absolute value? Why are fractions and decimals necessary?

The Fundamental Theorem of Arithmetic states that every integer greater than one can be expressed as a product of prime factors in only one way (except for the order of the factors).

The squares and cubes of whole numbers are called perfect squares and perfect cubes.

The order of operations is a set of rules for evaluating expressions to ensure that the solution is always the same.

The absolute value of a number is the distance from 0 on a number line. Because it represents distance, the absolute value of a number is always positive. Two opposites have the same absolute value. The greater the absolute value of a negative number, the smaller the number.

Whole number concepts can be extended to fractions and decimals when more precise calculations are needed.

Estimating a product or quotient can help determine where to place the decimal point.

Evidence of Learning (Assessments)

Ongoing observation
Class Participation
Classwork
Problem of the Day/Week
Guided Practice
Warm-ups/Exit Tickets
Homework
Quizzes/Chapter/Unit Tests
Benchmark Assessments

Objectives (SLO)

Students will know:
- Number line
- Positive number, negative number, opposite
- Composite number
- Prime factor
- Common factor, greatest common factor (GCF)

Students will be able to:
- Represent whole numbers, fractions, and decimals on a number line.
- Interpret and write statements of inequality for two given positive numbers using the symbols > or <.
- Express a whole number as a product of its prime factors.

- Common multiple, least common multiple (LCM)
- Square (of a number)
- Exponent, base (of an exponent)
- Perfect square
- Square root
- Cube (of a number)
- Perfect cube
- Cube root
- Absolute value
- Reciprocals

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- Find the common factors and the greatest common factor (GCF) of two whole numbers.
- Find the common multiples and the least common multiple (LCM) of two whole numbers.
- Find the square of a number.
- Find the square root of a perfect square.
- Find the cube of a number.
- Find the cube root of a perfect cube.
- Evaluate numerical expressions involving whole number exponents.
- Use negative numbers to represent real-world quantities.
- Represent, compare, and order positive and negative numbers on a number line.
- Understand that the absolute value of a number is the distance from 0 on a number line.
- Interpret absolute value as the magnitude for a positive or negative quantity in a real-world situation.
- Divide a fraction, whole number, or mixed number by a fraction or a mixed number
- Multiply a decimal by a decimal.
- Divide a whole number or a decimal by a decimal.
- Solve problems involving fractions and decimals.

Suggested Resources/Technology Tools

Math In Focus Resources Chapter 1: Positive Numbers and the Number Line
Math In Focus Resources Chapter 2: Negative Numbers and the Number Line
Math In Focus Resources Chapter 3: Multiplying and Dividing Fractions and Decimals

Khan Academy
Prodigy
Front Row
www.studyisland.com
www.ixl.com
www.brainpop.com

Tier 1 Modifications and Accommodations
Including special education students, Multilingual Language Learners (MLLs), students at risk of school failure, gifted and talented students, and students with 504 plans;

General Modifications for students struggling to learn:

Small group instruction within the classroom
Differentiation through content, process, product,and environment
Individual feedback and praise towards what is done correctly based upon effort, attitude and strategy.
Help students manage individual stressors for the student and plan alternate pathways for completion of assignments

Special Education - Transition Skills, Reteach, Anchor Charts, Guided Notes, Multiplication Chart, Hands on Activities, Manipulatives, See textbook for Differentiated Instruction ideas in each chapter, Teacher Resource Tools TRT1-TRT12

*These are only suggested ideas to modify instruction, modifications and accommodations should be tailored to each student's IEP and needs.

504 - Transition Skills, Reteach, Anchor Charts, Manipulatives, Teacher Resource Tools TRT1-TRT12

MLL - Vocabulary lists with examples, Manipulatives

Gifted and Talented - Activity Project, Extra Brain Work, Enrichment, Extra Practice, Performance Tasks, Video and Tools (Ed: Your Friend in Learning)

Career Readiness, Life Literacies, and Key Skills NJSLS

Please select all standards that apply to this unit of study:
- Act as a responsible and contributing community members and employee
- Attend to financial well-being
- Consider the environmental, social and economic impacts of decisions
- Demonstrate creativity and innovation
- Utilize critical thinking to make sense of problems and persevere in solving them
- Model integrity, ethical leadership and effective management
- Plan education and career paths aligned to personal goals
- Use technology to enhance productivity increase collaboration and communicate effectively
- Work productively in teams while using cultural/global competence

Suggestions on integrating these standards can be found at: https://www.nj.gov/education/standards/clicks

Unit 2

Ratios and Proportional Relationships

Summary and Rationale

Ratio

In this unit, students learn to compare two numbers using division and express this comparison as a ratio. They apply the concepts of equivalent ratios, part-whole, part-part, and whole-part comparisons to solve one and two-step real-world problems involving ratios. The study of ratios in this unit is extended to involve three quantities. Students then write equivalent ratios and ratios in simplest form, and use comparison models and the unitary method to solve many types of ratio problems involving two or three quantities, two related sets, and ratios that change.

Rate

Students extend their knowledge of ratios to the concept of rate. They use the unitary method and bar models to find rates and unit rates, and solve real-world rate problems.

Percent

Students learn that percent can be expressed as a fraction with a denominator of 100 and review the relationship between fractions, decimals, and percents. Students find percent of a number and solve real-world problems involving percent, including concepts such as sales tax, discount, and interest.

Students use bar models to visualize percentages, and solve problems using both the unitary method and traditional methods. Students write equivalent fractions, decimals, and percentages. They use bar models and equations to visualize and solve problems that involve finding a percent given a part and a whole, finding a part given its percent and the whole and finding the whole given a part and its percent.

Recommended Pacing

November - January

Standards

Ratios and Proportional Relationships

6.RP.1	With prompting and support, ask and answer questions about key details in a text.
6.RP.2	Understand the concept of a unit rate a/b associated with a ratio $a{:}b$ with b not equal to zero, 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 ¾ cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*

6.RP.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.
6.RP.3a	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.
6.RP.3b	Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to row 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
6.RP.3c	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.
6.RP.3d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
The Number System	
6.NS.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) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because ¾ of 8/9 is 2/3. (In general (a/b) ÷ (c/d) =ad/bc.) How much chocolate will each person get if 3 people share ½ lb of chocolate equally? How many ¾-cup servings are in a 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length ¾ mi and area ½ square mi?*
6.NS.2	With accuracy and efficiency, divide multi-digit numbers using the standard algorithm.
Mathematical Practices	
K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.2	Reason abstractly and quantitatively.
K-12.MP3	Construct viable arguments and critique the reasoning of others.
K-12.MP.4	Model with mathematics.
K-12.MP.5	Use appropriate tools strategically.
K-12.MP.6	Attend to precision.
K-12.MP.7	Look for and make use of structure.
K-12.MP.8	Look for and express regularity in repeated reasoning.

K-12.MP.1	Make sense of problems and persevere in solving them.

Interdisciplinary Connections	
Math journal, math vocabulary discussions, reading topic-related books, providing explanations	
SL.1.1.	Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. A. Follow agreed-upon norms for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion). B. Build on others' talk in conversations by responding to the comments of others through multiple exchanges. C. Ask questions to clear up any confusion about the topics and texts under discussion.
SL.1.3.	Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
SL.1.6.	Produce complete sentences when appropriate to task and situation.

Integration of Technology	
Use of SmartBoard, playing online games	
8.1.2.A.4	Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
Math journal, math vocabulary discussions, reading topic-related books, providing explanations	

Career Readiness, Life Literacies and Key Skills	
9.1.8.CDM.3	Demonstrate an understanding of the terminology associated with different types of credit (e.g., credit cards, installment loans, mortgages, lines of credit) and compare and calculate the interest rates associated with each
9.1.8.CDM.4	Compare and contrast loan management strategies, including interest charges and total principal repayment costs.
9.1.8.CP.1	Compare prices for the same goods or services.
9.1.8.EG.1	Explain how taxes affect disposable income and the difference between net and gross income
9.1.8.FL.4	Analyze the interest rates and fees associated with financial products
9.1.8.FP.6	Compare and contrast advertising messages to understand what they are trying to accomplish.
9.1.8.PB.4	Construct a simple personal savings and spending plan based on various sources of income and different stages of life (e.g. teenager, young adult, family)

9.1.8.PB.6	Construct a budget to save for short-term, long term, and charitable goals.
9.2.8.CAP.12	Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.
9.4.8.CT.2	Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option.
9.4.8.TL 1	Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.

Instructional Focus

Enduring Understandings:	Essential Questions:
Two or more numbers or quantities can also be compared by division and the comparison expressed as a ratio. A ratio expresses the relationship between two numbers or quantities that have the same units. A ratio can be written as a fraction or using a colon. A ratio can be used to compare two quantities, and can be used to solve problems. A rate can be used to compare one quantity to another quantity, and can be used to solve problems. Percent is another way of expressing a part of a whole. Percent is a concept used to compare quantities expressed per hundred. A percent can be expressed as a fraction with a denominator of 100. Percent means "per hundred" or "out of 100." A given percent is a numerator on a fraction with a denominator of 100. Percents are used everywhere in the real world. When fractions are expressed as percentages, they already have a common denominator, which makes for much easier computation.	In what different ways can numbers be compared? What is a ratio? In what different ways can a ratio be written? What does percent mean? Why is percent helpful? How are the concepts of ratio, rate, and percent used to solve real world problems? Where are ratios, rates, and percentages used?

Evidence of Learning (Assessments)

Ongoing observation
Class Participation
Classwork
Problem of the Day/Week
Guided Practice

Warm-ups/Exit Tickets
Homework
Quizzes/Chapter/Unit Tests
Benchmark Assessment

Objectives (SLO)

Students will know:
- Ratio
- Term
- Equivalent ratios
- Simplest form
- Greatest common factor (GCF)
- Rate, unit rate
- Speed, average speed
- Percent
- Base
- Sales tax
- Commission
- Interest, interest rate
- Markup
- Discount

Students will be able to:
- Read and write ratios to compare two quantities.
- Express equivalent ratios with three quantities.
- Interpret ratios given in fraction form.
- Use a ratio to find what fraction one quantity is of another or how many times as great (or as large) one is as the other. Identify and write equivalent ratios.
- Write ratios in simplest form
- Compare ratios.
- Solve real-world problems involving ratios and fractions.
- Solve real-world problems involving ratios with three quantities.
- Solve unit rate problems including unit pricing and constant speed.
- Solve problems involving unit rates and rates.
- Understand percent notation.
- Relate and compare percentages.
- Express fractions as percentages.
- Use different ways to find the number represented by a percent.
- Write equivalent fractions, decimals, and percents.
- Find the percent of a number.
- Solve problems involving percent, percent increase, and percent decrease.

Suggested Resources/Technology Tools

Math In Focus Resources <u>Grade 5 Chapter 9: Ratio</u>
Math In Focus Resources Grade 6 Chapter 4: Ratio
Math In Focus Resources Grade 6 Chapter 5: Rate
Math In Focus Resources <u>Grade 5 Chapter 10: Percent</u>
Math In Focus Resources Grade 6 Chapter 6: Percent

www.aaamath.com/rat61cx2.htm (Fractions to percents)
www.studyisland.com
www.ixl.com
www.brainpop.com

Khan Academy, Front Row, Prodigy

Tier 1 Modifications and Accommodations
Including special education students, Multilingual Language Learners (MLLs), students at risk of school failure, gifted and talented students, and students with 504 plans;

General Modifications for students struggling to learn:

Small group instruction within the classroom
Differentiation through content, process, product,and environment
Individual feedback and praise towards what is done correctly based upon effort, attitude and strategy.
Help students manage individual stressors for the student and plan alternate pathways for completion of assignments

Special Education - Transition Skills, Reteach, Anchor Charts, Guided Notes, Multiplication Chart, Hands on Activities, Manipulatives, See textbook for Differentiated Instruction ideas in each chapter, Teacher Resource Tools TRT13, Conversion Charts

*These are only suggested ideas to modify instruction, modifications and accommodations should be tailored to each student's IEP and needs.

504 - Transition Skills, Reteach, Anchor Charts, Manipulatives, Teacher Resource Tools TRT13, Conversion Charts

MLL - Vocabulary lists with examples, Manipulatives, Conversion Charts

Gifted and Talented - Activity Project, Extra Brain Work, Enrichment, Extra Practice, Performance Tasks, Video and Tools (Ed: Your Friend in Learning)

Career Readiness, Life Literacies, and Key Skills NJSLS

Please select all standards that apply to this unit of study:
  Act as a responsible and contributing community members and employee
  Attend to financial well-being
  Consider the environmental, social and economic impacts of decisions
  Demonstrate creativity and innovation
  Utilize critical thinking to make sense of problems and persevere in solving them
  Model integrity, ethical leadership and effective management
  Plan education and career paths aligned to personal goals
  Use technology to enhance productivity increase collaboration and communicate effectively
  Work productively in teams while using cultural/global competence
Suggestions on integrating these standards can be found at: https://www.nj.gov/education/standards/clicks

Unit 3
Expressions and Equations
Summary and Rationale

Algebra is a language that is used to create mathematical models of real-world situations and handle problems that we cannot solve using just arithmetic. Rather than using words, algebra uses symbols to make statements about things. In this unit, students will earn to write both numerical and algebraic expressions and equations that correspond to given situations. They also learn to simplify and evaluate expressions, and use expressions, inequalities, and equations to solve real-world problems.

Students learn that variables represent numbers whose exact values are not yet specified. They also learn that expressions in different forms can be equivalent, as they rewrite expressions to represent a quantity in different ways by simplifying it. Students will solve simple equations by using number sense, properties of operations, and the idea of maintaining equality on both sides of an equation.

Students write algebraic expressions to represent situations in the world around them. They learn to use variables to represent unknown quantities and to correctly identify the terms in algebraic expressions. Students expand and factor algebraic expressions and use substitution to evaluate algebraic expressions for given values.

Students relate the use of bar models and number properties to algebraic expressions in order to solve real-word problems, expand algebraic expressions, and recognize equivalent algebraic expressions.

Students learn to think of the = symbol as meaning that two expressions have the same value. This leap in abstraction should be accompanied by as much work with a balanced scale as possible. Students use inverse operations to "get the variable alone" on one side of an equal sign to solve an equation. This reliance on the properties of equality establishes a strong base for future work in algebra. Students can use substitution to check the accuracy of a solution to an equation. The solution is the value that makes the equation a true statement.

Students learn to think of the symbols > and < as meaning that two expressions have different values. This concept can be visualized using an unbalanced scale. Students are also introduced to the symbols ≥ and ≤, which expands their conception of how two quantities or expressions compare. They extend their use of substitution to determine whether a given number is a solution to an inequality and use number lines to represent a visual solution to one-variable inequalities.

The term *linear equation* is introduced in this unit. Students learn that the graphed solutions of simple two-variable equations are lines that contain an infinite number of solutions, including not just whole numbers, but also fractions, mixed numbers, and decimals.

Recommended Pacing	
January - March	
Standards	
(Sub Standard Heading)	
6.EE.2	Write, read, and evaluate expressions in which letters stand for numbers.
6.EE.2a	Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as $5 - y$.*
6.EE.2b	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.*
6.EE.2c	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 formula $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with side lengths s= ½ .*
6.EE.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.*
6.EE.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. Reason about and solve one-variable equations and inequalities.*
6.EE.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.EE.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.
6.EE.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
6.EE.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 in the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
6.EE.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 distance and times, and write the equation d=65t to represent the relationship between distance and time.*
The Number System	
6.NS.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.
6.NS.6b	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.
6.NS.6c	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.
6.NS.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.
Mathematical Practices	
K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.2	Reason abstractly and quantitatively.
K-12.MP3	Construct viable arguments and critique the reasoning of others.
K-12.MP.4	Model with mathematics.
K-12.MP.5	Use appropriate tools strategically.
K-12.MP.6	Attend to precision.
K-12.MP.7	Look for and make use of structure.
K-12.MP.8	Look for and express regularity in repeated reasoning.
Interdisciplinary Connections	

Math journal, math vocabulary discussions, reading topic-related books, providing explanations	
SL.1.1.	Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. A. Follow agreed-upon norms for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion). B. Build on others' talk in conversations by responding to the comments of others through multiple exchanges. C. Ask questions to clear up any confusion about the topics and texts under discussion.
SL.1.3.	Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
SL.1.6.	Produce complete sentences when appropriate to task and situation.
Science	
MS-LS1-1	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.
MS-LS1-2	Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.
MS-LS1-3	Use arguments supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.
MS-LS1-6	Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
MS-LS2-3	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
MS-LS4-1	Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.
MS-LS4-2	Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.
MS-ESS1-2	Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
MS-ESS1-4	Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.
MS-ESS2-2	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
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.

MS-ESS3-1	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
MS-ESS3-2	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
MS-ESS3-3	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
MS-ESS3-4	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
MS-ESS3-5	Ask questions to clarify evidence of the factors that have caused climate change over the past century.
Integration of Technology	
Use of SmartBoard, playing online games	
8.1.2.A.4	Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
Math journal, math vocabulary discussions, reading topic-related books, providing explanations	
Career Readiness, Life Literacies and Key Skills	
9.1.8.CDM.3	Demonstrate an understanding of the terminology associated with different types of credit (e.g., credit cards, installment loans, mortgages, lines of credit) and compare and calculate the interest rates associated with each
9.1.8.CDM.4	Compare and contrast loan management strategies, including interest charges and total principal repayment costs.
9.1.8.CP.1	Compare prices for the same goods or services.
9.1.8.EG.1	Explain how taxes affect disposable income and the difference between net and gross income
9.1.8.FL.4	Analyze the interest rates and fees associated with financial products
9.1.8.FP.6	Compare and contrast advertising messages to understand what they are trying to accomplish.
9.1.8.PB.4	Construct a simple personal savings and spending plan based on various sources of income and different stages of life (e.g. teenager, young adult, family)
9.1.8.PB.6	Construct a budget to save for short-term, long term, and charitable goals.
9.2.8.CAP.12	Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.

9.4.8.CT.2	Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option.
9.4.8.TL 1	Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.

Instructional Focus

Enduring Understandings:	Essential Questions:
Algebra is a language that is used to create mathematical models of real-world situations and handle problems that we cannot solve using just arithmetic. Rather than using words, algebra uses symbols to make statements about things. Variables represent numbers whose exact values are not yet specified. Numerical expressions can involve addition, subtraction, multiplication, and division. Numerical expressions that involve an unknown value are called algebraic expressions. To solve an equation is to find the exact value of the unknown variable. To do so, inverse operations are used along with the properties of operations and equality are used on both sides of the equation. Variables are used to represent unknown quantities. Algebraic expressions can be used to describe situations and solve real-world problems. Algebraic expressions are sometimes called variable expressions because they contain one or more variables. To evaluate an algebraic expression for a given value, substitute the value in for the variable and simplify the remaining numerical expression. When simplifying numerical or algebraic expressions, the expression obtained after simplifying is equivalent to the original expression. The = symbol means that two expressions have the same value. To solve a one-variable equation, use inverse operations to "get the variable alone" on one side of an equal sign to solve an equation. Substitution to check the accuracy of a solution to an equation. The solution is the value that makes the equation a true statement.	What does algebra allow us to do? What is a variable? Why are variables helpful? What are the guidelines for solving an equation? What is the difference between an algebraic expression and an equation? How are equations different from inequalities? How do you evaluate an algebraic expression given a specific value for the variable? How do you solve a simple equation? What is the best way to show the solutions to a one-variable inequality? Why? What do the solutions to a linear equation look like? Can the solutions be counted?

The symbols > and < as meaning that two expressions have different values.

The solutions to a one-variable inequality can be represented using a number line.

The graphed solutions of simple two-variable linear equations are lines that contain an infinite number of solutions, including not just whole numbers, but also fractions, mixed numbers, and decimals.

Equations and inequalities can be used to describe situations and solve real-world problems.

The coordinate plane is formed by the intersection of two number lines. The plane is divided into four regions, called quadrants. The origin is the place where the two number lines intersect.. An ordered pair is a pair of numbers that describes the location of a point in a coordinate plane.

Any point on a coordinate plane can be named by an ordered pair of numbers, and you can graph any ordered pair of real numbers as a point on the plane.

An ordered pair (x, y) is ordered because the horizontal coordinate is named first. If the order is reversed the location of the point is changed.

Evidence of Learning (Assessments)

Ongoing observation
Class Participation
Classwork
Problem of the Day/Week
Guided Practice
Warm-ups/Exit Tickets
Homework
Quizzes/Chapter/Unit Tests
Benchmark Assessments

Objectives (SLO)

Students will know:
- Numerical expression
- Variable
- Algebraic expression
- Terms
- Evaluate
- Substitute
- Simplify
- Coefficient
- Like terms
- Equivalent expressions
- Expand
- Factor
- Equation
- Solve
- True
- Equality Properties
- Solution
- Linear equation
- Independent variable, dependent variable
- Inequality
- Coordinate plane
- Origin
- Quadrants
- Ordered pair, x-coordinate, y-coordinate

Students will be able to:
- Recognize, write, and evaluate simple algebraic expressions in one variable.
- Use variables to write algebraic expressions.
- Evaluate algebraic expressions for given values of the variable.
- Simplify algebraic expressions in one variable.
- Solve simple equations.
- Write and evaluate inequalities.
- Solve real-world problems involving algebraic equations.
- Recognizing the expression obtained after simplifying is equivalent to the original expression.
- Expand and factor algebraic expressions.
- Solve real-world problems involving algebraic expressions.
- Solve equations in one variable
- Express the relationship between two quantities as a linear equation.
- Use a table or graph to represent a linear equation.
- Use substitution to determine whether a given number is a solution of an inequality.
- Represent the solutions of an inequality on a number line.
- Solve real-world problems by writing equations and inequalities.
- Name and graph points on a coordinate plane.

Suggested Resources/Technology Tools

Math In Focus Resources Chapter 7: Algebraic Expressions
Math In Focus Resources Chapter 8: Equations and Inequalities
Math In Focus Resources Chapter 9: The Coordinate Plane

Rulers
Yardsticks
Algebra tiles
Balance scale

www.studyisland.com
www.ixl.com

www.brainpop.com

Tier 1 Modifications and Accommodations
Including special education students, Multilingual Language Learners (MLLs), students at risk of school failure, gifted and talented students, and students with 504 plans;

General Modifications for students struggling to learn:

Small group instruction within the classroom
Differentiation through content, process, product,and environment
Individual feedback and praise towards what is done correctly based upon effort, attitude and strategy.
Help students manage individual stressors for the student and plan alternate pathways for completion of assignments

Special Education - Transition Skills, Reteach, Anchor Charts, Guided Notes, Multiplication Chart, Hands on Activities, Manipulatives, See textbook for Differentiated Instruction ideas in each chapter, Teacher Resource Tools TRT1, 12, 14-20

*These are only suggested ideas to modify instruction, modifications and accommodations should be tailored to each student's IEP and needs

504 - Transition Skills, Reteach, Anchor Charts, Manipulatives, Teacher Resource Tools TRT1, 12, 14-20

MLL - Vocabulary lists with examples, Manipulatives,

Gifted and Talented - Activity Project, Extra Brain Work, Enrichment, Extra Practice, Performance Tasks, Video and Tools (Ed: Your Friend in Learning)

Career Readiness, Life Literacies, and Key Skills NJSLS

Please select all standards that apply to this unit of study:
- Act as a responsible and contributing community members and employee
- Attend to financial well-being
- Consider the environmental, social and economic impacts of decisions
- Demonstrate creativity and innovation
- Utilize critical thinking to make sense of problems and persevere in solving them
- Model integrity, ethical leadership and effective management
- Plan education and career paths aligned to personal goals
- Use technology to enhance productivity increase collaboration and communicate effectively
- Work productively in teams while using cultural/global competence

Suggestions on integrating these standards can be found at: https://www.nj.gov/education/standards/clicks

Unit 4

Geometry

Summary and Rationale

Students will learn how to find areas of triangles, parallelograms,trapezoids, and other polygons. They will teh use this knowledge to calculate the areas of composite figures, which are made up of a combination of polygons. Students will explore and identify the differences between a two dimensional figure and a three-dimensional figure. Formulas for calculating perimeter and area for two-dimensional figures as well as formulas for calculating surface area and volume of three-dimensional figures will be used. Students are expected to recognize area as an attribute of two-dimensional shapes and volume as an attribute of three-dimensional shapes. Because a net is a two-dimensional representation of a three-dimensional solid, it can be used to find the surface area of a solid.

Calculating measurements for two and three-dimensional figures is often used by homeowners when working on household projects. Many contractors, such as painters, carpenters, masons, and landscapers will use these formulas when problem solving to calculate cost and materials.

Recommended Pacing

March - April

Standards

(Sub Standard Heading)	
6.G.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.
6.G.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.
6.G.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.
6.G.4	Represent three-dimensional figures (e.g., pyramid, triangular prism, rectangular prism) 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.

Mathematical Practices	
K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.2	Reason abstractly and quantitatively.
K-12.MP3	Construct viable arguments and critique the reasoning of others.
K-12.MP.4	Model with mathematics.
K-12.MP.5	Use appropriate tools strategically.
K-12.MP.6	Attend to precision.
K-12.MP.7	Look for and make use of structure.
K-12.MP.8	Look for and express regularity in repeated reasoning.

Interdisciplinary Connections	
Math journal, math vocabulary discussions, reading topic-related books, providing explanations	
SL.1.1.	Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. A. Follow agreed-upon norms for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion). B. Build on others' talk in conversations by responding to the comments of others through multiple exchanges. C. Ask questions to clear up any confusion about the topics and texts under discussion.
SL.1.3.	Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
SL.1.6.	Produce complete sentences when appropriate to task and situation.

Integration of Technology	
Use of SmartBoard, playing online games	
8.1.2.A.4	Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).

Math journal, math vocabulary discussions, reading topic-related books, providing explanations	

Career Readiness, Life Literacies and Key Skills	
9.2.8.CAP.12	Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.
9.4.8.CT.2	Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option.

Instructional Focus

Enduring Understandings:	Essential Questions:
Area is used to calculate the covering of a two-dimensional figure and is measured in square units.	Why is it important to be able to calculate the area of two-dimensional figures (polygons)?
Area is as an attribute of two-dimensional shapes and volume is as an attribute of three-dimensional shapes. Because a net is a two-dimensional representation of a three-dimensional solid, it can be used to find the surface area of a solid.	How can you calculate the area of a triangle? How are the base and height of a rectangle or triangle related?
Bases and heights are measurements that are used to find the area of a triangles, parallelograms, and trapezoids.	Are the base and the height always both sides of the triangle?
The base of a rectangle is always perpendicular to its height. The same is true for a trapezoid, except a trapezoid has two bases.	Why is it important to be able to calculate the surface area and volume of three-dimensional figures? How is surface area different from volume?
The base is a side of the triangle. However, depending on the triangle, the height may or not be another side of the triangle. The height must be perpendicular to the base.	
In right triangles, the base and the height are both sides of the triangle. They are the sides that are perpendicular to each other, forming the right angle. In other triangles, the sides are not perpendicular, so a dotted line is drawn to represent the height	
The base is a side of the parallelogram. The base of a parallelogram can be any of its sides. t The height must be perpendicular to the identified. base.	
The area of irregular polygons can often be found by separating it into familiar figures, finding the area of each smaller figure, and adding the areas together.	

A three-dimensional figure has the three dimensions of length, width, and height.

Prisms and pyramids are named by the shapes of their bases. A cross section of a prism or a pyramid is a two-dimensional polygon.

Surface area is used to calculate the covering of a three-dimensional figure. A net of a three-dimensional figure can be used to calculate the surface area. The surface area is the total area of all faces.

Volume is used to calculate the capacity of a three-dimensional container.

Evidence of Learning (Assessments)

Ongoing observation
Class Participation
Classwork
Problem of the Day/Week
Guided Practice
Warm-ups/Exit Tickets
Homework
Quizzes/Chapter/Unit Tests
Benchmark Assessments

Objectives (SLO)

Students will know:
- Two-dimensional geometric figures have an area and a perimeter.
- Three-dimensional geometric figures have a surface area and volume.
- Vertex
- Side
- Angle
- Base
- Height
- Perpendicular
- Area
- Right triangle
- Parallelogram
- Trapezoid
- Polygon
- Regular Polygon

Students will be able to:
- Identify the base given the height of a triangle.
- Identify the height given the base of the triangle.
- Use a formula to find the area of a triangle given its base and height.
- Use a formula to find the area of a parallelogram, given its base and height.
- Use a formula to find the area of a trapezoid given its bases and height.
- Divide any polygon into triangles.
- Divide regular polygons into triangles to find their areas.
- Calculate the area of composite figures.
- Identify the net of a prism and a pyramid.
- Identify the solid formed by a given net.
- Represent three-dimensional figures using nets to calculate surface areas

- Prism
- Rectangular prism
- Triangular prism
- Pyramid
- Square pyramid, triangular pyramid
- Net
- Surface area
- Cross section

- Find the surface area of a prism and pyramid by adding the area of each face.
- Calculate the volume and surface area of a right prism and pyramid.
- Use knowledge of area, volume, and surface area to solve real world problems.

Suggested Resources/Technology Tools

Math In Focus Resources Chapter 10: Area of Polygons
Math In Focus Resources Chapter 12: Surface Area and Volume of Solids

Solid shapes
Net of solid shapes

www.studyisland.com
www.ixl.com
www.brainpop.com

Tier 1 Modifications and Accommodations
Including special education students, Multilingual Language Learners (MLLs), students at risk of school failure, gifted and talented students, and students with 504 plans;

General Modifications for students struggling to learn:

Small group instruction within the classroom
Differentiation through content, process, product,and environment
Individual feedback and praise towards what is done correctly based upon effort, attitude and strategy.
Help students manage individual stressors for the student and plan alternate pathways for completion of assignments

Special Education - Transition Skills, Reteach, Anchor Charts, Guided Notes, Multiplication Chart, Hands on Activities, Manipulatives, See textbook for Differentiated Instruction ideas in each chapter, Teacher Resource Tools TRT 12, 21-26

*These are only suggested ideas to modify instruction, modifications and accommodations should be tailored to each student's IEP and needs

504 - Transition Skills, Reteach, Anchor Charts, Manipulatives, Teacher Resource Tools TRT 12, 21-26

MLL - Vocabulary lists with examples, Manipulatives,

Gifted and Talented - Activity Project, Extra Brain Work, Enrichment, Extra Practice, Performance Tasks, Video and Tools (Ed: Your Friend in Learning)

Career Readiness, Life Literacies, and Key Skills NJSLS

Please select all standards that apply to this unit of study:

       Act as a responsible and contributing community members and employee

       Attend to financial well-being

       Consider the environmental, social and economic impacts of decisions

       Demonstrate creativity and innovation

       Utilize critical thinking to make sense of problems and persevere in solving them

       Model integrity, ethical leadership and effective management

       Plan education and career paths aligned to personal goals

       Use technology to enhance productivity increase collaboration and communicate effectively

       Work productively in teams while using cultural/global competence

Suggestions on integrating these standards can be found at: https://www.nj.gov/education/standards/clicks

Unit 5
An Introduction to Statistics
Summary and Rationale

Students will discover how to collect, organize, and display data. Choosing the appropriate graph is situational, yet specific graphs are used for displaying different types of data. Students will calculate the probability of an event occurring, based on comparing the possible outcomes to the total outcomes. These ratios are used to make predictions on the chance the event will occur.

Many companies in the business world will use statistical analysis to make very important decisions. Advertising and marketing companies collect, organize, and display data, then analyze the information.

Recommended Pacing

April - May

Standards

Statistics and Probability	
6.SP.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
6.SP.2	Understand that a set of data collected to answer a statistical question has a distribution that can be described by its center, spread, and overall shape.
6.SP.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.
6.SP.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
6.SP.5	Summarize numerical data sets in relation to their context such as by:
6.SP.5.a	Reporting the number of observations.
6.SP.5.b	Describing the nature of the attribute under investigation, including how it was measured and its units

	of measurement.
6.SP.5.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.
6.SP.5.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.
Mathematical Practices	
K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.2	Reason abstractly and quantitatively.
K-12.MP3	Construct viable arguments and critique the reasoning of others.
K-12.MP.4	Model with mathematics.
K-12.MP.5	Use appropriate tools strategically.
K-12.MP.6	Attend to precision.
K-12.MP.7	Look for and make use of structure.
K-12.MP.8	Look for and express regularity in repeated reasoning.
Interdisciplinary Connections	
Math journal, math vocabulary discussions, reading topic-related books, providing explanations	
SL.1.1.	Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. A. Follow agreed-upon norms for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion). B. Build on others' talk in conversations by responding to the comments of others through multiple exchanges. C. Ask questions to clear up any confusion about the topics and texts under discussion.
SL.1.3.	Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
SL.1.6.	Produce complete sentences when appropriate to task and situation.
Integration of Technology	

	Use of SmartBoard, playing online games
8.1.2.A.4	Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
Math journal, math vocabulary discussions, reading topic-related books, providing explanations	

Career Readiness, Life Literacies and Key Skills	
9.2.8.CAP.12	Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.
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., 6.SP.B.5)
9.4.8.CT.2	Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option.
9.4.8.IML 3	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)
9.4.8.IML 4	Ask insightful questions to organize different types of data and create meaningful visualizations.
9.4.8.IML 5	Analyze and interpret local or public data sets to summarize and effectively communicate the data
9.4.8.TL 1	Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.

Instructional Focus

Enduring Understandings:	Essential Questions:
Statistical data identifies central tendency, or patterns used to make inference that influence the decision making process. There are different statistics for describing the "the center" of a numerical data set. A measure of center describes how the data within a set is centered. The mean, median, and mode are common measures for the central tendency of a data set. A frequency table shows how often each data value occurs.	How can statistical data be used to influence decisions and make predictions?

A box-and-whisker plot displays and analyzes how a data set is distributed by emphasizing five key values and dividing the data into four equal parts.

A bar graph uses horizontal or vertical bars to display numerical information. When the numerical information is grouped into equal intervals, the bar graph is called a histogram.

Data can be described through observations of peeks, gaps, clusters, and symmetry of lack of symmetry.

Survey questions are statistical questions that usually have more than one answer when asked of a group of people. The questions should contain language that is neutral and does not lead people to answer in a particular way.

Evidence of Learning (Assessments)

 Ongoing observation
Class Participation
Classwork
Problem of the Day/Week
Guided Practice
Warm-ups/Exit Tickets
Homework
Quizzes/Chapter/Unit Tests
Benchmark Assessments

Objectives (SLO)

Students will know:
· Statistical variability
· Display of data
· Mean
· Median
· Mode
· Range
· Frequency tables, dot plots
· Bar graph, histogram
· Box-and-whisker plot
· Statistical question
· Shapes of distribution

Students will be able to:
Recognize a statistical question as one that anticipates a range in the collected data
Collect, organize, and display data on appropriate graph; including bar graph, line graph, stem and leaf plot, and histogram.
Calculate measures of central tendency; mean, median, and mode, for a set of data
Identify and predict trends and deviations of data given measures of central tendency and variability

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Suggested Resources/Technology Tools

Math in Focus Resources Chapter 13: Introduction to Statistics
Math in Focus Resources Chapter 14: Measures of Central Tendency
Course 2- Grade 7 (Green Book) Chapter 9: 9.1 Interpreting Quartiles and Interquartile Range
Course 2- Grade 7 (Green Book) Chapter 9: 9.2 Understanding Box and Whisker Plots (6.SP. 4 and 6.SP.5.c)

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www.ixl.com
www.brainpop.com

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- Model integrity, ethical leadership and effective management
- Plan education and career paths aligned to personal goals
- Use technology to enhance productivity increase collaboration and communicate effectively

Work productively in teams while using cultural/global competence
Suggestions on integrating these standards can be found at: https://www.nj.gov/education/standards/clicks