NEPTUNE CITY SCHOOL DISTRICT

Mathematics
Curriculum
Grade 6

NEPTUNE CITY SCHOOL DISTRICT
Office of the Chief School Administrator, Principal
210 West Sylvania Avenue
Neptune City, NJ 07753

The Neptune City School District is appreciative and proud to accept and align the curriculum of the Neptune Township School District to properly prepare the Neptune City students for successful integration into the Neptune Township High School Educational Program.

(August 2024)

NEPTUNE CITY SCHOOL DISTRICT BOARD OF EDUCATION

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SCHOOL DISTRICT ADMINISTRATION

Dr. Raymond J. Boccuti
Chief School Administrator, Principal

School Business Administrator, Board Secretary

Michael Haynes
Supervisor of Special Services

SCHOOL DISTRICT MISSION STATEMENT

The Neptune City School District, in partnership with the parents and the community, will support and sustain an excellent system of learning, promote pride in diversity, and expect all students to achieve the New Jersey Student Learning Standards at all grade levels to become responsible and productive citizens.

NEPTUNE CITY SCHOOL DISTRICT

MATHEMATICS
CURRICULUM
GRADE 6

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Curriculum

NEPTUNE TOWNSHIP SCHOOL DISTRICT

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Acknowledgements

The Mathematics Curriculum guide for grade 6 was developed for Neptune City School District through the efforts of Tracy Whitt in cooperation with Curriculum Steering Committee members Dr. Raymond J. Boccuti, Katherine Porter, Susan Tonzola, Leigh White

The Mathematics Curriculum Guide is designed to align with the New Jersey Student Learning Standards for Mathematics, reflecting the heightened discipline these standards bring to education. This guide emphasizes problem-solving skills as well as activity based learning, moving beyond facts and skills. We aim for this guide to be a useful tool for the educators teaching this course and welcome their suggestions for future enhancements.

NEPTUNE CITY SCHOOL DISTRICT

DISTRICT MISSION STATEMENT

The primary mission of the Neptune Township School District is to prepare students for a life-long learning process in a complex and diverse world. It is with high expectations that our schools foster:

• A strong foundation in academic and modern technologies.

• A positive and varied approach to teaching and learning.

• An emphasis on critical thinking skills and problem-solving techniques.

• A respect for and an appreciation of our world, its resources, and its people.

• A sense of responsibility, good citizenship, and accountability.

• An involvement by the parents and the community in the learning process.

Neptune City School District

Educational Outcome Goals

The students in the Neptune City school district will become life-long learners and will:

- Develop fluency in reading, writing, speaking, listening, and viewing, coupled with strong comprehension and critical thinking abilities.
- Attain the mathematical competencies, insights, and mindsets essential for thriving in professional and daily life.
- Master core scientific concepts, enhance analytical thinking, and practice safety, critical inquiry, and open-mindedness when gathering, evaluating, and interpreting data.
- Achieve technological literacy.
- Demonstrate proficiency in all New Jersey Student Learning Standards (NJSLS).
- Cultivate the capability to comprehend their surroundings and value America's heritage, achieving strong literacy in civics, history, economics, and geography.
- Foster an appreciation for diverse cultures and exhibit integrity, accountability, fairness, compassion, and civic engagement.
- Achieve cultural literacy by understanding the historical, societal, and multicultural dimensions and impacts of the arts.
- Show proficiency in decision-making, setting goals, and communicating effectively, emphasizing the development of character.Understand and practice the skills of family living, health, wellness and safety for their physical, mental, emotional, and social development.
- Acquire the essential consumer, family, and life skills needed to contribute effectively to society.
- Cultivate the capacity for creative and innovative decision-making, along with proficiency in expressing ideas, thoughts, and emotions.
- Foster an understanding of career paths and acquire crucial technical and workplace skills essential for various aspects of life and professional endeavors.

MATHEMATICS - GRADE 6
CURRICULUM

COURSE DESCRIPTION

In Grade 6 Mathematics, the curriculum emphasizes four key areas: (1) linking ratio and rate to multiplication and division of whole numbers, while applying these concepts to problem-solving; (2) mastering the division of fractions and expanding understanding to include rational numbers, including negatives; (3) expressing, interpreting, and utilizing equations and expressions; and (4) building proficiency in statistical reasoning.

Students will expand on their earlier exploration of area by analyzing the relationships between shapes in order to calculate area, surface area, and volume. This involves breaking down shapes, rearranging and/or removing parts, and linking these shapes to other shapes. Through these approaches, students engage in discussions, develop, and validate formulas for calculating areas of triangles and parallelograms. They also lay the groundwork for future studies in Grade 7, where they will work with scale drawings and constructions, including drawing polygons on the coordinate plane.

INTEGRATED SOCIAL AND EMOTIONAL LEARNING COMPETENCIES *The following social and emotional competencies are integrated in this curriculum document:*	
Self-Awareness	
	Recognize one's own feelings and thoughts
	Recognize the impact of one's feelings and thoughts on one's own behavior
X	Recognize one's personal traits, strengths and limitations
X	Recognize the importance of self-confidence in handling daily tasks and challenges
Self-Management	
	Understand and practice strategies for managing one's own emotions, thoughts and behaviors
X	Recognize the skills needed to establish and achieve personal and educational goals
X	Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals
Social Awareness	
	Recognize and identify the thoughts, feelings, and perspectives of others
	Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds
X	Demonstrate an understanding of the need for mutual respect when viewpoints differ
X	Demonstrate an awareness of the expectations for social interactions in a variety of setting
Responsible Decision Making	
X	Develop, implement and model effective problem solving and critical thinking skill
X	Identify the consequences associated with one's action in order to make constructive choices
	Evaluate personal, ethical, safety and civic impact of decisions
Relationship Skills	
X	Establish and maintain healthy relationships
X	Utilize positive communication and social skills to interact effectively with others
X	Identify ways to resist inappropriate social pressure
X	Demonstrate the ability to present and resolve interpersonal conflicts in constructive ways
X	Identify who, when, where, or how to seek help for oneself or others when needed

Topic 1	**Use Positive and Rational Numbers**
Suggested Time Frame	**20 Days**

Overview / Rationale

This chapter is designed to build students' foundational understanding of positive and rational numbers, a critical component of mathematics that extends beyond the classroom into real-world applications. The chapter emphasizes the importance of mastering operations with positive and rational numbers, including fractions, decimals, and whole numbers, as these skills are essential for solving problems in various contexts such as finance, measurement, and data analysis.

Students will explore how to accurately perform addition, subtraction, multiplication, and division with positive and rational numbers. They will also learn to compare and order these numbers, represent them on a number line, and apply them in real-world scenarios. By working with rational numbers, students will develop a deeper understanding of the relationships between fractions, decimals, and whole numbers, enabling them to approach complex problems with confidence.

The rationale for this chapter lies in its ability to equip students with the numerical literacy required for higher-level mathematics and everyday decision-making. Understanding positive and rational numbers is not only foundational for algebra and geometry but also critical for interpreting data, managing personal finances, and engaging with technology. By the end of this chapter, students will have the tools to approach mathematical problems systematically and with precision, laying the groundwork for future success in mathematics and beyond.

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics	
6.NS.A	**Apply and extend previous understandings of multiplication and division to divide fractions by fractions.**
6.NS.A.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions.	
6.NS.B	**Compute fluently with multi-digit numbers and find common factors and multiples.**
6.NS.B.2. Fluently divide multi-digit numbers using the standard algorithm. **6.NS.B.3.** Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	

6.NS.C	**Apply and extend previous understandings of numbers to the system of rational numbers.**

Applied Standards for Mathematical Practice

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

Essential Questions	**Enduring Understandings** *Students will understand…*
-How can you add, subtract, and multiply with decimals? -How can you divide whole numbers and decimals? -How can you multiply fractions and mixed numbers? -How can you represent the division of fractions? -How can you divide a fraction by a fraction? -How can you divide with mixed numbers? -How can you solve problems with rational numbers?	-Adding and subtracting decimals with precision -Multiplying decimals -Adding, subtracting, and multiplying decimals to solve real-world problems -Use place value structure to divide whole numbers and decimals -Divide whole numbers and decimals to solve real-world problems
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-The process and rules for adding, subtracting, and multiplying decimals. -How to divide whole numbers by decimals. -How to multiply fractions and mixed numbers. -Methods for representing the division of fractions. -The steps to divide a fraction by a fraction. -How to divide using mixed numbers. -Strategies for solving problems involving rational numbers. -The significance of precision in adding and subtracting decimals. -Techniques for multiplying decimals.	-Accurately add, subtract, and multiply decimals. -Solve real-world problems involving the addition, subtraction, and multiplication of decimals. -Use place value understanding to divide whole numbers and decimals. -Solve division problems involving whole numbers and decimals in practical contexts. -Multiply fractions by fractions and mixed numbers. -Apply multiplication of fractions and mixed numbers to real-life situations. -Represent the division of fractions using visual models or mathematical notation. -Divide a fraction by another fraction.

-How to apply decimal operations in real-world contexts. -The use of place value in dividing whole numbers and decimals. -How to solve real-world problems involving the division of whole numbers and decimals.	-Divide mixed numbers accurately. -Solve problems involving rational numbers. -Demonstrate precision in performing decimal operations. -Apply knowledge of place value to execute division operations accurately.

Key Academic Vocabulary	
Review: Compatible numbers Decimal Divisor Estimate Quotient	**New:** Reciprocal

Interdisciplinary Connections
New Jersey Student Learning Standards for English Language Arts ● **RI.6.4.** Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings. ● **W.1** Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence. **2020 New Jersey Student Learning Standards for Computer Science and Design Thinking** **NJSLS 8.1 Computer Science** ● **8.1.8.IN.1:** Model how information is broken down into smaller pieces, transmitted as addressed packets through multiple devices over networks and the Internet, and reassembled at the destination. ● **8.1.12.AP.6:** Refine a solution that meets users' needs by incorporating feedback from team members and users. **NJSLS 8.2 Design Thinking** ● **8.2.8.ED.6:** Analyze how trade-offs can impact the design of a product. ● **8.2.8.ED.3:** Develop a proposal for a solution to a real-world problem that includes a model.

Student Resources

Texts: Savvas Envision Mathematics Common Core 2021

Resources: **Student's Edition**

- Review What You Know
- Language Development Activity
- Mid-topic checkpoint and Performance Task
- Topic Review
- Pick a Project

Websites:

- http://www.hmhco.com
- http://khanacademy.org

Integrated Technology

- Google Suite: Docs, Sheets, Slides, Forms
- Devices:
  - Chromebooks
  - Texas Instruments (TI-30X Calculators)

Teacher Resources

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- Devices: Chromebooks

Websites:

- http://www.hmhco.com Into Math – Ed, Your Friend in Learning
- http://www.kutasoftware.com Test and worksheet generator for teachers
- http://khanacademy.org Tutorials on individual lessons

Stage 2 – Assessment Evidence

Performance Task(s):

Learning Activities:
ACT Math: Stocking Up
Pick a Project: Make Your Own Board Game, Plan The Menu For a School Fundraiser, Design a vegetable and Herb Garden, or Present a Proposal For a Tiger Exhibit
Stem Project: Improve Your School

Pre-Assessments:
Gr 6 Math *LinkIt!* NJSLS Form A
Topic Readiness Assessment
Grade 6 Readiness Test

Formative Assessments:
IXL
LinkIt
Mid Topic Checkpoint
Review and Fluency Practice
Exit tickets

Summative Assessments:
Quizzes
Tests

Benchmark:
Cumulative Final with multiple choice, short answer, and ECR

Alternative:
Quizizz
Kahoot
Cool Math Games
NJCTL Quizzes
Kuta Software

Stage 3 – Learning Plan

Learning Mindset: *Perseverance*

Topic Opener:

- **Topic 1:** *Stocking Up*
- **Diagnostic Assessment:** *Get Ready*

Topic 1: Use Positive Rational Numbers

- **Lesson 1.1:** Fluently Add, Subtract, and Multiply Decimals
- **Lesson 1.2:** Fluently Divide Whole Numbers and Decimals
- **Lesson 1.3:** Multiply Fractions
- **Lesson 1.4:** Understand Division with Fractions
- **Lesson 1.5:** Divide Fractions by Fractions
- **Lesson 1.6:** Divide Mixed Numbers
- **Lesson 1.7:** Solve Problems with Rational Numbers

Topic 2	**INTEGERS AND RATIONAL NUMBERS**
Suggested Time Frame	**25 Days**

STAGE 1: Desired Results

Overview/Rational:

This chapter focuses on developing students' understanding of integers and rational numbers, two fundamental concepts in mathematics that are essential for both academic success and practical decision-making in everyday life. The chapter introduces students to the properties and operations of integers (positive and negative whole numbers, including zero) and rational numbers (numbers that can be expressed as fractions or decimals), emphasizing their use in various real-world contexts.

Students will learn how to plot, compare, and order integers and rational numbers on a number line, providing them with a visual understanding of numerical relationships. They will also explore how to perform arithmetic operations with these numbers, and how to apply these operations in solving practical problems. The concept of absolute value is introduced as a way to measure the distance of a number from zero, enhancing students' ability to interpret and analyze numerical data.

The rationale for this chapter is rooted in the importance of integers and rational numbers as the building blocks for more advanced mathematical concepts, such as algebra, geometry, and data analysis. Mastery of these concepts is crucial for students as they progress in their mathematical education, as well as for understanding and solving problems they will encounter in everyday life, such as managing finances, measuring distances, and analyzing trends. By the end of this chapter, students will have a solid foundation in working with integers and rational numbers, preparing them for the challenges of more complex mathematical concepts and applications.

New Jersey Student Learning Standards for Mathematics

6.NS.C	The Number System

6.NS.C.5-Apply and extend previous understandings of numbers to the system of rational numbers

> 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.C.6a-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.

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., , and that 0 is its own opposite.

6.NS.C.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.C.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.C.7a-Understand ordering and absolute value of rational numbers.

Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.

6.NS.C.7b-Write, interpret, and explain statements of order for rational numbers in real-world contexts

6.NS.C.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.

6.NS.C.7d-Distinguish comparisons of absolute value from statements about order.

6.NS.C.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.G.A.3-Solve real-world and mathematical problems involving area, surface area, and volume.

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.

Applied Standards for Mathematical Practice

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Essential Questions	**Enduring Understandings** *Students will understand…*
-What are integers and rational numbers? -What are integers and how are they used to represent real-world quantities? -How can you plot, compare, and order rational numbers using a number line? -How are absolute values used to describe quantities? -How can you graph a point with rational coordinates on a coordinate plane? -How can you find the distance between two points on a coordinate plane? -How is distance usd to solve problems about polygons in a coordinate plane?	-Integers are the counting numbers, their opposites, and 0. -Integers can be compared, ordered, and used to describe real-world contexts. -Each rational number can be associated with a unique point on the number line. -A number to the right of another on the number line is the greater number. -The absolute value of a number can be described as the number's distance from 0 on the number line. -Absolute value can be interpreted as the magnitude of a positive or negative quantity in a real-world situation. -A coordinate plane is formed by a horizontal number line, the x-axis, and a vertical number line, the y-axis, that intersect at a point called the origin. -An ordered pair (x and y) locates a point on the coordinate plane. -Many real-world problem situations can be represented with a mathematical model, but that model does not represent a real-world situation exactly. -The distance between two points on the coordinate plane with the same first coordinate or the same second coordinate can be found by adding or subtracting the absolute values of the coordinates that differ. -The coordinates of the vertices of a polygon on the coordinate plane can be used to find the lengths of the sides of the polygon and its perimeter.
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*

-The definitions of integers and rational numbers. -How integers are used to represent real-world quantities. -Methods to plot, compare, and order rational numbers using a number line. -The concept and application of absolute values to describe quantities. -How to graph points with rational coordinates on a coordinate plane. -How to determine the distance between two points on a coordinate plane. -The use of distance in solving problems related to polygons in a coordinate plane.	-Identify and define integers and rational numbers. -Use integers to represent and describe real-world quantities. -Plot, compare, and order rational numbers on a number line. -Calculate and interpret absolute values to describe quantities. -Graph points with rational coordinates on a coordinate plane. -Determine the distance between two points on a coordinate plane. -Apply the concept of distance to solve problems related to polygons in a coordinate plane. -Compare and order integers in various contexts. -Associate rational numbers with their corresponding points on a number line. -Use number lines to compare magnitudes and positions of rational numbers. -Represent the absolute value of a number as its distance from 0 on the number line. -Interpret absolute value in real-world situations to determine magnitude. -Use ordered pairs to accurately locate points on a coordinate plane. -Solve real-world problems using mathematical models, recognizing their limitations. -Find the distance between points with the same first or second coordinate by using absolute values. -Calculate the lengths of the sides and the perimeter of polygons on the coordinate plane using vertex coordinates.

Key Academic Vocabulary	
Review:	**New:**
Decimal Denominator Fraction Numerator	Absolute Value Coordinate Plane Integers Opposites Ordered Pair Origin Quadrants Rational Number X- and Y-axes

Interdisciplinary Connections
New Jersey Student Learning Standards for English Language Arts ● **R.1** Read closely to determine what the text says as explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. ● **R.4** Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. ● **W.1** Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence. **2020 New Jersey Student Learning Standards for Computer Science and Design Thinking** **NJSLS 8.1 Computer Science** ● **8.1.8.NI.1:** Model how information is broken down into smaller pieces, transmitted as addressed packets through multiple devices over networks and the Internet, and reassembled at the destination. ● **8.1.8.NI.2:** Model the role of protocols in transmitting data across networks and the Internet and how they enable secure and errorless communication. ● **8.1.8.NI.4:** Explain how new security measures have been created in response to key malware events. ● **8.1.8.IC.1:** Compare the trade-offs associated with computing technologies that affect individual's everyday activities and career options. ● **8.1.8.IC.2:** Describe issues of bias and accessibility in the design of existing technologies. ● **8.1.8.DA.1:** Organize and transform data collected using computational tools to make it usable for a specific purpose. **NJSLS 8.2 Design Thinking** ● **8.2.8.ED.1:** Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer ● **8.2.8.ED.6:** Analyze how trade-offs can impact the design of a product. ● **8.2.8.ITH.2:** Compare how technologies have influenced society over time. ● **8.2.8.ITH.5:** Compare the impacts of a given technology on different societies, noting factors that may make a technology appropriate and sustainable in one society but not in another.

Student Resources

Texts: Savvas Envision Mathematics Common Core 2021

Resources: **Student's Edition**

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- Language Development Activity
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- Pick a Project

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- http://www.kutasoftware.com Test and worksheet generator for teachers
- http://khanacademy.org Tutorials on individual lessons

Stage 2 – Assessment Evidence

Performance Task(s):

Learning Activities:
ACT Math: The Ultimate Throw
Pick a Project: Make a Travel Brochure, Design a Connect The Dots Puzzle, Record an Exercise Video, or Write Your Own Commercial
Stem Project: Improve Your School

Pre-Assessments:
Gr 6 Math *LinkIt!* NJSLS Form A
Topic Readiness Assessment
Grade 6 Readiness Test

Formative Assessments:
IXL
LinkIt
Mid Topic Checkpoint
Review and Fluency Practice
Exit tickets

Summative Assessments:
Quizzes
Tests

Benchmark:
Cumulative Final with multiple choice, short answer, and ECR

Alternative:
Quizizz
Kahoot
Cool Math Games
NJCTL Quizzes
Kuta Software

Stage 3 – Learning Plan

Learning Mindset: *Collaboration*

Topic Opener:

- **Topic 2:** *Improve Your School*
- **Diagnostic Assessment:** *Get Ready*

Topic 2: Integers and Rational Numbers

- **Lesson 2.1:** Understanding Integers
- **Lesson 2.2:** Represent Rational Numbers on the Number Line
- **Lesson 2.3:** Absolute Values of Rational Numbers
- **Lesson 2.4:** Represent Rational Numbers on the Coordinate Plane
- **Lesson 2.5:** Find Distances on the Coordinate Plane
- **Lesson 2.6:** Represent Polygons on the Coordinate Plane

Topic 3	**Numeric and Algebraic Expressions**
Suggested Time Frame	**15 Days**

Overview / Rationale

This chapter introduces students to the essential concepts of numeric and algebraic expressions, laying the groundwork for their future success in algebra and higher mathematics. Understanding how to manipulate and interpret expressions is a critical skill that allows students to model and solve real-world problems, making this chapter a key component of the mathematics curriculum.

Students will begin by exploring numeric expressions, learning how to write, evaluate, and simplify expressions using the order of operations. This foundational knowledge will then extend to algebraic expressions, where students will learn to incorporate variables to represent unknown quantities. The chapter will guide students through writing, evaluating, and simplifying algebraic expressions, helping them understand how these expressions can model relationships between quantities in both mathematical and real-world contexts.

A significant focus will be placed on understanding the properties of operations—such as the distributive, associative, and commutative properties—and how these properties can be applied to generate equivalent expressions. By the end of the chapter, students will be proficient in simplifying complex expressions and understanding how different expressions can represent the same quantity.

The rationale for this chapter is to provide students with the tools needed to transition from arithmetic to algebra, a critical step in their mathematical education. Mastery of numeric and algebraic expressions is essential for success in solving equations, understanding functions, and analyzing mathematical models in later chapters and courses. This chapter not only builds computational skills but also enhances students' problem-solving abilities, enabling them to approach a wide range of mathematical challenges with confidence.

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics	
6.EE.A	**Apply and extend previous understandings of arithmetic to algebraic expressions.**
6.EE.A.1. Write and evaluate numerical expressions involving whole-number exponents.	
6.EE.A.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.	
b. Identify parts of an expression using mathematical terms.	

c. Evaluate expressions at specific values of their variables.
6.EE.A.3. Apply the properties of operations to generate equivalent expressions.
6.EE.A 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.

6.EE.B	**Use properties of operations to generate equivalent expressions.**

6.EE.A.3-Apply the properties of operations to generate equivalent expressions.

6.EE.B.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem.

Applied Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Attend to precision.
- Look for and make use of structure.

Essential Questions	**Enduring Understandings** *Students will understand…*
-How can you write and evaluate numbers with exponents? -How can you write the prime factorization and find the greatest common factor and least common multiple of two numbers? **-**How do you write and evaluate numerical expressions? -How can you write an algebraic expression? -How can you evaluate an algebraic expression? -How can you identify and write equivalent expressions? -How can you simplify algebraic expressions?	-A whole number exponent can be used to represent repeated multiplication of a number. -Any number can be written as its prime factorization. -The greatest common factor is the greatest factor that two or more whole numbers have in common. -The least common multiple is the smallest multiple that two or more nonzero whole numbers have in common. -There is an agreed upon order in which operations are carried out in a numerical expression. -Algebraic expressions use variables to describe situations in which some of the information is not known. -Parts of expressions can be described using words such as terms, coefficient, product, and factor. -The value of an algebraic expression can be found by replacing the variables with given numbers and doing the calculations that result.

	-Many situations can be represented with a mathematical model, but that model may not represent a real world situation exactly. -The Distributive Property and other properties of operations are used to identify and write equivalent expressions. -Algebraic expressions can be simplified using the properties of operations to combine like terms and generate equivalent expressions.
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-How to write and evaluate numbers with exponents. -The method for writing the prime factorization of a number. -How to find the greatest common factor (GCF) and least common multiple (LCM) of two numbers. -The process for writing and evaluating numerical expressions. -How to write algebraic expressions. -The steps to evaluate an algebraic expression. -How to identify and write equivalent expressions. -Methods for simplifying algebraic expressions.	-Write and evaluate numbers using exponents to represent repeated multiplication. -Determine the prime factorization of any given number. -Calculate the greatest common factor of two or more whole numbers. -Find the least common multiple of two or more nonzero whole numbers. -Write and evaluate numerical expressions following the correct order of operations. -Construct algebraic expressions to describe situations with unknown information using variables. -Identify and describe parts of algebraic expressions using terms such as terms, coefficient, product, and factor. -Evaluate an algebraic expression by substituting variables with given numbers and performing the resulting calculations. -Represent real-world situations with mathematical models, understanding their limitations. -Use the Distributive Property and other properties of operations to identify and write equivalent expressions. -Simplify algebraic expressions by combining like terms and generating equivalent expressions using the properties of operations.

Key Academic Vocabulary	
Review: Composite Number Formula Numerical Expression Prime Number	**New:** Algebraic Expression Base Coefficient Composite Number Equivalent Expressions Evaluate Exponent Factor Tree Greatest Common Factor (GCF) Least Common Multiple (LCM) Like Terms Numerical Expression Power Prime Factorization Prime Number Simplify Substitution Term Variable

Interdisciplinary Connections

New Jersey Student Learning Standards for English Language Arts

- **RI.6.4.** Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
- **RI.6.7.** Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

2020 New Jersey Student Learning Standards for Computer Science and Design Thinking
NJSLS 8.1 Computer Science

- **8.1.8.DA.1:** Organize and transform data collected using computational tools to make it usable for a specific purpose.
- **8.1.12.AP.6:** Refine a solution that meets users' needs by incorporating feedback from team members and users.

Student Resources

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  - Texas Instruments (TI-30X Calculators)

Teacher Resources

Texts: Savvas Envision Mathematics Common Core 2021

Resources:

- Google Suite: Docs, Sheets, Slides, Forms
- Devices: Chromebooks

Websites:

- http://www.hmhco.com Into Math – Ed, Your Friend in Learning
- http://www.kutasoftware.com Test and worksheet generator for teachers
- http://khanacademy.org Tutorials on individual lessons

Stage 2 – Assessment Evidence

Performance Task(s):

Learning Activities:
ACT Math: The Field Trip
Pick a Project: Write an Algebraic Poem, Plan a Team Purchase, Design a Pool Patio, or Calculate With Exponents
Stem Project: Design a Bridge

Pre-Assessments:
Gr 6 Math *LinkIt!* NJSLS Form A
Topic Readiness Assessment
Grade 6 Readiness Test

Formative Assessments:
IXL
LinkIt
Mid Topic Checkpoint
Review and Fluency Practice
Exit tickets

Summative Assessments:
Quizzes
Tests

Benchmark:
Cumulative Final with multiple choice, short answer, and ECR

Alternative:
Quizizz
Kahoot
Cool Math Games
NJCTL Quizzes
Kuta Software

Stage 3 – Learning Plan

Learning Mindset: *Purpose Driven Learning*

Topic Opener:

- **Topic 3:** *Design a Bridge*
- **Diagnostic Assessment:** *Get Ready*

Topic 3: Numeric and Algebraic Expressions

- **Lesson 3.1:** Understanding and Representing Exponents
- **Lesson 3.2:** Find Greatest Common Factor and Least Common Multiple
- **Lesson 3.3:** Write and Evaluate Numerical Expressions
- **Lesson 3.4:** Write Algebraic Expressions
- **Lesson 3.5:** Evaluate Algebraic Expressions
- **Lesson 3.6:** Generate Equivalent Expressions
- **Lesson 3.7:** Simplify Algebraic Expressions

Topic 4	**Represent and Solve Equations and Inequalities**
Suggested Time Frame	**25 Days**

Overview / Rationale

This chapter is designed to introduce students to the fundamental concepts of equations and inequalities, essential tools in mathematics for modeling, analyzing, and solving a wide range of problems. Understanding how to work with equations and inequalities is crucial not only in the study of algebra but also in applying mathematical reasoning to real-world situations.

Students will begin by exploring the nature of equations, learning how to identify and create equations that represent mathematical relationships. They will study how to solve linear equations using properties of equality, such as addition, subtraction, multiplication, and division, gaining the ability to determine the value of unknown variables. This chapter will also introduce students to inequalities, teaching them how to write and solve inequalities that describe a range of possible solutions rather than a single answer.

Throughout the chapter, students will engage in activities that demonstrate the practical applications of equations and inequalities, such as solving problems involving money, measurement, and data interpretation. They will learn how to represent solutions on a number line and understand the significance of different types of solutions, whether exact or approximate.

The rationale for this chapter is rooted in its importance for developing logical thinking and problem-solving skills. Equations and inequalities are the building blocks of algebra and are used extensively in science, engineering, economics, and everyday decision-making. By mastering these concepts, students will be well-prepared for more advanced mathematical topics and equipped to approach complex problems with confidence and precision. This chapter serves as a critical step in their mathematical journey, providing the foundation for future success in both academic and real-world contexts.

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics

6.EE.A.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).

6.EE.B.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.B.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.B.7-Solve real-world and mathematical problems by writing and solving equations of the form and for cases in which , and are all nonnegative rational numbers.

6.EE.B.8-Write an inequality of the form or to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form or have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

Applied Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.

Essential Questions	**Enduring Understandings** *Students will understand…*
-How can you determine whether a given number makes an equation true? -How can you use the properties of equality to write equivalent equations? -How can you write and solve an addition or subtraction equation? -How can you write and solve a multiplication or division equation? -How can you write and solve equations involving rational numbers? -How can you write an inequality to describe a situation? -How can you represent the solutions of an inequality?	-A solution of an equation is a value for the variable that makes the equation true and that equation is true when the expressions or numbers on both sides of the equal sight have the same value -Understanding that the same number can be added to, subtracted from, or multiplied on both sides of an equation and equality is maintained -Dividing both sides of an equation by the same nonzero number also maintains equality -A problem situation can be represented by an equation with a variable -The equation can be solved by using the inverse operation and a property of equality -A multiplication or division problem situation can be represented by an equation with a variable

	-The equation can be solved by using the inverse operation -Inverse relationships and properties of equality can be used to solve equations with fractions, mixed numbers, and decimals -An inequality is a mathematical sentence that contains the inequality symbols less than, greater than, or equal to -An inequality describes a situation that has an infinite number of numerical possibilities -Variables can be used to represent quantities that change in relationship to one another -The dependent variable changes in response to the independent variable -Patterns can be used to identify the relationship between quantities and write an equation that describes the relationship -Tables, graphs, and equations can be used to analyze the relationship between dependent and independent variables
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-How to determine whether a given number makes an equation true. -How to use the properties of equality to write equivalent equations. -The process for writing and solving addition and subtraction equations. -The process for writing and solving multiplication and division equations. -How to write and solve equations involving rational numbers. -How to write inequalities to describe situations. -How to represent the solutions of an inequality.	-Verify if a given number is a solution to an equation by substituting it for the variable and checking the equality. -Apply the properties of equality (addition, subtraction, multiplication, division) to transform and write equivalent equations. -Write and solve equations using addition and subtraction by isolating the variable and performing inverse operations. -Write and solve equations using multiplication and division by isolating the variable and performing inverse operations. -Solve equations involving rational numbers, including fractions, mixed numbers, and decimals, using inverse operations and properties of equality. -Write inequalities to describe real-world situations, using inequality symbols such as less than, greater than, or equal to. -Represent solutions of inequalities on a number line and describe the solution set.

Key Academic Vocabulary	
Review: Algebraic Expression Coefficient Equation Evaluate Variable	**New:** Addition Property of Equality Dependent Variable Division Property of Equality Equation Independent Variable Inequality Inverse Relationship Multiplication Property of Equality Solution of an Equation Subtraction Property of Equality

Interdisciplinary Connections

New Jersey Student Learning Standards for English Language Arts

- **R.I.6.7.** Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
- **W2.** Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

2020 New Jersey Student Learning Standards for Computer Science and Design Thinking
NJSLS 8.1 Computer Science

- **8.1.8.NI.1:** Model how information is broken down into smaller pieces, transmitted as addressed packets through multiple devices over networks and the Internet, and reassembled at the destination.
- **8.1.8.NI.2:** Model the role of protocols in transmitting data across networks and the Internet and how they enable secure and errorless communication.
- **8.1.8.NI.4:** Explain how new security measures have been created in response to key malware events.
- **8.1.8.IC.1:** Compare the trade-offs associated with computing technologies that affect individual's everyday activities and career options.
- **8.1.8.IC.2:** Describe issues of bias and accessibility in the design of existing technologies.
- **8.1.8.DA.1:** Organize and transform data collected using computational tools to make it usable for a specific purpose.

NJSLS 8.2 Design Thinking

- **8.2.8.ED.1:** Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer
- **8.2.8.ED.6:** Analyze how trade-offs can impact the design of a product.
- **8.2.8.ITH.2:** Compare how technologies have influenced society over time.
- **8.2.8.ITH.5:** Compare the impacts of a given technology on different societies, noting factors that may make a technology appropriate and sustainable in one society but not in another.

Student Resources

Texts: Savvas Envision Mathematics Common Core 2021

Resources: **Student's Edition**

- Review What You Know
- Language Development Activity
- Mid-topic checkpoint and Performance Task
- Topic Review
- Pick a Project

Websites:

- http://www.hmhco.com
- http://khanacademy.org

Integrated Technology

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  - Chromebooks
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- http://www.kutasoftware.com Test and worksheet generator for teachers
- http://khanacademy.org Tutorials on individual lessons

Stage 2 – Assessment Evidence

Performance Task(s):

Learning Activities:
ACT Math: Checking a Bag
Pick a Project: Analyze an Exercise Routine, Write and Illustrate a Children's Book, Make a Model of a Staircase, or Plan a Race
Stem Project: Design a Bridge

Pre-Assessments:
Gr 6 Math *LinkIt!* NJSLS Form A
Topic Readiness Assessment
Grade 6 Readiness Test

Formative Assessments:
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Summative Assessments:
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Alternative:
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Kahoot
Cool Math Games
NJCTL Quizzes
Kuta Software

Stage 3 – Learning Plan

Learning Mindset: *Purpose Driven Learning*

Topic Opener:

- **Topic 4:** *Design a Bridge*
- **Diagnostic Assessment:** *Get Ready*

Topic 4: Represent and Solve Equations and Inequalities

- **Lesson 4.1:** Understand Equations and Solutions
- **Lesson 4.2:** Apply Properties of Equality
- **Lesson 4.3:** Write and Solve Addition and Subtraction Equations
- **Lesson 4.4:** Write and Solve Multiplication and Division Equations
- **Lesson 4.5:** Write and Solve Equations With Rational Numbers
- **Lesson 4.6:** Understand and Write Inequalities
- **Lesson 4.7:** Solve Inequalities
- **Lesson 4.8:** Understand Dependent and Independent Variables
- **Lesson 4.9:** Use Patterns to Write and Solve Equations
- **Lesson 4.10:** Relate Tables, Graphs, and Equations

Topic 5	**Understand and Use Ratio and Rate**
Suggested Time Frame	**20 Days**

Overview / Rationale

This chapter focuses on the concepts of ratio and rate, which are fundamental for understanding relationships between quantities and solving problems in both mathematics and everyday life. Ratios and rates are tools that help students make sense of the world by comparing quantities and analyzing proportional relationships.

Students will begin by exploring ratios, learning how to express the relationship between two quantities in various forms, such as fractions, decimals, and percentages. They will then extend this understanding to rates, which compare two quantities with different units, such as speed (distance per time) or unit price (cost per item). The chapter emphasizes the importance of unit rates, teaching students how to simplify rates to make meaningful comparisons and solve practical problems.

Throughout the chapter, students will engage in activities that apply their understanding of ratios and rates to real-world scenarios, such as converting measurements, calculating prices, and analyzing data. They will learn to use tables, graphs, and equations to represent and interpret ratios and rates, developing their ability to think critically and reason proportionally.

The rationale for this chapter lies in the pervasive use of ratios and rates across various disciplines, including science, economics, and engineering, as well as in everyday tasks such as cooking, shopping, and budgeting. Mastery of these concepts is essential for students as they progress in mathematics and encounter more complex topics, such as proportions, percentages, and algebraic reasoning. By the end of this chapter, students will be equipped with the skills needed to understand and apply ratios and rates in diverse contexts, enabling them to solve problems with accuracy and confidence.

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics	

6.RP.A.1-Understand ratio concepts and use ratio reasoning to solve problems

Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

6.RP.A.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.

6.RP.A.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.A.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.A.3b-Solve unit rate problems including those involving unit pricing and constant speed.

Essential Questions	**Enduring Understandings** *Students will understand…*
-What is a mathematical way to compare quantities? -How can you find equivalent ratios? -How can you compare ratios to solve problems? -How can you use tables and graphs to show equivalent ratios? -What are rates and unit rates? -How can you use unit rates to make comparisons?	-Ratios can be used to describe the relationship between two quotients where for every x units of one quantity, there are y units of another quantity -Equivalent ratios can be found by multiplying or dividing both terms by the same nonzero number -Ratio tables can be used to compare ratios and solve problems

-How can you use unit rates to solve problems? -How can you use ratios to convert customary units of measure? -How can you use ratios to convert metric units of measure? -How can you use ratios to convert customary and units of measure?	-Equivalent ratios can be represented in a table, and the pairs of values can be plotted on the coordinate plane -A rate is a ratio that compare two quantities with unlike units of measure -A unit rate is a special rate that compares a quantity to one unit of another quantity -Rates are easily compared when they are expressed as unit rates -Unit rates, including unit prices, can be used to solve problems -Unit rates and conversion factors can be used to convert customary units of measure -Unit rates and conversion factors can be used to convert metric units of measure -Unit rates and conversion factors can be used to convert between customary and metric units of measure
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-Mathematical methods to compare quantities. -How to find and recognize equivalent ratios. -How to compare ratios to solve problems. -The use of tables and graphs to display equivalent ratios. -Definitions and examples of rates and unit rates. -How to use unit rates to make comparisons. -How to solve problems using unit rates. -Methods for using ratios to convert customary units of measure. -Methods for using ratios to convert metric units of measure. -Methods for using ratios to convert between customary and metric units of measure.	-Describe and compare quantities using ratios. -Find equivalent ratios by multiplying or dividing both terms by the same nonzero number. -Use ratio tables to compare ratios and solve real-world problems. -Represent equivalent ratios in tables and plot the pairs of values on a coordinate plane. -Define and identify rates and unit rates, understanding their use in comparisons. -Calculate unit rates and use them to compare different quantities. -Apply unit rates to solve practical problems, including finding the best value. -Use ratios and unit rates to convert between different customary units of measure. -Use ratios and unit rates to convert between different metric units of measure. -Use ratios and unit rates to convert between customary and metric units of measure.

Key Academic Vocabulary	
Review: Common Factor Common Multiple Equivalent Fractions Fraction	**New:** Circumference of a circle Constant Speed Conversion Factor Diameter Dimensional Analysis Equivalent Ratios Pi (x) Rate Ratio Term Unit Price Unit Rate

Interdisciplinary Connections

New Jersey Student Learning Standards for English Language Arts

- **R7.** Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
- **W7.** Conduct short as well as more sustained research projects, utilizing an inquiry-based research process, based on focused questions, demonstrating understanding of the subject under investigation.
- **W9.** Draw evidence from literary or informational texts to support analysis, reflection, and research.

2020 New Jersey Student Learning Standards for Computer Science and Design Thinking
NJSLS 8.1 Computer Science

- **8.1.8.NI.1:** Model how information is broken down into smaller pieces, transmitted as addressed packets through multiple devices over networks and the Internet, and reassembled at the destination.
- **8.1.8.NI.2:** Model the role of protocols in transmitting data across networks and the Internet and how they enable secure and errorless communication.
- **8.1.8.NI.4:** Explain how new security measures have been created in response to key malware events.
- **8.1.8.IC.2:** Describe issues of bias and accessibility in the design of existing technologies.
- **8.1.8.DA.1:** Organize and transform data collected using computational tools to make it usable for a specific purpose.

NJSLS 8.2 Design Thinking

- **8.2.8.ED.1:** Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer

- **8.2.8.ITH.2:** Compare how technologies have influenced society over time.
- **8.2.8.WITH.5:** Compare the impacts of a given technology on different societies, noting factors that may make a technology appropriate and sustainable in one society but not in another.

Student Resources

Texts: Savvas Envision Mathematics Common Core 2021

Resources: **Student's Edition**

- Review What You Know
- Language Development Activity
- Mid-topic checkpoint and Performance Task
- Topic Review
- Pick a Project

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Integrated Technology

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  - Chromebooks

Texas Instruments (TI-30X Calculators)

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- http://www.kutasoftware.com Test and worksheet generator for teachers
- http://khanacademy.org Tutorials on individual lessons

Stage 2 – Assessment Evidence

Performance Task(s):

Learning Activities:
ACT Math: Get In Line
Pick a Project: Compare Costs of Pet Foods, Analyze a Sport Statistic, Experiment With Combinations of Colors, or Plan a Tour
Stem Project: Get Into Gear

Pre-Assessments:
Gr 6 Math *LinkIt!* NJSLS Form A
Topic Readiness Assessment
Grade 6 Readiness Test

Formative Assessments:
IXL
LinkIt
Mid Topic Checkpoint
Review and Fluency Practice
Exit tickets

Summative Assessments:
Quizzes
Tests

Benchmark:
Cumulative Final with multiple choice, short answer, and ECR

Alternative:
Quizizz
Kahoot
Cool Math Games
NJCTL Quizzes
Kuta Software

Stage 3 – Learning Plan
Learning Mindset: *Purpose Driven Learning* **Topic Opener:** ● **Topic 5:** *Get Into Gear* ● **Diagnostic Assessment:** *Get Ready* **Topic 4: Represent and Solve Equations and Inequalities** ● **Lesson 5.1:** Understand Ratios ● **Lesson 5.2:** Generate Equivalent Ratios ● **Lesson 5.3:** Compare Ratios ● **Lesson 5.4:** Represent and Graph Ratios ● **Lesson 5.5:** Understand Rates and Unit Rates ● **Lesson 5.6:** Compare Unit Rates ● **Lesson 5.7:** Solve Unit Rate Problems ● **Lesson 5.8:** Ratio Reasoning: Convert Customary Units ● **Lesson 5.9:** Ratio Reasoning: Convert Metric Units ● **Lesson 5.10:** Relate Customary and Metric Units

Topic 6	**Understand and Use Percents**
Suggested Time Frame	**20 Days**

Overview / Rationale
This chapter is dedicated to understanding percents, a vital mathematical concept used in everyday life for expressing parts of a whole, comparing quantities, and solving practical problems. Percents are a universal language in finance, business, science, and daily decision-making, making this chapter essential for developing numerical literacy and problem-solving skills. Students will start by exploring the basic concept of percent as a rate per 100, learning how to convert between fractions, decimals, and percents. The chapter will guide students in calculating percentages of a number, finding the whole when given a part and the percent, and solving problems involving percents greater than 100% and less than 1%. Additionally, students will practice estimating

percentages and using compatible numbers to make mental calculations, which are crucial skills for quick and efficient problem-solving.

Real-world applications will be emphasized throughout the chapter, allowing students to see the relevance of percents in contexts such as discounts, interest rates, tips, taxes, and population statistics. By working through these applications, students will develop a deeper understanding of how percents are used to make informed decisions in both personal finance and broader economic scenarios.

The rationale for this chapter is to equip students with the ability to confidently interpret and manipulate percents in a variety of contexts. Understanding percents is foundational for more advanced topics in mathematics, such as probability, statistics, and algebra, as well as for navigating everyday situations. By mastering the concept of percents, students will be prepared to tackle complex mathematical challenges and make informed decisions in their daily lives.

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics	
6.RP.A.1-Understand ratio concepts and use ratio reasoning to solve problems Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. 6.RP.A.3c-Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means times the quantity); solve problems involving finding the whole, given a part and the percent.	

Applied Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.

- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Essential Questions	**Enduring Understandings** *Students will understand…*
-How can you represent a rate with 100 as the whole? –How are fractions, decimals, and percents related? -How can you write a percent greater than 100 or less than 1 as a fraction and as a decimal? -How can you estimate to find the percent of a number? -How can you find percents? -How can you find the whole in a percent problem?	-A percent is a rate in which the first term is compared to 100/. -The percent is the number of hundredths rta represent the part of the whole. -Fractions, decimals, and percents are three ways to show parts of a whole. -A percent greater than 100 is equivalent to more than the whole. -A percent less than 1 is equivalent to less than 1/100 of the whole. -Equivalent fractions and compatible numbers can be used to estimate the percent of a number. -Finding the percent of a whole is like finding a fractional part of a whole. -Models and equations can be used to find the whole amount when the percent and a part are known.
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-How to represent a rate with 100 as the whole. -The relationships among fractions, decimals, and percents. -How to write a percent greater than 100 or less than 1 as a fraction and as a decimal. -Methods for estimating the percent of a number. -How to calculate percentages. -How to determine the whole in a percent problem.	-Represent a rate with 100 as the whole, understanding that a percent represents parts per hundred. -Convert between fractions, decimals, and percents, demonstrating their interrelatedness. -Write a percent greater than 100 or less than 1 as both a fraction and a decimal. -Use estimation techniques, including equivalent fractions and compatible numbers, to find the percent of a number. -Calculate the percent of a number accurately. -Use models and equations to find the whole amount in a percent problem when given the percent and a part.

Key Academic Vocabulary	
Review: Decimal Fraction Ratio Term	**New:** Percent

Interdisciplinary Connections
New Jersey Student Learning Standards for English Language Arts ● **R7.** Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words. ● **W7.** Conduct short as well as more sustained research projects, utilizing an inquiry-based research process, based on focused questions, demonstrating understanding of the subject under investigation. ● **W9.** Draw evidence from literary or informational texts to support analysis, reflection, and research. **2020 New Jersey Student Learning Standards for Computer Science and Design Thinking** **NJSLS 8.1 Computer Science** ● **8.1.8.NI.1:** Model how information is broken down into smaller pieces, transmitted as addressed packets through multiple devices over networks and the Internet, and reassembled at the destination. ● **8.1.8.NI.2:** Model the role of protocols in transmitting data across networks and the Internet and how they enable secure and errorless communication. ● **8.1.8.NI.4:** Explain how new security measures have been created in response to key malware events. ● **8.1.8.IC.2:** Describe issues of bias and accessibility in the design of existing technologies. ● **8.1.8.DA.1:** Organize and transform data collected using computational tools to make it usable for a specific purpose. **NJSLS 8.2 Design Thinking** ● **8.2.8.ED.1:** Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer ● **8.2.8.ITH.2:** Compare how technologies have influenced society over time. ● **8.2.8.ITH.5:** Compare the impacts of a given technology on different societies, noting factors that may make a technology appropriate and sustainable in one society but not in another.

Stage 2 – Assessment Evidence

Performance Task(s):

Learning Activities:
ACT Math: Ace The Test
Pick a Project: Build a Mosaic, Estimate Percents, Design Flyers, or Make a Growth Chart
Stem Project: Engineering to Prevent Extinction

Pre-Assessments:
Gr 6 Math *LinkIt!* NJSLS Form A
Topic Readiness Assessment
Grade 6 Readiness Test

Formative Assessments:
IXL
LinkIt
Mid Topic Checkpoint
Review and Fluency Practice
Exit tickets

Summative Assessments:
Quizzes
Tests

Benchmark:
Cumulative Final with multiple choice, short answer, and ECR

Alternative:
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Cool Math Games
NJCTL Quizzes
Kuta Software

Stage 3 – Learning Plan

Learning Mindset: *Curiosity*

Topic Opener:

- **Topic 6:** *Engineering to Prevent Extinction*
- **Diagnostic Assessment:** *Get Ready*

Topic 6: Represent and Solve Equations and Inequalities

- **Lesson 6.1:** Understand Percent
- **Lesson 6.2:** Relate Fractions, Decimals, and Percents
- **Lesson 6.3:** Represent Percents Greater Than 100 or Less Than 1
- **Lesson 6.4:** Estimate to Find Percent
- **Lesson 6.5:** Find the Percent of a Number
- **Lesson 6.6:** Find the Whole Given a Part and the Percent

Student Resources
Texts: Savvas Envision Mathematics Common Core 2021 **Resources:** **Student's Edition** ● Review What You Know ● Language Development Activity ● Mid-topic checkpoint and Performance Task ● Topic Review ● Pick a Project **Websites:** ● http://www.hmhco.com ● http://khanacademy.org **Integrated Technology** ● Google Suite: Docs, Sheets, Slides, Forms ● Devices: ● Chromebooks Texas Instruments (TI-30X Calculators)
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Topic 7	**Solve Area, Surface Area, and Volume Problems**
Suggested Time Frame	**25 Days**

Overview / Rationale

This chapter focuses on the concepts of area, surface area, and volume, which are fundamental for understanding and solving geometric problems. These concepts are not only essential in mathematics but also have practical applications in fields such as architecture, engineering, design, and everyday life, where measuring space and understanding dimensions are critical.

Students will begin by exploring the area of two-dimensional shapes, starting with basic figures like rectangles and parallelograms and extending to triangles, trapezoids, kites, and complex polygons. They will learn to apply area formulas and understand how these formulas are derived, which helps in solidifying their comprehension of geometric principles. The chapter will also cover the surface area of three-dimensional shapes, such as prisms and pyramids, where students will learn to calculate the total area of all the faces of these solids using nets and formulas.

The concept of volume will be introduced to help students understand how to measure the space within three-dimensional objects, focusing on rectangular prisms with both whole and fractional edge lengths. Through hands-on activities and problem-solving exercises, students will gain practical experience in calculating and comparing the volume of different shapes.

The rationale for this chapter lies in its ability to help students develop spatial reasoning and problem-solving skills, which are crucial for success in both academic and real-world scenarios. Understanding area, surface area, and volume is essential not only for higher-level mathematics but also for everyday tasks, such as calculating the amount of paint needed for a wall, the wrapping paper for a gift, or the capacity of a container. By mastering these concepts, students will be better equipped to tackle a wide range of mathematical problems and to apply their knowledge in practical, real-world situations.

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics	

6.EE.A.2a-Write, read, and evaluate expressions in which letters stand for numbers.

Write expressions that record operations with numbers and with letters standing for numbers.

6.EE.A.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).

6.EE.B.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.G.A.1-Solve real-world and mathematical problems involving area, surface area, and volume

> 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.A.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 and to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

6.G.A.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.A.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.

6.NS.C.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.

Essential Questions	**Enduring Understandings** *Students will understand…*
-How can you use the area formula of a rectangle to find the area formula of a parallelogram? -How can you find the area of a triangle?- -How can you find the areas of trapezoids and kites? -How can you find the areas of polygons?	-The formula for the area of a parallelogram, A=bh, can be derived from the formula for the area of a rectangle. -The formula for the area of a triangle A=1/2bh, can be derived from the formula for the area of a parallelogram.

-How do you classify and represent solid figures? -How can you find the surface area of a prism? -How can you find the surface area of a pyramid? -How can you find the volume of a rectangular prism with fractional edge lengths?	-The area of trapezoids and kites can be found by decomposing the trapezoids and kites into shapes for which the area formulas are known. -The areas of polygons, including polygons on the coordinate plane, can be found by composing or decomposing the polygons into shapes for which the area formulas are known. -A solid figure can be classified based on the number of bass, the shape of the base(s), and the shape of the other faces. -A net can be used to represent a polyhedron -The surface area of a prism is the sum of the areas of its faces. -The surface area of a pyramid is the sum of the areas of its faces. -Unit cubes or formulas can be used to find the volume of rectangular prisms and cubes.
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-How to use the area formula of a rectangle to derive the area formula of a parallelogram. -The method for finding the area of a triangle. -How to find the areas of trapezoids and kites by decomposing them into simpler shapes. -The process for finding the areas of various polygons. -How to classify and represent solid figures. -The method for calculating the surface area of a prism. -The method for calculating the surface area of a pyramid. -How to find the volume of a rectangular prism with fractional edge lengths.	-Apply the area formula of a rectangle ($A = l \times w$) to derive the area formula of a parallelogram ($A = b \times h$). -Calculate the area of a triangle using the formula $A = 1/2 \times b \times h$. -Determine the areas of trapezoids and kites by decomposing them into shapes with known area formulas. -Find the areas of polygons by composing or decomposing them into simpler shapes, including polygons on the coordinate plane. -Classify solid figures based on the number and shape of their bases and other faces. -Represent a polyhedron using a net. -Calculate the surface area of a prism by summing the areas of its faces. -Calculate the surface area of a pyramid by summing the areas of its faces. -Use unit cubes or volume formulas to find the volume of rectangular prisms and cubes, including those with fractional edge lengths.

Key Academic Vocabulary	
Review: Area Parallelogram Perpendicular Polygon Volume	**New:** Base Edge Face Kite Net Polyhedron Vertex

Interdisciplinary Connections

New Jersey Student Learning Standards for English Language Arts

- **R7.** Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
- **W7.** Conduct short as well as more sustained research projects, utilizing an inquiry-based research process, based on focused questions, demonstrating understanding of the subject under investigation.
- **W9.** Draw evidence from literary or informational texts to support analysis, reflection, and research.

2020 New Jersey Student Learning Standards for Computer Science and Design Thinking
NJSLS 8.1 Computer Science

- **8.1.8.NI.1:** Model how information is broken down into smaller pieces, transmitted as addressed packets through multiple devices over networks and the Internet, and reassembled at the destination.
- **8.1.8.NI.2:** Model the role of protocols in transmitting data across networks and the Internet and how they enable secure and errorless communication.
- **8.1.8.NI.4:** Explain how new security measures have been created in response to key malware events.
- **8.1.8.IC.2:** Describe issues of bias and accessibility in the design of existing technologies.
- **8.1.8.DA.1:** Organize and transform data collected using computational tools to make it usable for a specific purpose.

NJSLS 8.2 Design Thinking

- **8.2.8.ED.1:** Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer
- **8.2.8.ITH.2:** Compare how technologies have influenced society over time.
- **8.2.8.ITH.5:** Compare the impacts of a given technology on different societies, noting factors that may make a technology appropriate and sustainable in one society but not in another.

Stage 2 – Assessment Evidence

Performance Task(s):

Learning Activities:
ACT Math: That's a Wrap
Pick a Project: Compare Cube-Shaped Buildings, Draw Nets of Number Cubes, Calculate the Amount of Gift Wrap, or Write a Rap Battle
Stem Project: Pack It

Pre-Assessments:
Gr 6 Math *LinkIt!* NJSLS Form A
Topic Readiness Assessment
Grade 6 Readiness Test

Formative Assessments:
IXL
LinkIt
Mid Topic Checkpoint
Review and Fluency Practice
Exit tickets

Summative Assessments:
Quizzes
Tests

Benchmark:
Cumulative Final with multiple choice, short answer, and ECR

Alternative:
Quizizz
Kahoot
Cool Math Games
NJCTL Quizzes
Kuta Software

Stage 3 – Learning Plan

Learning Mindset: *Purpose Driven-Learning*

Topic Opener:

- **Topic 7:** That's a Wrap
- **Diagnostic Assessment:** *Get Ready*

Topic 7: Represent and Solve Equations and Inequalities

- **Lesson 7.1:** Find Areas of Parallelograms and Rhombuses
- **Lesson 7.2:** Solve Triangle Area Problems
- **Lesson 7.3:** Find Areas of Trapezoids and Kites
- **Lesson 7.4:** Find Areas of Polygons
- **Lesson 7.5:** Represent Solid Figures Using Nets
- **Lesson 7.6:** Find Surface Areas of Prisms
- **Lesson 7.7:** Find Surface Areas of Pyramids
- **Lesson 7.8:** Find Volume with Fractional Edge Lengths

Student Resources
Texts: Savvas Envision Mathematics Common Core 2021 **Resources:** **Student's Edition** ● Review What You Know ● Language Development Activity ● Mid-topic checkpoint and Performance Task ● Topic Review ● Pick a Project **Websites:** ● http://www.hmhco.com ● http://khanacademy.org **Integrated Technology** ● Google Suite: Docs, Sheets, Slides, Forms ● Devices: ● Chromebooks Texas Instruments (TI-30X Calculators)
Teacher Resources
Texts: Savvas Envision Mathematics Common Core 2021 **Resources:** ● Google Suite: Docs, Sheets, Slides, Forms ● Devices: Chromebooks **Websites:** ● http://www.hmhco.com Into Math – Ed, Your Friend in Learning ● http://www.kutasoftware.com Test and worksheet generator for teachers ● http://khanacademy.org Tutorials on individual lessons

Topic 8	**Display, Describe, and Summarize Data**
Suggested Time Frame	**20 Days**

Overview / Rationale

This chapter is designed to introduce students to the critical concepts of data analysis, focusing on how to display, describe, and summarize data effectively. In a world increasingly driven by information, the ability to interpret and analyze data is essential for making informed decisions, understanding trends, and solving problems across various fields, including science, economics, and social studies.

Students will begin by exploring different methods of data representation, such as bar graphs, histograms, box plots, and frequency tables. They will learn how to choose the appropriate type of graph or chart based on the nature of the data and the information they wish to convey. The chapter will also cover key statistical measures, including mean, median, mode, range, and measures of variability like the interquartile range (IQR) and mean absolute deviation (MAD). These measures will help students describe the central tendency, spread, and overall shape of data distributions.

As students progress, they will learn how to summarize data sets by identifying patterns, outliers, and trends, and how to interpret these summaries in the context of real-world situations. The chapter emphasizes the importance of asking statistical questions that anticipate variability in data, enabling students to think critically about the information they collect and analyze.

The rationale for this chapter is to equip students with the foundational skills needed for data literacy, a crucial competency in the 21st century. By understanding how to display, describe, and summarize data, students will be able to analyze information effectively, make evidence-based decisions, and communicate their findings clearly. These skills are not only vital for academic success but also for navigating an increasingly data-driven world, where the ability to interpret and use data is a key component of informed citizenship and professional success.

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics

6.SP.A.1-Develop understanding of statistical variability

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.A.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.

6.SP.A.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.B.4-Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

6.SP.B.5-Summarize numerical data sets in relation to their context.

6.SP.B.5a-Reporting the number of observations.

6.SP.B.5b-Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.

6.SP.B.5c-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.B.5d-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.

Applied Standards for Mathematical Practice

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

Essential Questions	**Enduring Understandings** *Students will understand…*
-How are statistical questions different from other questions? -How can you use a single measure to describe a data set? -Why is a box plot useful for representing certain types of data? -How can a frequency table or histogram help you organize and analyze data? -How can the variability of data be described using a single number? -Why is one statistical measure more useful than another to describe a given situation?	-A statistical question anticipates variability in responses and can be answered by collecting and analyzing data. -The mean, median, and mode are ranges that can be used to describe the center of a data set. -The range is a measure that can be used to describe the variability of a data set. -A box plot is a good choice for displaying a distribution of numerical data values on a number line. -Data values can be organized into equal intervals and displayed in a frequency table or histogram.

-How can you summarize a data distribution?	-Measures of variability, such as mean absolute deviation (MAD) and interquartile range (IQR), describe the spread and clustering of data in a set. -Data sets may best be described using different measures of center and variability. -A set of numerical data collected to answer a statistical question has a distribution that can be described by its center, spread, and overall shape.
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-The difference between statistical questions and other types of questions. -How to use measures like mean, median, and mode to describe the center of a data set. -The utility of a box plot for representing certain types of data. -The use of frequency tables and histograms for organizing and analyzing data. -How to describe the variability of data using a single number. -Why certain statistical measures are more useful than others for describing specific situations. -How to summarize a data distribution.	-Identify and formulate statistical questions that anticipate variability in responses. -Use mean, median, and mode to describe the center of a data set. -Create and interpret box plots to display the distribution of numerical data. -Organize and analyze data using frequency tables and histograms. -Calculate and interpret measures of variability such as range, mean absolute deviation (MAD), and interquartile range (IQR). -Select and justify the use of appropriate statistical measures to describe different situations. -Summarize data distributions by describing their center, spread, and overall shape.

Key Academic Vocabulary	
Review: Bar Graph Data Plot Tally Chart	**New:** Absolute Deviation Box Plot Data Distribution Frequency Table Histogram Interquartile Range (IQR) Mean Mean Absolute Deviation (MAD) Median Mode Outlier Quartile Range Statistical Question

Interdisciplinary Connections

New Jersey Student Learning Standards for English Language Arts

- **R7.** Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
- **W7.** Conduct short as well as more sustained research projects, utilizing an inquiry-based research process, based on focused questions, demonstrating understanding of the subject under investigation.
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- **8.2.8.ITH.5:** Compare the impacts of a given technology on different societies, noting factors that may make a technology appropriate and sustainable in one society but not in another.

Stage 2 – Assessment Evidence

Performance Task(s):

Learning Activities:
ACT Math: Vocal Range
Pick a Project: Explore Video Blogs, Investigate Cereals, Analyze a Time Trial, or Survey Your School
Stem Project: Shake It Up

Pre-Assessments:
Gr 6 Math *LinkIt!* NJSLS Form A
Topic Readiness Assessment
Grade 6 Readiness Test

Formative Assessments:
IXL
LinkIt
Mid Topic Checkpoint
Review and Fluency Practice
Exit tickets

Summative Assessments:
Quizzes
Tests

Benchmark:
Cumulative Final with multiple choice, short answer, and ECR

Alternative:
Quizizz
Kahoot
Cool Math Games
NJCTL Quizzes
Kuta Software

Stage 3 – Learning Plan

Learning Mindset: *Metacognition*

Topic Opener:

- **Topic 8:** Shake It Up
- **Diagnostic Assessment:** *Get Ready*

Topic 8: Display, Describe, and Summarize Data

- **Lesson 8.1:** Recognize Statistical Questions
- **Lesson 8.2:** Summarize Data Using Mean, Median, Mode, and Range
- **Lesson 8.3:** Display Data in Box Plots
- **Lesson 8.4:** Display Data in Frequency Tables and Histograms
- **Lesson 8.5:** Summarize Data Using Measures of Variability
- **Lesson 8.6:** Choose Appropriate Statistical Measures
- **Lesson 8.7:** Summarize Data Distributions

Student Resources
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Teacher Resources
Texts: Savvas Envision Mathematics Common Core 2021 **Resources:** ● Google Suite: Docs, Sheets, Slides, Forms ● Devices: Chromebooks **Websites:** ● http://www.hmhco.com Into Math – Ed, Your Friend in Learning ● http://www.kutasoftware.com Test and worksheet generator for teachers ● http://khanacademy.org Tutorials on individual lessons

CAREER READINESS, LIFE LITERACIES, AND KEY SKILLS 9.1 FINANCIAL LITERACY - Grades 6 - 8	
	Financial Psychology
	An individual's values and emotions will influence the ability to modify financial behavior (when appropriate), which will impact one's financial wellbeing.
X	9.1.8.FP.1: Describe the impact of personal values on various financial scenarios.
X	9.1.8.FP.3: Explain how self-regulation is important to managing money (e.g., delayed gratification, impulse buying, peer pressure, etc.).

X	9.1.8.FP.5: Determine how spending, investing, and using credit wisely contributes to financial well-being.
	Financial Institutions
	There are a variety of factors that influence how well suited a financial institution and/or service will be in meeting an individual's financial needs.
X	9.1.8.FI.1: Identify the factors to consider when selecting various financial service providers.
X	9.1.8.FI.4: Analyze the interest rates and fees associated with financial products.
	Economic and Government Influence
	Taxes affect one's personal finances.
X	9.1.8.EG.1: Explain how taxes affect disposable income and the difference between net and gross income
	Planning and Budgeting
	A budget aligned with an individual's financial goals can help prepare for life events.
X	9.1.8.PB.2: Explain how different circumstances can affect one's personal budget.
	Goals (e.g., higher education, autos, and homes, retirement), affect your finances.
X	9.1.8.PB.6: Construct a budget to save for short-term, long term, and charitable goals.
	There are strategies to decrease and manage expenses.
X	9.1.8.PB.7: Brainstorm techniques that will help decrease expenses including comparison shopping, negotiating, and day-to-day expense management.
	Credit Profile
	There are strategies to build and maintain a good credit history.
X	9.1.8.CP.2: Analyze how spending habits affect one's ability to save.

9.2 CAREER AWARENESS, EXPLORATION, PREPARATION AND TRAINING - Grades 6-8	
	Career Awareness and Planning
	An individual's strengths, lifestyle goals, choices, and interests affect employment and income
X	9.2.8.CAP.3: Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income.
X	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.

	Developing and implementing an action plan is an essential step for achieving one's personal and professional goals.
X	9.2.5.CAP.5: Identify various employee benefits, including income, medical, vacation time, and lifestyle benefits provided by different types of jobs and careers.
	Early planning can provide more options to pay for postsecondary training and employment.
X	9.2.8.CAP.6: Compare the costs of postsecondary education with the potential increase in income from a career of choice.
X	9.2.8.CAP.7: Devise a strategy to minimize costs of postsecondary education.
	There are a variety of resources available to help navigate the career planning process.
X	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.
X	9.2.8.CAP.12: Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.
	Communication skills and responsible behavior in addition to education, experience, certifications, and skills are all factors that affect employment and income.
X	9.2.8.CAP.15: Present how the demand for certain skills, the job market, and credentials can determine an individual's earning power.
X	9.2.8.CAP.18: Explain how personal behavior, appearance, attitudes, and other choices may impact the job application process.
X	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.

Making Connections to Careers
● Financial Analyst ● Insurance Underwriter ● Actuary ● Statistician ● Engineer ● Economist ● Food Services ● Flight Engineer ● Agricultural worker ● Retail clerk ● Real Estate Agent

- Construction Manager
- Corrections Officer
- Human Resources
- Electrician
- Financial Analyst
- Financial Engineer
- Cartographer
- Urban Planning
- Robotics
- Computer Design
- Digital Marketer
- Product Manager
- Sociologist

9.4 LIFE LITERACIES AND KEY SKILLS Grade 6-8	
	Critical Thinking and Problem-solving
	Multiple solutions often exist to solve a problem.
X	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.
X	9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1).
	An essential aspect of problem solving is being able to self-reflect on why possible solutions for solving problems were or were not successful.
X	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.
	Digital Citizenship
	Detailed examples exist to illustrate crediting others when incorporating their digital artifacts in one's own work.
X	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.
	There are tradeoffs between allowing information to be public and keeping information private and secure.unauthorized use of data, such as personally owned video, photos, and music.
X	9.4.8.DC.3: Describe tradeoffs between allowing information to be public (e.g., within online games) versus keeping information private and secure.
	Digital footprints are publicly accessible, even if only shared with a select group. Appropriate measures such as proper interactions can protect online reputations.
X	9.4.8.DC.4: Explain how information shared digitally is public and can be searched, copied, and potentially seen by public audiences.
X	9.4.8.DC.5: Manage digital identity and practice positive online behavior to avoid inappropriate forms of self-disclosure.
	Global and Cultural Awareness
	Awareness of and appreciation for cultural differences is critical to avoid barriers to productive and positive interaction.
X	9.4.8.GCA.1: Model how to navigate cultural differences with sensitivity and respect.

X	9.4.8.GCA.2: Demonstrate openness to diverse ideas and perspectives through active discussions to achieve a group goal.
	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.
X	9.4.8.IML.2: Identify specific examples of distortion, exaggeration, or misrepresentation of information.
	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.
X	9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations.
	The mode of information can convey a message to consumers or an audience.
X	9.4.8.IML.6: Identify subtle and overt messages based on the method of communication.
	Sources of information are evaluated for accuracy and relevance when considering the use of information.
X	9.4.8.IML.7: Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose.
X	9.4.8.IML.8: Apply deliberate and thoughtful search strategies to access high-quality information on climate change.
	There are ethical and unethical uses of information and media.
X	9.4.8.IML.9: Distinguish between ethical and unethical uses of information and media.
X	9.4.8.IML.10: Examine the consequences of the use of media.
X	9.4.8.IML.11: Predict the personal and community impact of online and social media activities.
	There is a need to produce and publish media that has information supported with quality evidence and is intended for authentic audiences.
X	9.4.8.IML.14: Analyze the role of media in delivering cultural, political, and other societal messages.
X	9.4.8.IML.15: Explain ways that individuals may experience the same media message differently.
	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.
X	9.4.8.TL.1: Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.
X	9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem.
X	9.4.8.TL.3: Select appropriate tools to organize and present information digitally.
	Digital tools allow for remote collaboration and rapid sharing of ideas unrestricted by geographic location or time.
X	9.4.8.TL.5: Compare the process and effectiveness of synchronous collaboration and asynchronous collaboration.
X	9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem.

Accommodations and Modifications

Below please find a list of suggestions for accommodations and modifications to meet the diverse needs of our students. Teachers should consider this a resource and understand that they are not limited to the recommendations included below.

An **accommodation** *changes* HOW *a student learns*; the change needed does not alter the grade-level standard. A **modification** *changes* WHAT *a student learns*; the change alters the grade-level expectation.

Special Education and 504 Plans

All modifications and accommodations must be specific to each individual child's IEP (Individualized Educational Plan) or 504 Plan.

- Pre-teach or preview vocabulary
- Repeat or reword directions
- Have students repeat directions
- Use of small group instruction
- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments
- Repetition and time for additional practice
- Model skills/techniques to be mastered
- Extended time to complete task/assignment/work
- Provide a copy of class notes
- Strategic seating (with a purpose - eg. less distraction)
- Flexible seating
- Repetition and additional practice
- Use of manipulatives
- Use of assistive technology (as appropriate)
- Assign a peer buddy
- Emphasize key words or critical information by highlighting
- Use of graphic organizers
- Scaffold with prompts for sentence starters
- Check for understanding with more frequency
- Provide oral reminders and check student work during independent practice
- Chunk the assignment - broken up into smaller units, work submitted in phases
- Encourage student to proofread assignments and tests
- Provide regular home/school communication
- Teacher checks student planner
- Provide student with clear expectations in writing and grading criteria for assignments (rubrics)

Testing Accommodations:

Students should receive all testing accommodations for Benchmark assessments that they receive for State testing.

- Setting: Alternate setting for assessments, small groups, screens to block distractions
- Presentation: large print, test readers, use of audio, fewer questions on each page
- Response: answer verbally, use large block answer sheet, speech-to-text dictation, accept short answers
- Allow for retakes
- Provide study guides
- Use of reference aids such as glossary, multiplication tables, calculator
- Choice of test format (multiple-choice, essay, true-false)
- Alternate ways to evaluate (projects or oral presentations instead of written tests)
- Open-book or open-note tests

English Language Learners:

All modifications and accommodations should be specific to each individual child's LEP level as determined by the WIDA screening or ACCESS, utilizing the WIDA Can Do Descriptors.

- Pre-teach or preview vocabulary
- Repeat or reword directions
- Have students repeat directions
- Use of small group instruction
- Scaffold language based on their Can Do Descriptors
- Alter materials and requirements according to Can Do Descriptors
- Adjust number of paragraphs or length of writing according to their Can Do Descriptor
- TPR (Total Physical Response-Sheltered Instruction strategy) Demonstrate concepts through multi-sensory forms such as with body language, intonation
- Pair visual prompts with verbal presentations
- Repetition and additional practice
- Model skills and techniques to be mastered
- Native Language translation (peer, assistive technology, bilingual dictionary)
- Emphasize key words or critical information by highlighting
- Use of graphic organizers
- Scaffold with prompts for sentence starters
- Check for understanding with more frequency
- Use of self-assessment rubrics
- Increase one-on-one conferencing; frequent check ins
- Use study guide to organize materials
- Make vocabulary words available in a student created vocabulary notebook, vocabulary bank, Word Wall, or vocabulary ring
- Extended time
- Select text complexity and tiered vocabulary according to Can Do Descriptors
- Projects completed individually or with partners
- Use online dictionary that includes images for words: http://visual.merriamwebster.com/.
- Use online translator to assist students with pronunciation: http://www.reverso.net/text_translation.aspx?lang=EN.

Students at Risk of Failure:

- Use of self-assessment rubrics for check-in
- Pair visual prompts with verbal presentations
- Ask students to restate information and/or directions
- Opportunity for repetition and additional practice
- Model skills/techniques to be mastered
- Extended time
- Provide copy of class notes
- Strategic seating with a purpose
- Provide students opportunity to make corrections and/or explain their answers
- Support organizational skills
- Check daily planner
- Encourage student to proofread work
- Assign a peer buddy
- Build on students' strengths based on Multiple Intelligences: Linguistic (verbal); Logical (reasoning); Musical/Rhythmic; Intrapersonal Intelligence (understanding of self); Visual Spatial Intelligence; Interpersonal Intelligence (the ability to interact with others effectively); Kinesthetic (bodily); Naturalist Intelligence; and Learning Styles: Visual; Auditory; Tactile; Kinesthetic; Verbal

High Achieving:

Extension Activities

- Allow for student choice from a menu of differentiated outcomes; choices grouped by complexity of thinking skills; variety of options enable students to work in the mode that most interests them
- Allow students to pursue independent projects based on their individual interests
- Provide enrichment activities that include more complex material
- Allow opportunities for peer collaboration and team-teaching
- Set individual goals
- Conduct research and provide presentation of appropriate topics
- Provide students opportunity to design surveys to generate and analyze data to be used in discussion
- Allow students to move through the assignment at their own pace (as appropriate)

Strategies to Differentiate to Meet the Needs of a Diverse Learning Population

- Vocabulary Sorts-students engage with the vocabulary word by sorting into groups of similar/different rather than memorizing definitions
- Provide "Realia" (real life objects to relate to the five senses) and ask questions relating to the senses
- Role Play-students create or participate in role playing situations or Reader's Theater
- Moving Circle-an inside and outside circle partner and discuss, circles moves to new partner (Refer to Kagan Differentiated Strategies)

- Brainstorm Carousel-Large Post Its around the room, group moves in a carousel to music. Group discusses the topic and responses on paper. Groups rotate twice to see comments of others. (Refer to Kagan Differentiated Strategies)
- Gallery Walk-Objects, books, or student work is displayed. Students examine artifacts and rotate.
- Chunking-chunk reading, tests, questions, homework, etc to focus on particular elements.
- Think Pair Share Write
- Think Talk Write
- Think Pair Share
- Note-taking -can be done through words, pictures, phrases, and sentences depending on level
- KWL (Know, Want to Know, Learned)/KWHL(Know, What to Know, How Will I Learn, learned)/KWLS (Know, Want to Know, Learned, Still Want to Know) /KWLQ (Know, What to Know, Learned, Questions I Still Have) Charts
- Corners Cooperative Learning Strategy: http://cooperativelearningstrategies.pbworks.com/w/page/28234420/Corners.
- Circle Map strategy- place the main topic in a small circle and add student ideas in a bigger circle around the topic. Students may use their native language with peers to brainstorm.
- Flexible grouping -as a whole class, a small group, or with a partner, temporary groups are created: http://www.teachhub.com/flexible-grouping-differentiated-instruction-strategy.
- Jigsaw Activities -cooperative learning in a group, each group member is responsible for becoming an "expert" on one section of the assigned material and then "teaching" it to the other members of the team: http://www.adlit.org/strategies/22371/.

Grade 6 Mathematics Pacing Guide

LESSONS	TOPIC	NJSLS	LESSONS	TOPIC	NJSLS
1	Class Introduction to Course		26	Topic 2.1	
2	LinkIt! Pre-Assessment		27	Topic 2.1	
3	LinkIt! Pre-Assessment		28	Topic 2.2	
4	Into Math Pre-Assessment		29	Topic 2.2	
5	Into Math Pre-Assessment		30	Topic 2.3	
6	Topic 1 STEM Task		31	Topic 2.3	
7	Topic 1		32	Topic 2.4	
8	Topic 1.1		33	Topic 2.5	
9	Topic 1.1		34	Topic 2.5	
10	Topic 1.2		35	Topic 2.6	
11	Topic 1.2		36	Topic 2.6	
12	Topic 1.3		37	Topic 2 Review	
13	Topic 1.3		38	Topic 2 Test	
14	Topic 1.4		39	Topic 3 Stem Task	
15	Topic 1.4		40	Topic 3	
16	Topic 1.5		41	Topic 3.1	
17	Topic 1.5		42	Topic 3.1	
18	Topic 1.6		43	Topic 3.2	
19	Topic 1.6		44	Topic 3.2	
20	Topic 1.7		45	Topic 3.3	
21	Topic 1.7		46	Topic 3.3	
22	Topic 1 Review		47	Topic 3.4	
23	Topic 1 Test		48	Topic 3.4	
24	Topic 2 Stem Task		49	Topic 3.5	
25	Topic 2		50	Topic 3.5	

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LESSONS	TOPIC	NJSLS	LESSONS	TOPIC	NJSLS
51	Topic 3.6		76	Topic 4.10	
52	Topic 3.6		77	Topic 4 Review	
53	Topic 3.7		78	Topic 4 Test	
54	Topic 3.7		79	Midterm Exam Review	
55	Topic 3 Review		80	Midterm Exam Review	
56	Topic 3 Test		81	Midterm *LinkIt!* Exam	
57	Topic 4 Stem Task		82	Midterm *LinkIt!* Exam	
58	Topic 4		83	Midterm *Into Math* Exam	
59	Topic 4.1		84	Midterm *Into Math* Exam	
60	Topic 4.1		85	Topic 5 Stem Task	
61	Topic 4.2		86	Topic 5	
62	Topic 4.2		87	Topic 5.1	
63	Topic 4.3		88	Topic 5.1	
64	Topic 4.3		89	Topic 5.2	
65	Topic 4.4		90	Topic 5.2	
66	Topic 4.5		91	Topic 5.3	
67	Topic 4.6		92	Topic 5.3	
68	Topic 4.6		93	Topic 5.4	
69	Topic 4.7		94	Topic 5.4	
70	Topic 4.7		95	Topic 5.6	
71	Topic 4.8		96	Topic 5.6	
72	Topic 4.8		97	Topic 5.7	
73	Topic 4.9		98	Topic 5.8	
74	Topic 4.9		99	Topic 5.8	
75	Topic 4.10		100	Topic 5.9	

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LESSONS	TOPIC	NJSLS	LESSONS	TOPIC	NJSLS
101	Topic 5.9		126	Topic 7.2	
102	Topic 5.10		127	Topic 7.2	
103	Topic 5.10		128	Topic 7.3	
104	Topic Review		129	Topic 7.3	
105	Topic Test		130	Topic 7.4	
106	Topic 6 Stem		131	Topic 7.4	
107	Topic 6		132	Topic 7.5	
108	Topic 6.1		133	Topic 7.6	
109	Topic 6.1		134	Topic 7.6	
110	Topic 6.2		135	Topic 7.7	
111	Topic 6.2		136	Topic 7.7	
112	Topic 6.3		137	Topic 7.8	
113	Topic 6.3		138	Topic 7.8	
114	Topic 6.4		139	Topic Review	
115	Topic 6.4		140	Topic Test	
116	Topic 6.5		141	NJSLA Administration	
117	Topic 6.5		142	NJSLA Administration	
118	Topic 6.6		143	NJSLA Administration	
119	Topic 6.6		144	NJSLA Administration	
120	Topic 6 Review		145	NJSLA Administration	
121	Topic 6 Test		146	NJSLA Administration	
122	Topic 7 Stem Task		147	Topic 8 Stem Task	
123	Topic 7		148	Topic 8	
124	Topic 7.1		149	Topic 8.1	
125	Topic 7.1		150	Topic 8.1	

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LESSONS	TOPIC		LESSONS	TOPIC	
151	Topic 8.2		176	EOY Math Project	
152	Topic 8.2		177	Eoy Math Project	
153	Topic 8.3		178	Eoy Math Project	
154	Topic 8.3		179	Eoy Math Project	
155	Topic 8.4		180	Eoy Math Project	
156	Topic 8.4				
157	Topic 8.5				
158	Topic 8.5				
159	Topic 8.6				
160	Topic 8.6				
161	Topic 8.7				
162	Topic 8.7				
163	Topic 8 Review				
164	Topic 8 Test				
165	Volume 2 Review				
166	Volume 2 Review				
167	Volume 2 Review				
168	Volume 2 Review				
169	Volume 2 Test				
170	EOY Exam Review				
171	EOY *LinkIt!* Exam				
172	EOY *LinkIt!* Exam				
173	EOY *Into Math* Exam				
174	EOY *Into Math* Exam				
175	EOY Math Project				

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