NEPTUNE CITY SCHOOL DISTRICT

Mathematics
Curriculum
Grade 7

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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Chief School Administrator, Principal

School Business Administrator, Board Secretary

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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 7

Table of Contents

Curriculum

NEPTUNE TOWNSHIP SCHOOL DISTRICT

MATHEMATICS - GRADE 7
CURRICULUM

Acknowledgements

The Mathematics Curriculum guide for grade 7 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, and 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 7
CURRICULUM

COURSE DESCRIPTION

In Grade 7 Mathematics, Seventh Grade Mathematics is a comprehensive course designed to deepen students' understanding of fundamental mathematical concepts while introducing them to more advanced topics that form the basis for future study in algebra and beyond. Students will build proficiency in working with rational numbers, including operations with fractions, decimals, and integers. They will also explore proportional relationships, learning to analyze and apply them in various contexts, such as solving real-world problems involving ratios, rates, and percentages. Throughout the course, students will generate and simplify equivalent expressions, developing their algebraic thinking and preparing them for more complex equations.

In addition to numerical and algebraic skills, students will solve problems using equations and inequalities, enhancing their ability to model and solve mathematical situations. The course also introduces basic statistical concepts, such as using sampling to draw inferences about populations, and delves into probability, where students will predict outcomes and evaluate the likelihood of events. Geometry plays a significant role as well, with students solving problems involving area, surface area, and volume of various shapes. By the end of the course, students will have a solid foundation in these critical areas of mathematics, equipping them with the skills needed for success in more advanced courses and real-world problem-solving.

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	**Rational Number Operations**
Suggested Time Frame	**20 Days**

Overview / Rationale

Topic 1 is designed to build upon students' prior knowledge of fractions and extend their understanding to operations involving integers and rational numbers. As students transition from basic arithmetic to more complex mathematical concepts, it is crucial for them to develop a deep understanding of how different types of numbers—fractions, decimals, integers, and rational numbers—are interrelated and how operations on these numbers can be applied in various contexts.

The focus of this topic is to reinforce the properties of operations (such as commutativity, associativity, and distributivity) and apply them to a broader range of numbers, including both positive and negative values. Students will explore how to add, subtract, multiply, and divide integers and rational numbers, making connections between these operations and those they have already mastered with whole numbers and fractions. This topic also emphasizes the importance of understanding the role of absolute value in operations with integers, which is a key concept for solving real-world problems that involve direction or magnitude.

By the end of this topic, students will have gained the skills necessary to perform operations with rational numbers confidently and accurately. They will also be able to analyze and solve complex mathematical problems that require the use of multiple operations, making decisions about which operations to use based on the context of the problem. This foundational knowledge and skill set are essential for success in higher-level mathematics, including algebra, and for applying mathematical reasoning in real-world situations. The ability to manipulate and understand rational numbers opens the door to more advanced topics and prepares students for the challenges of future mathematical learning.

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics

7.NS.A.1a-A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
a. Describe situations in which opposite quantities combine to make 0.

7.NS.A.1b- Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
7.NS.A.1c-Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
7.NS.A.1d-Apply properties of operations as strategies to add and subtract rational numbers.
7.NS.A.2a-. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts
7.NS.A.2b-Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). Interpret quotients of rational numbers by describing real world contexts.
7.NS.A.2c- Apply properties of operations as strategies to multiply and divide rational numbers.
7.NS.A.2d- Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
7.NS.A.3-Solve real-world and mathematical problems involving the four operations with rational numbers.1
7.EE.B.3-. Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

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 the properties of operations be used to solve problems involving integers and rational numbers? -How are rational numbers written as decimals? -How do you use what you know about absolute values to add integers? -How is subtracting integers related to adding integers? -How are adding and subtracting integers related to adding and subtracting other rational numbers? -How do the signs of factors affect their product? -How is multiplying rational numbers like multiplying integers? -How does dividing integers relate to multiplying integers? -How is dividing rational numbers like dividing integers? -How do you decide which rational number operations to use to solve problems?	-Relating integers and their opposites -Understanding rational numbers -Adding integers -Subtracting integers -Adding and subtracting rational numbers -Multiplying integers -Multiplying rational numbers -Dividing integers -Dividing rational numbers -Solving problems with rational numbers
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-The properties of operations (commutative, associative, distributive) and how they apply to integers and rational numbers. -The relationship between integers and their opposites, including the concept of absolute value. -How rational numbers can be expressed as decimals, and how to convert between fractions and decimals.	-Apply the properties of operations to solve problems involving integers and rational numbers. -Convert rational numbers to decimals and fractions, and use these forms interchangeably in calculations. -Add and subtract integers using absolute value, and extend these skills to include other rational numbers.

-The rules for adding and subtracting integers, including how absolute values influence these operations. -The relationship between adding/subtracting integers and adding/subtracting other rational numbers (fractions and decimals). -How the signs of factors affect the product in multiplication. -The process of multiplying and dividing rational numbers, including how these operations are similar to those with integers. -The relationship between division and multiplication, particularly how dividing integers relates to multiplying them. -How to determine the appropriate operation(s) (addition, subtraction, multiplication, division) when solving problems involving rational numbers.	-Multiply and divide rational numbers, using the same principles that apply to integers. -Solve real-world and mathematical problems involving all four operations with rational numbers. -Analyze problems to determine which operation or combination of operations to use when working with rational numbers. -Demonstrate fluency in performing operations with fractions, decimals, and integers, ensuring accuracy and efficiency in calculations. -Interpret and solve word problems that require the application of rational number operations, justifying the choice of operations used.

Key Academic Vocabulary	
Review: Absolute Value Associative Property Commutative Property Distributive Property Integers Rational Numbers	**New:** Additive Inverse Complex Fraction Multiplicative Inverse Repeating Decimal Terminating Decimal

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

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: Win Some, Lose Some
Pick a Project: Design a Handmade Item to Sell, Make a Timeline, Build a Model of an Obstacle Course, Film an Exercise Video
Stem Project: How Cold is Too Cold?

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: Curiosity

Topic Opener:

- **Topic 1: How Cold is Too Cold?**
- **Diagnostic Assessment:** *Get Ready*

Topic 1:

- **Lesson 1.1:** Relate Integers and Their Opposites
- **Lesson 1.2:** Understand Rational Numbers
- **Lesson 1.3:** Add Integers
- **Lesson 1.4:** Subtract Integers
- **Lesson 1.5:** Add and Subtract Rational Numbers
- **Lesson 1.6:** Multiply Integers
- **Lesson 1.7:** Multiply Rational Numbers
- **Lesson 1.8:** Divide Integers
- **Lesson 1.9:** Divide Rational Numbers
- **Lesson 1.10:** Solve Problems with Rational Numbers

Topic 2	Analyze and Use Proportional Relationships
Suggested Time Frame	25 Days

STAGE 1: Desired Results
Overview/Rational:

New Jersey Student Learning Standards for Mathematics	
7.RP.A.1-A. Analyze proportional relationships and use them to solve real-world and mathematical problems. 1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. 7.RP.A.2a-2. Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. 7.RP.A.2b-. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. 7.RP.A.2c-Represent proportional relationships by equations. 7.RP.A.2d-. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate. 7.RP.A.3-. Use proportional relationships to solve multistep ratio and percent 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…*
-How are ratios, rates, and unit rates used to solve problems? -Why is it useful to write a ratio of fractions as a unit rate? -How are proportional quantities described by equivalent ratios? -How can you represent a proportional relationship with an equation? -What does the graph of a proportional relationship look like? -How can proportional reasoning help solve problems?	-Connecting ratios, rates, and unit rates. -Determining unit rates with ratios of fractions. -Understanding proportional relationships: equivalent fractions. -Describing proportional relationships: constant of proportionality. -Graphing proportional relationships. -Applying proportional reasoning to solve problems.
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-The definitions and differences between ratios, rates, and unit rates. -How to write and interpret ratios of fractions and understand why it's useful to express them as unit rates. -The concept of proportional relationships and how they are described by equivalent ratios. -The constant of proportionality and how it relates to proportional relationships. -How to represent proportional relationships with equations. -The characteristics of the graph of a proportional relationship, including its linearity and passage through the origin.	-Use ratios, rates, and unit rates to solve problems, including real-world applications. -Convert ratios of fractions into unit rates and use these unit rates to solve problems. -Identify and analyze proportional relationships by determining whether two quantities form equivalent ratios. -Calculate and interpret the constant of proportionality in proportional relationships. -Represent proportional relationships algebraically using equations and graphically using coordinate planes. -Analyze graphs to identify proportional relationships and understand their significance,

-How proportional reasoning is applied to solve real-world and mathematical problems.	including the relationship between the slope of the line and the constant of proportionality. -Apply proportional reasoning to solve a variety of problems, including those involving scale, conversion, and real-world situations where proportionality is a key factor.

Key Academic Vocabulary	
Review: Complex Fraction Equivalent Ratios Rate Ratio Terms	**New:** Constant of Proportionality Proportion Proportional Relationship

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 an 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

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

Teacher Resources

Texts: Savvas Envision Mathematics Common Core 2021

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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: Mixin It Up
Pick a Project: Predict Race Results, Calculate the Weight of your Pack, Write a Short Story, or Play Music
Stem Project: An Essential Resource

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 2: An Essential Resource**
- **Diagnostic Assessment: Get Ready!**

Topic 2:

- **Lesson 2.1:** Connect Ratios, Rates, and Unit Rates
- **Lesson 2.2:** Determine Unit Rates with Ratios of Fractions
- **Lesson 2.3:** Understand Proportional Relationships: Equivalent Ratios
- **Lesson 2.4:** Describe Proportional Relationships: Constant of Probability
- **Lesson 2.5:** Graph Proportional Relationships
- **Lesson 2.6:** Apply Proportional Reasoning to Solve Problems

Topic 3	**Analyze and Solve Percent Problems**
Suggested Time Frame	**15 Days**

Overview / Rationale

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics	
7 RP.A.2c- Represent proportional relationships by equations. **7.RP.A.3-** Use proportional relationships to solve multistep ratio and percent problems.	
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 do percents show the relationship between quantities? -How does proportional reasoning relate to percent?	-Percents and Numbers -Connecting percents and proportions -Representing and using the percent equation

-How are percent problems related to proportional reasoning? -How is finding percent error similar to finding percent change? -How are the concepts of percent markup and percent markdowns related to the percent equation? -How does simple interest show proportional reasoning and relate to the percent equation?	-Solving percent change and percent error problems -Solving markup and markdown problems -Solving simple interest problems
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-The concept of percent as a way to express the relationship between a part and a whole, represented out of 100. -How proportional reasoning underpins the concept of percent and how percentages can be used to compare quantities. -The relationship between percent problems and proportional reasoning, including how percentages can be interpreted as ratios. -How to calculate and understand percent change and percent error, and how these concepts are connected. -The concepts of percent markup and percent markdown and their relationship to the percent equation. -How simple interest is calculated and how it reflects proportional reasoning in relation to the percent equation.	-Use percents to show relationships between quantities in various contexts, including comparisons and calculations involving parts of a whole. -Apply proportional reasoning to solve problems involving percents, including those that require setting up and solving proportions. -Represent and solve percent problems using the percent equation, including problems involving discounts, taxes, and tips. -Calculate percent change and percent error, and interpret the results in real-world scenarios. -Solve problems involving percent markup and markdown by applying the percent equation, understanding how these concepts impact pricing and discounts. -Calculate simple interest using the percent equation and understand its applications in financial contexts, such as loans and savings.

Key Academic Vocabulary	
Review: Percent Proportion Rate Ratio	**New:** Interest Rate Markdown Markup Percent Change Percent Equation Percent Error Percent Markdown Percent Markup Principal Simple Interest

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.

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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 Smart Shopper
Pick a Project: Search For Bargains, Write and Perform a Cheer or Rap, Estimate Baskets, or Design an App Icon
Stem Project: Analyze Activity Tracker Data

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

Formative Assessments:
IXL
LinkIt
Mid Topic Checkpoint
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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: Inquiry

Topic Opener:

- **Topic 3: Analyze Activity Tracker Data**
- **Diagnostic Assessment: Get Ready!**

Topic 3:

- **Lesson 3.1:** Analyze Percents of Numbers
- **Lesson 3.2:** Connect Percent and Proportion
- **Lesson 3.3:** Represent and Use the Percent Equation
- **Lesson 3.4:** Solve Percent Change and Percent Error Problems
- **Lesson 3.5:** Solve Markdown Problems
- **Lesson 3.6:** Solve Simple Interest Problems

Topic 4	Generate Equivalent Expressions
Suggested Time Frame	**25 Days**

Overview / Rationale

This unit on algebraic expressions is designed to introduce students to the foundational concepts and skills necessary for understanding and manipulating algebraic expressions—an essential component of algebra and higher-level mathematics. Algebraic expressions are powerful tools for representing real-world situations and solving problems involving unknown quantities. By learning how to write, evaluate, and simplify these expressions, students develop a deeper understanding of how mathematics can model and solve a wide range of problems.

The unit emphasizes the use of properties of operations—such as the commutative, associative, and distributive properties—to generate equivalent expressions, simplify complex expressions, and perform operations like addition and subtraction on expressions. Understanding how to manipulate expressions using these properties enables students to explore how quantities are related, how to factor and expand expressions, and how these processes affect the values of expressions.

Through this unit, students will also learn to analyze and compare equivalent expressions, providing them with the skills to identify relationships between different mathematical representations. This not only reinforces their algebraic reasoning but also prepares them for more advanced topics in mathematics, such as solving equations and inequalities, working with functions, and exploring more complex algebraic structures. By the end of this unit, students will be equipped to use algebraic expressions as a powerful tool for problem-solving and mathematical modeling, laying a strong foundation for their continued study of mathematics.

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics

7.EE.A.1- Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
7.EE.A.2- Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.
7.EE.B.3-. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically.

Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
7.EE.B.4-Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

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 algebraic expressions be used to represent and solve problems? -What are equivalent expressions? -How are properties of operations used to simplify expressions? -How does the value of an expression change when it is expanded? -How does the Distributive Property relate to factor expressions? -How can properties of operations be used to add expressions? -How can properties of operations be used to subtract expressions? -How can writing equivalent expressions show how quantities are related?	-Writing and evaluating algebraic expressions -Generating equivalent expressions -Simplifying, factoring, and expanding expressions -Adding and subtracting expressions -Analyzing equivalent expressions

Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-How algebraic expressions can be used to represent real-world situations and solve problems by defining variables and writing expressions. -The concept of equivalent expressions, and how to identify or generate them using mathematical operations and properties. -The properties of operations (commutative, associative, distributive) and how they are applied to simplify, expand, and factor algebraic expressions. -How expanding an expression affects its value and structure, and how it relates to the original expression. -The role of the Distributive Property in expanding and factoring expressions, and how it can be used to simplify or manipulate expressions. -How to use the properties of operations to add and subtract algebraic expressions effectively. -The importance of writing equivalent expressions to demonstrate relationships between quantities in both mathematical and real-world contexts.	-Write and evaluate algebraic expressions that represent real-world problems, using variables to model different scenarios. -Generate equivalent expressions by applying properties of operations, such as combining like terms and using the Distributive Property. -Simplify algebraic expressions by applying the properties of operations, including expanding and factoring expressions when necessary. -Expand algebraic expressions and understand how expansion changes the form while maintaining the expression's equivalence. -Factor expressions by identifying common factors and applying the Distributive Property in reverse. -Add and subtract algebraic expressions by combining like terms and using the appropriate properties of operations. -Analyze and compare equivalent expressions to understand how they demonstrate relationships between quantities, and use this analysis to solve problems.

Key Academic Vocabulary	
Review: Evaluate Expression Factor Order of Operations Substitute Term	**New:** Equivalent Expressions

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 an 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

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

Teacher Resources

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Websites:

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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: I've Got You Covered
Pick a Project:
Stem Project: Analyze Activity Tracker Data

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: *Inquiry*

Topic Opener:

- **Topic 4: Analyze Activity Tracker Data**
- **Diagnostic Assessment:** *Get Ready!*

Topic 4:

- **Lesson 4.1:** Write and Evaluate Algebraic Expressions
- **Lesson 4.2:** Generate Equivalent Expressions
- **Lesson 4.3:** Simplify Expressions
- **Lesson 4.4:** Expand Expressions
- **Lesson 4.5:** Factor Expressions
- **Lesson 4.6:** Add Expressions
- **Lesson 4.7:** Subtract Expressions
- **Lesson 4.8:** Analyze Equivalent Expressions

Topic 5	**Solve Problems Using Equations and Inequalities**
Suggested Time Frame	**20 Days**

Overview / Rationale

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics	

7 EE.B.3- Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

7EE.B. 4-Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

7 EE.B.4a- Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

7 EE.B.4b-Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.

Essential Questions	**Enduring Understandings** *Students will understand…*
-How does an equation show the relationship between variables and other quantities in a situation? -How is solving a two-step equation similar to solving a one-step equation? -How does the Distributive Property help you solve equations? -How is solving inequalities with addition and subtraction similar to and different from solving equations with addition and subtraction? -How is solving inequalities with multiplication and division similar to and different from solving equations with multiplication and division? -How is solving a two-step inequality similar to and different from solving a two-step equation? -How is solving a multi-step inequality similar to and different from solving a multi-step equation?	-Writing two-step equations -Solving two-step equations -Solving equations using the Distributive Property -Solving inequalities using addition or subtraction -Solving inequalities using multiplication or division -Solving two-step inequalities -Solving multi-step inequalities
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*

-The role of equations in representing relationships between variables and other quantities in various situations. -The similarities and differences between solving one-step and two-step equations, including the sequential application of inverse operations. -How the Distributive Property is used to simplify and solve equations, particularly when dealing with expressions that involve parentheses. -The process for solving inequalities using addition and subtraction, and how it compares to solving equations using the same operations. -The process for solving inequalities using multiplication and division, including the important rule about reversing the inequality sign when multiplying or dividing by a negative number. -The similarities and differences between solving two-step equations and two-step inequalities, focusing on the sequence of operations and the treatment of inequalities. -The steps involved in solving multi-step inequalities and how these steps compare to those used in solving multi-step equations.	-Write two-step equations that accurately represent real-world situations, defining variables and setting up equations that reflect the relationships between quantities. -Solve two-step equations by applying inverse operations in the correct sequence, ensuring the equation remains balanced. -Use the Distributive Property to simplify and solve equations, particularly those involving terms inside parentheses. -Solve inequalities using addition or subtraction, applying similar methods as used in solving equations while recognizing key differences. -Solve inequalities using multiplication or division, including reversing the inequality sign when necessary to maintain the correct solution. -Solve two-step inequalities by following a logical sequence of operations, understanding how each step relates to maintaining the inequality. -Solve multi-step inequalities, applying appropriate operations and ensuring that the inequality remains true throughout the process.

Key Academic Vocabulary	
Review: Inverse Relationship Like Terms Inequality Properties of Equality	**New:** Isolate the Variable

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.

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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: Digital Downloads
Pick a Project: Comparing with a Venn Diagram, Write a Play, Exchange Souvenirs, or Solve Randomized Equations and Inequalities
Stem Project: Water is Life

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: *Analytical and Problem-Solving* **Topic Opener:** ● **Topic 5: Water is Life!** ● **Diagnostic Assessment:** *Get Ready!* **Topic 4:** ● **Lesson 5.1:** Write Two-Step Equations ● **Lesson 5.2:** Solve Two-Step Equations ● **Lesson 5.3:** Solve Equations using the Distributive Property ● **Lesson 5.4:** Solve Inequalities Using Addition or Subtraction ● **Lesson 5.5:** Solve Inequalities Using Multiplication or Division ● **Lesson 5.6:** Solve Two-Step Equations ● **Lesson 5.7:** Solve Multi-Step Inequalities

Topic 6	**Use Sampling To Draw Inferences About Populations**
Suggested Time Frame	**20 Days**

Overview / Rationale

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics	

7.SP.A.1- Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
7.SP.A.2-. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.
7.SP.B-. Draw informal comparative inferences about two populations.
7.SP.B.3-. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.
7.SP.B.4-Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.
7.RP A.2c-Represent proportional relationships by equations.
7.RPA.3-Use proportional relationships to solve multistep ratio and percent problems.
7 EE.B.3- Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

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 determine a representative sample of a population? -How can inferences be drawn about a population from data gathered from samples?	-Population and samples -Drawing inferences from data -Making comparative inferences about population

-How can data displays be used to compare populations? -How can dot plots and statistical measures be used to compare populations?	-Making more comparative inferences about populations
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-The difference between a population and a sample, including how to identify and define each. -What constitutes a representative sample and how it can accurately reflect the characteristics of a population. -The process of drawing inferences about a population based on data gathered from a sample, including understanding potential biases and limitations. -How different data displays (such as dot plots, histograms, and box plots) can be used to visually compare populations. -The role of statistical measures (such as mean, median, range, and interquartile range) in comparing populations and interpreting data.	-Identify and select a representative sample from a given population to ensure the validity of data analysis. -Draw inferences about a population based on data collected from a sample, using statistical reasoning to support their conclusions. -Use data displays, such as dot plots, histograms, and box plots, to compare and contrast different populations, effectively communicating findings. -Apply statistical measures to analyze and compare populations, interpreting the results to draw informed conclusions about similarities and differences between groups. -Make and justify comparative inferences about populations, using data and statistical reasoning to support their conclusions.

Key Academic Vocabulary	
Review: Center Data Distribution Statistical Question Variability	**New:** Inference Population Random Sample Representative Sample Sample Valid Inference

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.

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NJSLS 8.1 Computer Science

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- **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: Raising Money Pick a Project: Write To Your Representative, Analyze an Activity, Simulate a Population Study, or Build a Mobile Stem Project: Golden Path **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: *Critical Thinking*

Topic Opener:

- **Topic 6: Golden Path**
- **Diagnostic Assessment:** *Get Ready!*

Topic 6:

- **Lesson 6.1:** Population and Samples
- **Lesson 6.2:** Draw Inferences From Data
- **Lesson 6.3:** Make Comparative Inferences About Populations
- **Lesson 6.4:** Make More Comparative Inferences About Populations

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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Topic 7	**Probability**
Suggested Time Frame	**25 Days**

Overview / Rationale

Topic 7 delves into the fundamental concepts of probability and its applications, providing students with a comprehensive understanding of how chance processes operate and how to model and evaluate them effectively. This unit focuses on the principles of probability, exploring both theoretical and experimental approaches to understanding how likely events are to occur. Students will learn how to use probability models to represent and analyze random events, facilitating predictions and informed decision-making.

By investigating different probability models and simulations, students will gain practical skills in determining the likelihood of both simple and compound events. This topic emphasizes the importance of using various tools, such as probability models and simulations, to estimate and evaluate probabilities in diverse scenarios. Through hands-on activities and real-world examples, students will develop the ability to apply these concepts to analyze outcomes, compare probabilities, and make predictions based on data. The rationale behind this unit is to equip students with the necessary skills to interpret and manage uncertainty in various contexts, fostering critical thinking and analytical abilities essential for understanding and navigating the complexities of chance processes.

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics

7.SP.C.5- Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.
7.SP.C.6- Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.
7.SP.C.7- Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
7.SP.C.7a- Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.
7.SP.C.7b- Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.
7.SP.C.8a-Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
7.SP.C.8b- Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.

7.SP.C.8c-Design and use a simulation to generate frequencies for compound events.
7.EE.B.3- Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
7.RP.A.2c-Represent proportional relationships by equations.

Essential Questions	**Enduring Understandings** *Students will understand…*
-What is probability? -How can the probability of an event help make predictions? -How is experimental probability similar to and different from theoretical probability? -How can a model be used to find the probability of an event? -How can all the possible outcomes or sample space of a compound event be represented? -How can a model help find the probability of a compound event? -How can you use simulations to determine the probability of an event?	-Likelihood and probability -Theoretical probability -Experimental Probability -Using Probability models -Determining outcomes of compound events -Finding probabilities of compound events -Simulating compound events
Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*

-The definition of probability and its role in quantifying the likelihood of an event occurring. -The difference between theoretical probability (based on known outcomes) and experimental probability (based on actual trials or experiments). -How probability can be used to make predictions about the likelihood of future events. -The concept of a probability model and how it can represent the likelihood of different outcomes. -What a compound event is and how to determine its possible outcomes or sample space. -Methods for finding the probability of compound events using models, including tree diagrams, lists, or area models. -How simulations can be used to approximate the probability of an event, especially when theoretical or experimental methods are not feasible.	-Calculate the probability of a simple event using both theoretical and experimental approaches. -Compare and contrast theoretical and experimental probabilities, analyzing how they are similar and different in predicting outcomes. -Create and use probability models, such as tree diagrams or area models, to represent and calculate the probability of events. -Identify and enumerate all possible outcomes for compound events, using tools like lists, tables, or tree diagrams to organize the sample space. -Apply probability models to find the probability of compound events, including independent and dependent events. -Design and conduct simulations to estimate the probability of an event, interpreting the results to make informed predictions. -Analyze and interpret the results of probability simulations, using them to refine predictions and understand the likelihood of various outcomes.

Key Academic Vocabulary	
Review: Equivalent Frequency Diagram Ratio	**New:** Compound Event Event Experimental Probability Outcome Probability Probability Model Relative Frequency Sample Space Simulation Theoretical Probability

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.
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- **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.

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- **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
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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: Photo Finish
Pick a Project: Develop a Game of Chance, Design an Adventure, Generate a Funny Sentence, Perform Your Knowledge
Stem Project: International Trading

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

Formative Assessments:
IXL
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Mid Topic Checkpoint
Review and Fluency Practice
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Summative Assessments:
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Stage 3 – Learning Plan

Learning Mindset: *Global Perspective and Contextual Awareness*

Topic Opener:

- **Topic 7: International Trading**
- **Diagnostic Assessment:** *Get Ready!*

Topic 7:

- **Lesson 7.1:** Understand Likelihood and Probability
- **Lesson 7.2:** Understand Theoretical Probability
- **Lesson 7.3:** Understand Experimental Probability
- **Lesson 7.4:** Use Probability Models
- **Lesson 7.5:** Determine Outcomes of Compound Events
- **Lesson 7.6:** Find Probabilities of Compound Events
- **Lesson 7.7:** Simulate Compound Events

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Topic 8	**Solve Problems Involving Geometry**
Suggested Time Frame	**20 Days**

Overview / Rationale

STAGE 1: Desired Results

New Jersey Student Learning Standards for Mathematics	

7.EE.B.3- Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
7.EE.B.4a-Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.
7.G.A.1- Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
7.G.A.2- Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
7.G.A.3- Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.
7.G.B.4- Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
7.G.B.5- Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
7.G.B.6-Solve real-world and mathematical problems involving area, volume and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
7 NS.A.3-Solve real-world and mathematical problems involving the four operations with 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 do scale drawings and actual measurements represent proportional relationships? -How can a shape that meets given conditions be drawn? -How can you determine when it is possible to draw a triangle given certain conditions? -How are angles formed by intersecting lines related? -How is the circumference of a circle related to the length of its diameter? -How can the area formula for a circle be used to solve problems? -How do the faces of a three-dimensional figure determine the two-dimensional shapes created by slicing the figure? -How is finding the area of composite two-dimensional figures similar to finding the surface area of three-dimensional figures? -How does the formula for volume of a prism help you understand what volume of a prism means?	-Solving problems involving scale and drawings -Drawing geometric figures -Drawing triangles with given conditions -Solving problem using angle relationships -Solving problems involving circumference of a circle -Solving problems involving area of a circle -Describing cross sections -Solving problems involving surface area -Solving problems involving volume

Learning Targets: Knowledge *Students will know…*	**Learning Targets: Skills** *Students will be able to…*
-How scale drawings and actual measurements represent proportional relationships and can be used to solve real-world problems. -The conditions required to draw geometric shapes, including triangles, based on given parameters. -The relationship between intersecting lines and the angles they form. -The mathematical relationship between the circumference of a circle and its diameter. -The formula for the area of a circle and its application in solving related problems. -How the faces of three-dimensional figures influence the shapes created by slicing the figure. -The concept of composite two-dimensional figures and how finding their area relates to surface area calculations for three-dimensional figures. -The formula for the volume of a prism and what it represents in terms of the prism's capacity.	-Solve problems involving scale drawings and proportional relationships. -Accurately draw geometric figures based on given conditions. -Determine the possibility of constructing a triangle given specific side lengths or angles. -Apply knowledge of angle relationships to solve problems involving intersecting lines. -Calculate the circumference of a circle using its diameter and solve related problems. -Use the formula for the area of a circle to find the area in various scenarios. -Describe and analyze cross sections of three-dimensional figures to understand their two-dimensional representations. -Calculate the surface area of composite figures and compare this process to finding the surface area of three-dimensional figures. -Solve problems related to the volume of prisms, using the formula to determine the volume and understand its significance.

Key Academic Vocabulary	
Review: Area Base Diameter Height Radius Volume	**New:** Adjacent angles Circumference Complementary angles Composite figure Cross section Scale drawing Supplementary angles Vertical angles

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: Whole Lotta Dough
Pick a Project: Construct a Three Dimensional Structure, Analyze a Pepperoni Pizza, Plan a Guided Tour, or Build a Scale Model
Stem Project: Upscale Design

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: Creative Problem-Solving and User-Centric Thinking

Topic Opener:

- **Topic 8: Upscale Design**
- **Diagnostic Assessment:** *Get Ready!*

Topic 8:

- **Lesson 8.1:** Solve Problems Involving Scale Drawings
- **Lesson 8.2:** Draw Geometric Figures
- **Lesson 8.3:** Draw Triangles with Given Conditions
- **Lesson 8.4:** Solve Problems Using Angle Relationships
- **Lesson 8.5:** Solve Problems Involving Circumference of a Circle
- **Lesson 8.6:** Solve Problems Involving Area of a Circle
- **Lesson 8.7:** Describe Cross Sections
- **Lesson 8.8:** Solve Problems Involving Surface Area
- **Lesson 8.9:** Solve Problems Involving Volume

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

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		LESSONS	TOPIC	
1	Class Introduction to Course		26	Topic 1.10	
2	LinkIt! Pre-Assessment		27	Topic 1.10	
3	LinkIt! Pre-Assessment		28	Topic 1 Review	
4	Into Math Pre-Assessment		29	Topic 1 Test	
5	Into Math Pre-Assessment		30	Topic 2 Stem Task	
6	Topic 1 STEM Task		31	Topic 2	
7	Topic 1		32	Topic 2.1	
8	Topic 1.1		33	Topic 2.1	
9	Topic 1.1		34	Topic 2.2	
10	Topic 1.2		35	Topic 2.2	
11	Topic 1.2		36	Topic 2.3	
12	Topic 1.3		37	Topic 2.3	
13	Topic 1.3		38	Topic 2.4	
14	Topic 1.4		39	Topic 2.4	
15	Topic 1.4		40	Topic 2.5	
16	Topic 1.5		41	Topic 2.5	
17	Topic 1.5		42	Topic 2.6	
18	Topic 1.6		43	Topic 2.6	
19	Topic 1.6		44	Topic 2 Review	
20	Topic 1.7		45	Topic Test	
21	Topic 1.7		46	Topic 3 Stem Task	
22	Topic 1.8		47	Topic 3	
23	Topic 1.8		48	Topic 3.1	
24	Topic 1.9		49	Topic 3.1	
25	Topic 1.9		50	Topic 3.2	

Grade 6 Mathematics Pacing Guide

LESSONS	TOPIC		LESSONS	TOPIC	
51	Topic 3.2		76	Topic 4.7	
52	Topic 3.3		77	Topic 4.7	
53	Topic 3.3		78	Topic 4.8	
54	Topic 3.4		79	Topic 4.8	
55	Topic 3.4		80	Topic 4 Review	
56	Topic 3.5		81	Topic 4 Test	
57	Topic 3.5		82	Midterm *Review*	
58	Topic 3.6		83	Midterm *Review*	
59	Topic 3.6		84	Midterm *LinkIt!* Exam	
60	Topic 3 Review		85	Midterm *LinkIt!* Exam	
61	Topic 3 Test		86	Topic 5 Stem Task	
62	Topic 4 Stem Task		87	Topic 5	
63	Topic 4		88	Topic 5.1	
64	Topic 4.1		89	Topic 5.1	
65	Topic 4.1		90	Topic 5.2	
66	Topic 4.2		91	Topic 5.2	
67	Topic 4.2		92	Topic 5.3	
68	Topic 4.3		93	Topic 5.3	
69	Topic 4.3		94	Topic 5.4	
70	Topic 4.4		95	Topic 5.4	
71	Topic 4.4		96	Topic 5.5	
72	Topic 4.5		97	Topic 5.5	
73	Topic 4.5		98	Topic 5.6	
74	Topic 4.6		99	Topic 5.6	
75	Topic 4.6		100	Topic 5.7	

Grade 6 Mathematics Pacing Guide

LESSONS	TOPIC		LESSONS	TOPIC	
101	Topic 5.7		126	Topic 7.5	
102	Topic 5 Review		127	Topic 7.5	
103	Topic 5 Test		128	Topic 7.6	
104	Topic 6 Stem Task		129	Topic 7.6	
105	Topic 6		130	Topic 7.7	
106	Topic 6.1		131	Topic 7.7	
107	Topic 6.1		132	Topic 7 Review	
108	Topic 6.2		133	Topic 7 Test	
109	Topic 6.2		134	Topic 8 Stem Task	
110	Topic 6.3		135	Topic 8	
111	Topic 6.3		136	Topic 8.1	
112	Topic 6.4		137	Topic 8.1	
113	Topic 6.4		138	Topic 8.2	
114	Topic Review		139	Topic 8.3	
115	Topic 6 Test		140	Topic 8.3	
116	Topic 7 Stem Task		141	NJSLA Administration	
117	Topic 7		142	NJSLA Administration	
118	Topic 7.1		143	NJSLA Administration	
119	Topic 7.1		144	NJSLA Administration	
120	Topic 7.2		145	NJSLA Administration	
121	Topic 7.2		146	NJSLA Administration	
122	Topic 7.3		147	Topic 8.4	
123	Topic 7.3		148	Topic 8.4	
124	Topic 7.4		149	Topic 8.5	
125	Topic 7.4		150	Topic 8.5	

Grade 6 Mathematics Pacing Guide

LESSONS	TOPIC		LESSONS	TOPIC	
151	Topic 8.6		176	EOY Math Project	
152	Topic 8.6		177	Eoy Math Project	
153	Topic 8.7		178	Eoy Math Project	
154	Topic 8.7		179	Eoy Math Project	
155	Topic 8.8		180	Eoy Math Project	
156	Topic 8.8				
157	Topic 8.9				
158	Topic 8.9				
159	Topic 8 Review				
160	Topic 8 Test				
161	Topic 8 Review				
162	Topic 8 Review				
163	Topic 8 Test				
164	Volume 2 Review				
165	Volume 2 Review				
166	Volume 2 Review				
167	Volume 2 Review				
168	Volume 2 Test				
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				

NEPTUNE CITY SCHOOL DISTRICT

Office of the Superintendent
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