Little Egg Harbor School District
Curriculum Guide

Mathematics: Sixth Grade

BOE APPROVAL DATE: 08/19/2025

Original Adoption:	August 2024
Created by:	Ocean County Curriculum Consortium
Revised on:	August 5, 2024
Revised by:	Elizabeth Bacskai and Dora Lupo

Little Egg Harbor School District Mathematics Curriculum	
Content Area: Mathematics	
Course Title: Elementary	**Grade Level: Sixth**
Ratio and Proportional Relationships	**30 Days**
The Number System	**60 Days**
Expressions and Equations	**40 Days**
Geometry	**25 Days**
Statistics and Probability	**25 Days**

Introduction

Vision for Mathematics Education in New Jersey

A New Jersey education in Mathematics builds quantitatively and analytically literate citizens prepared to meet the demands of college and career, and to engage productively in an information-driven society. All students will have access to a high-quality mathematics education that fosters a population that:

- Leverages data in decision-making and as a lens for discussing, analyzing, and responding to practical questions.
- Persists to make sense of and model problems arising in everyday life, society, and the workplace.
- Thinks critically and strategically to assess quantitative relationships and to solutions to complex problems.
- Employs precise reasoning and constructs viable arguments to deduce conclusions, recognize false statements and assess peers' reasoning.
- Interprets, evaluates and critiques the mathematics embedded in social, scientific and commercial systems, as well as the claims made in the private and public sectors.

In Sixth Grade, instruction focuses broadly on four critical areas:

1. Connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems;
2. Completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers;
3. Writing, interpreting, and using expressions and equations; and
4. Developing understanding of statistical thinking.

Critical Areas

1. Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.
2. Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.
3. Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as) to describe relationships between quantities.
4. Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.

Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.

Alignment with State Mandates
The following colors are used throughout this document to indicate areas in which the curriculum is aligned with the following NJSA requirements: ● Holocaust and genocides (N.J.S.A. 18A:35-28) ● History and contributions of African-Americans (Amistad Law) (N.J.S.A. 18A:35-4.43) ● Highlight and promote diversity and inclusion (Diversity & Inclusion Law) (N.J.S.A. 18A:35-4.36a) ● History of disabled and LGBT persons included in middle and high school curriculum (Section 18A:35-4.35) ● Climate Change - to prepare students to understand how and why climate change happens, the impact it has on our local and global communities and to act in informed and sustainable ways. Please click here for specific examples (by subject).

Ratios and Proportional Relationships	**Duration:** 30 days
Standards/Learning Targets	
Focus Standards (Major Standards)	
● **6.RP.A** Understand ratio concepts and use ratio reasoning to solve problems ● **6.RP.A.1** Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”	

- **6.RP.A.2** Understand the concept of a unit rate *a/b* associated with a ratio *a:b* with $b \neq 0$, and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is ¾ cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."
- **6.RP.A.3** Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
- **6.RP.A.3a** Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
- **6.RP.A.3b** Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?
- **6.RP.A.3c** Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means $\frac{30}{100}$ times the quantity); solve problems involving finding the whole, given a part and the percent.
- **6.RP.A.3d** Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Supporting and Additional Standards

- **6.NS.B.2** With accuracy and efficiency, divide multi-digit numbers using the standard algorithm.
- **6.NS.B.3** With accuracy and efficiency, add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
- **6.NS.B.4** Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4(9 + 2).

Primary Interdisciplinary Connections

English Language Arts

- **RI.MF.6.6.** Integrate information when presented in different media or formats (e.g., visually, quantitatively) to develop a coherent understanding of a topic or issue.
- **SL.PE.6.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

- **SL.II.6.2.** Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
- **SL.UM.6.5.** Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.

Science

- **MS-ETS1-2** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

Computer Science and Design Thinking Standards

- **8.1.8.DA.1:** Organize and transform data collected using computational tools to make it usable for a specific purpose.
- **8.1.8.DA.3:** Identify the appropriate tool to access data based on its file format.
- **8.1.8.DA.6:** Analyze climate change computational models and propose refinements.
- **8.2.8.ED.2:** Identify the steps in the design process that could be used to solve a problem.

Career Readiness, Life Literacies, and Key Skills Standards

- **9.1.8.CP.1:** Compare prices for the same goods or services.
- **9.1.8.FP.3:** Explain how self-regulation is important to managing money (e.g., delayed gratification, impulse buying, peer pressure, etc.).
- **9.1.8.FP.4:** Analyze how familial and cultural values influence savings rates, spending, and other financial decisions.
- **9.2.8.CAP.3:** Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income.
- **9.4.8.CI.1:** Assess data gathered on varying perspectives on causes of climate change (e.g., crosscultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4).
- **9.4.8.DC.8:** Explain how communities use data and technology to develop measures to respond to effects of climate change (e.g., smart cities).
- **9.4.8.IML.3:** Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).
- **9.4.8.IML.4:** Ask insightful questions to organize different types of data and create meaningful visualizations.

- **9.4.8.TL.1:** Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.
- **9.4.8.TL.2:** Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).
- **9.4.8.TL.3:** Select appropriate tools to organize and present information digitally.
- **9.4.8.TL.4:** Synthesize and publish information about a local or global issue or event (e.g., MSLS4-5, 6.1.8.CivicsPI.3).

Evidence of Student Learning

Performance Tasks/Use of Technology

- i-Ready Math in Action
- i-Ready MyPath
- i-Ready Fluency Flight
- IXL
- Standards-based activities and tasks
  - Illustrative Math Tasks - Sixth Grade
  - Math Milestones Tasks - Sixth Grade
  - Math Is Visual videos & Tasks
- Google Slides & Forms
- Digital Review Platforms - Kahoot / Blooket
- Flipgrid
- NCTM Illuminations
- Splash Learn - Games for Kids
- ABCya! - Games for Kids
- Multiplication.com - Games

Assessments

Formative

- Exit slips
- Teacher observations/anecdotal/checklists
- i-Ready games
- Performance Assessments
- Oral Assessments/Conferencing
- Portfolio/Math Journals
- Daily Classwork
- Pre-assessments

Summative

- i-Ready Mid-Unit Assessments
- i-Ready Unit Assessments
- Digital Comprehension Checks
- Unit & Cumulative Reviews
- LinkIt Progress Monitoring Standard Assessments

Benchmark

- i-Ready Assessments (Fall, Winter, Spring)
- District-wide Common Benchmark Assessments

Alternative

- Performance Tasks
- Extension Projects
- Written/verbal explanations

	• Peer assessment • Self-assessment • Untimed Fact Practice Assessment • Project Based Assessments with Scoring Rubric
Knowledge and Skills	
Content	**Skills**
Essential Questions: • How are ratios and rates used in everyday life? • What real world situations might you compare two different quantities? • What are three ways you represent a relationship between two quantities? • What is a unit rate and when are they used in the real world? • How can you make equal ratios? • What is the relationship between ratio, rates, and fractions? • How can you use ratios and rates to solve real-world and mathematical problems? • What are some ways to display equivalent ratios and rates? • How can tables, graphs and equations be used to represent and solve ratio and rate problems? • How can you convert measurements using rates? • How can you use ratio and rate reasoning to solve percent problems? • How can finding the GCF and LCM assist in solving mathematical problems?	**Students will be able to:** • Compare two quantities when there are *a* units of one quantity for every *b* units of the other. • Apply knowledge about multiples and factors to find equivalent ratios. • Create equivalent ratios to make a comparison. • Reason with equivalent ratios to find the unknown amount of one quantity. • Determine the unit rate to solve real-world problems. • Use a unit rate to find the amount of one quantity in a ratio relationship when you know the amount of the other quantity. • Apply what you know about ratios and rates to solve problems about percentages (finding the whole given a part and finding the percent.) • Apply ratio reasoning to convert measurements.

<table>
<tr><td>Enduring Understandings:
Students will know…" I can….."
Understand ratios and the language used to describe two amounts.
Find a rate when given a specific ratio.
Solve word problems related to ratios in order to find the rate.
Make tables of equivalent ratios, determine the missing values.
Use a table to compare ratios.
Create tables to represent values in the ordered pairs and then plot on a coordinate plane.
Solve unit rate problems, including problems involving constant speed and unit pricing.
Apply ratio knowledge to convert units of measurements.
Find a percent of a quantity as a rate per 100.
Solve percent problems that involve finding the whole or finding the percent.
Express a percent as a decimal or a fraction.
Use math vocabulary and precise language to explain ratios, rates, and percents.</td><td></td></tr>
<tr><td colspan="2" align="center">Instructional Plan</td></tr>
<tr><td>Suggested Activities</td><td>Resources</td></tr>
<tr><td>3 Act Task - Split Time
3 Act Task - Finals Week
Finding & Using Unit Rates - Exploring diverse tiling</td><td>Ready Mathematics Program
i-Ready MyPath
IXL
Seesaw</td></tr>
</table>

patterns from various cultures • *Zero* by Kathryn Otoshi • *One Grain of Rice: A Mathematical Folktale* by Demi • *Usha and the Big Digger* By Amitha Jagannath Knight • *Seven Golden Rings: A Tale of Music and Math* by Rajani Larocca • *My Rows and Piles of Coins* by Tololwa M. Mollel	• Class Dojo • NJSLS and iRCL 2024 Padlet • Manipulatives by iReady Lessons • Achieve the Core Coherence Map • Multiples Charts • Number Lines • Word Walls • Anchor Charts As appropriate: ○ Boom Cards ○ VB-Mapp ○ ABLLS-R ○ Connecting Math Concepts ○ Prodigy ○ SplashLearn Differentiate according to formative assessments and i-Ready Diagnostic individualized path • Resources for **on-grade** students: ○ Log into i-Ready and then follow these steps: ■ Click assess and teach ■ Click Teacher Toolbox Math ■ Click Grade Level ■ Click REINFORCE and use the resources shown • Resources for students **approaching** grade level expectations: ○ Log into i-Ready and then follow these steps: ■ Click assess and teach ■ Click Teacher Toolbox Math ■ Click Grade Level

<table>
<tr><td></td><td>
Click RETEACH and use the resources shown
Resources for students exceeding grade level expectations:
Log into i-Ready and then follow these steps:
Click assess and teach
Click Teacher Toolbox Math
Click Grade Level
Click EXTEND and use the resources shown
Useful links / online resources
Math Vocabulary Graphic Organizer
Double Number Lines and Equivalent Ratios
</td></tr>
<tr><td colspan="2">Suggested Options for Differentiation</td></tr>
<tr><td colspan="2">
Multilingual Learners
Simplify written and verbal instructions
Provide written directions with models and diagrams when possible
Build in more group work to allow ML students to interact and communicate with peers
Provide vocabulary ahead of time
Use sentence frames to give students practice with academic language
Pre-teach as often as possible- share videos, articles, vocabulary etc. with ML students prior to use in class
Utilize visual charts/cues
Highlight key words
Provide manipulatives
Frequently check for understanding
Involve families in student learning
Provide social/emotional support
Respect cultural traditions
Show photos, videos, and definitions when possible for culturally unique vocabulary
</td></tr>
</table>

- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps

Special Education/504 Plans

- Follow specific students accommodations and modifications as listed in individual student IEPs
- Preferential seating.
- Provide special lighting or acoustics.
- Provide a space with minimal distractions.
- Administer a test in a small group setting.
- Behavior management support.
- Adjusted class schedules or grading.
- Extended time on tests and assignments.
- Verbal, visual, or technology aids

Gifted and Talented

- Differentiated assignments/projects/assessments
- Differentiate learning pace using curriculum acceleration
- Curriculum compacting
- Open ended/abstract questions to activate higher level thinking
- Alternative modes of communication
- Student developed extension activities
- Plan self directed inquiry
- Opportunities to push assessment/activity boundaries
- Self centered curriculum allowing for student choice

Students In Need of Academic Support:

- Ensure child has access to all appropriate academic resources both in school and at home
- Provide structure and adhere to a consistent daily routine with clear and concise rules
- Facilitate successful experiences
- Provide tutoring if needed
- Allow students to complete assignments in school

- Do not penalize for late or missing assignments/materials
- Offer encouragement and understanding
- Allow students to have personal possessions and property in school
- Give choice to provide a sense of control

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input

Culturally Diverse:

- Involve families in student learning
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Teach study skills
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps
- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education
- Communicate high expectations for the success of all students
- Integrate the arts into learning activities

Core Instructional and Supplemental Materials
● Ready Mathematics Program (Teacher / Student Editions) ● i-Ready MyPath and digital resources ● Manipulatives ● District Approved Online Programs ● Workstations with open-ended tasks As appropriate: ● Boom Cards ● VB-Mapp ● ABLLS-R ● Connecting Math Concepts ● Prodigy ● SplashLearn **Varied Levels of Text:** ● Multiplication Read Alouds ● Marilyn Burns Math Library List ● EPIC
Teacher Notes / Reflections

The Number System	**Duration:** 60 days

Standards/Learning Targets
Focus Standards (Major Standards)

- **6.NS.A** Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- **6.NS.A.1** Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(\frac{2}{3}) \div (\frac{3}{4})$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(\frac{2}{3}) \div (\frac{3}{4}) = \frac{8}{9}$ because $\frac{3}{4}$ of $\frac{8}{9}$ is $\frac{2}{3}$. (In general, $(\frac{a}{b}) \div (\frac{c}{d}) = (\frac{ad}{bc})$. How much chocolate will each person get if 3 people share $\frac{1}{2}$ lb of chocolate equally? How many 3/4-cup servings are in $\frac{2}{3}$ of a cup of yogurt? How wide is a rectangular strip of land with length $\frac{3}{4}$mi and area $\frac{1}{2}$ square mi?
- **6.NS.B** Compute fluently with multi-digit numbers & find common factors & multiples.
- **6.NS.B.2** With accuracy and efficiency, divide multi-digit numbers using the standard algorithm.
- **6.NS.B.3** With accuracy and efficiency, add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
- **6.NS.B.4** Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4(9 + 2).
- **6.NS.C** Apply and extend previous understandings of numbers to the system of rational numbers
- **6.NS.C.5** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

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

Supporting and Additional Standards

- **6.RP.A.3** Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
- **6.EE.A** Apply and extend previous understandings of arithmetic to algebraic expressions.
- **6.EE.A.1** Write and evaluate numerical expressions involving whole-number exponents.
- **6.EE.A.2** Write, read, and evaluate expressions in which letters stand for numbers.

- **6.EE.A.3** Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.
- **6.EE.B.7** Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which ^{p}, ^{q} and ^{x} are all nonnegative rational numbers.

Primary Interdisciplinary Connections

English Language Arts

- **RI.MF.6.6.** Integrate information when presented in different media or formats (e.g., visually, quantitatively) to develop a coherent understanding of a topic or issue.
- **SL.PE.6.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
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● i-Ready MyPath
● i-Ready Fluency Flight
● IXL
● Standards-based activities and tasks
    ○ Illustrative Math Tasks - Sixth Grade
    ○ Math Milestones Tasks - Sixth Grade
    ○ Math Is Visual videos & Tasks
	Assessments
	Formative
	● Exit slips
	● Teacher observations/anecdotal/checklists
	● i-Ready games
	● Performance Assessments
	● Oral Assessments/Conferencing
	● Portfolio/Math Journals
	● Daily Classwork
	● Pre-assessments

<table>
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- Google Slides & Forms
- Digital Review Platforms - Kahoot / Blooket
- Flipgrid
- NCTM Illuminations
- Splash Learn - Games for Kids
- ABCya! - Games for Kids
- Multiplication.com - Games

</td><td>

Summative
- i-Ready Mid-Unit Assessments
- i-Ready Unit Assessments
- Digital Comprehension Checks
- Unit & Cumulative Reviews
- LinkIt Progress Monitoring Standard Assessments

Benchmark
- i-Ready Assessments (Fall, Winter, Spring)
- District-wide Common Benchmark Assessments

Alternative
- Performance Tasks
- Extension Projects
- Written/verbal explanations
- Peer assessment
- Self-assessment
- Untimed Fact Practice Assessment
- Project Based Assessments with Scoring Rubric

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<tr><th colspan="2">Knowledge and Skills</th></tr>
<tr><th>Content</th><th>Skills</th></tr>
<tr><td>

Essential Questions:
- Given a word problem, how do you decide which operation(s) (+, -, x, ÷) to use to solve the problem?
- Why do you invert and multiply when dividing fractions?
- What can I use as a visual model and how can this help me solve multiplication and division of fractions?
- When will I use the division of fractions in the real world? (ie: recipes)

</td><td>

Students will be able to:
- Apply your understanding of multiplication to evaluate expressions that include exponents.
- Apply knowledge of place value and operations with whole numbers to add, subtract, multiply, and divide with decimals.
- Use the relationship between multiplication and division to help divide with fractions.
- Find the greatest common factor and least common

</td></tr>
</table>

- When and why are decimals used in the real world? - How do I distinguish between repeating and terminating decimals? - Why is accurate placement of the decimal point important when computing with decimals? - What are strategies to help find the greatest common factor of two whole numbers? - In what situations can least common multiple and greatest common factor be used? - What is the significance of positive and negative? numbers? - When are positive and negative numbers used? - How can positive and negative numbers help us determine locations, directions and/or values? - What words can be used to represent negative value in numbers? - How can you represent numbers that are less than zero? - How can you use a number line to compare positive and negative fractions and decimals? - How can you graph and locate points that contain negative numbers in a coordinate plane? - What situations in the real-world can be represented by positive and negative numbers, and what is the meaning of zero as it relates to these situations? - What is the opposite of a number and use this concept to explain why the opposite of the opposite of a number is the number itself? - How do you locate and/or plot a rational number on a vertical or horizontal number line? - How can you locate and/or plot a pair of rational numbers in a coordinate plane?	multiple of two whole numbers. - Use positive and negative numbers to describe quantities with opposite values. - Determine a number’s distance from zero. - Extend the number line to show and compare positive and negative rational numbers or their absolute values. - An inequality with a variable can have infinitely many solutions. You can show the solution on a number line. - You can extend the coordinate plane to plot points with negative coordinates. - Find the distance between points on the coordinate plane. - Locate rational numbers as a point on a horizontal or vertical number line. - Express rational numbers in a variety of ways. - Use positive and negative numbers in everyday contexts (temperatures, recipes, taxes, money, etc). - Interpret absolute value as magnitude for positive or negative quantities. - Solve mathematical problems by graphing points in all four quadrants

Enduring Understandings: *Students will know…" I can….."* ● Divide two fractions. ● Solve word problems involving the division of fractions by fractions. ● Divide multi-digit numbers using the standard algorithm. ● Add, subtract, multiply and divide multi-digit numbers involving decimals using the standard algorithm. ● Find the greatest common factor of two whole numbers less than or equal to 100. ● Find the least common multiple of two whole numbers less than or equal to 12. ● Use the distributive property to show the sum of two whole numbers 1-100 in different ways. ● Understand that positive and negative numbers are used to describe amounts having opposite values. ● Use positive and negative numbers to show amounts in real-world situations and explain what the number 0 means in those situations. ● Understand that a rational number is a point on a number line. ● Extend number line diagrams to show positive and negative numbers on the line and in the plane. ● Recognize opposite signs of numbers as indicating places on opposite sides of zero on the number line. ● Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane.	

• Place integers and other numbers on a number line diagram. • Place ordered pairs on a coordinate plane. • Order positive and negative numbers. • Determine absolute value of rational numbers. • Find the distance between two numbers (positive or negative) on a number line. • Write, understand and explain what rational numbers mean in real-world situations. • Understand absolute values as they apply to real-world situations. • Understand the language of positive and negative numbers in context. • Graph in all four quadrants of the coordinate plane to solve real-world and math problems. • Determine the distance between points in the same first coordinate or the same second coordinate.	
Instructional Plan	
Suggested Activities	**Resources**
• Dividing Fractions 3 Act Task - Salting a Driveway • *Zero* by Kathryn Otoshi • *One Grain of Rice: A Mathematical Folktale* by Demi • *Usha and the Big Digger* By Amitha Jagannath Knight • *Seven Golden Rings: A Tale of Music and Math* by Rajani Larocca	• Ready Mathematics Program • i-Ready MyPath • IXL • Seesaw • Class Dojo • NJSLS and iRCL 2024 Padlet

My Rows and Piles of Coins by Tololwa M. Mollel	- Manipulatives by iReady Lessons - Achieve the Core Coherence Map - Multiples Charts - Number Lines - Word Walls - Anchor Charts As appropriate: - Boom Cards - VB-Mapp - ABLLS-R - Connecting Math Concepts - Prodigy - SplashLearn Differentiate according to formative assessments and i-Ready Diagnostic individualized path - Resources for **on-grade** students: - Log into i-Ready and then follow these steps: - Click assess and teach - Click Teacher Toolbox Math - Click Grade Level - Click REINFORCE and use the resources shown - Resources for students **approaching** grade level expectations: - Log into i-Ready and then follow these steps: - Click assess and teach - Click Teacher Toolbox Math - Click Grade Level - Click RETEACH and use the resources shown

	- Resources for students **exceeding** grade level expectations: - Log into i-Ready and then follow these steps: - Click assess and teach - Click Teacher Toolbox Math - Click Grade Level - Click EXTEND and use the resources shown Useful links / online resources - Math Vocabulary Graphic Organizer - Comparing Absolute Values

Suggested Options for Differentiation

Multilingual Learners

- Simplify written and verbal instructions
- Provide written directions with models and diagrams when possible
- Build in more group work to allow ML students to interact and communicate with peers
- Provide vocabulary ahead of time
- Use sentence frames to give students practice with academic language
- Pre-teach as often as possible- share videos, articles, vocabulary etc. with ML students prior to use in class
- Utilize visual charts/cues
- Highlight key words
- Provide manipulatives
- Frequently check for understanding
- Involve families in student learning
- Provide social/emotional support
- Respect cultural traditions
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals

- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps

Special Education/504 Plans

- Follow specific students accommodations and modifications as listed in individual student IEPs
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- Provide special lighting or acoustics.
- Provide a space with minimal distractions.
- Administer a test in a small group setting.
- Behavior management support.
- Adjusted class schedules or grading.
- Extended time on tests and assignments.
- Verbal, visual, or technology aids

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- Differentiated assignments/projects/assessments
- Differentiate learning pace using curriculum acceleration
- Curriculum compacting
- Open ended/abstract questions to activate higher level thinking
- Alternative modes of communication
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- Plan self directed inquiry
- Opportunities to push assessment/activity boundaries
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- Ensure child has access to all appropriate academic resources both in school and at home
- Provide structure and adhere to a consistent daily routine with clear and concise rules
- Facilitate successful experiences
- Provide tutoring if needed
- Allow students to complete assignments in school
- Do not penalize for late or missing assignments/materials
- Offer encouragement and understanding
- Allow students to have personal possessions and property in school

- Give choice to provide a sense of control

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input

Culturally Diverse:

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- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education
- Communicate high expectations for the success of all students
- Integrate the arts into learning activities

Core Instructional and Supplemental Materials

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As appropriate:

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Varied Levels of Text:

- Multiplication Read Alouds
- Marilyn Burns Math Library List
- EPIC

Teacher Notes / Reflections

Expressions and Equations	**Duration:** 40 days
Standards/Learning Targets	
Focus Standards (Major Standards)	

- **6.EE.A** Apply and extend previous understandings of arithmetic to algebraic expressions.
- **6.EE.A.1** Write and evaluate numerical expressions involving whole-number exponents.
- **6.EE.A.2** Write, read, and evaluate expressions in which letters stand for numbers.
- **6.EE.A.2a** Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as 5 – y.
- **6.EE.A.2b** Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.
- **6.EE.A.2c** Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = \frac{1}{2}$.
- **6.EE.A.3** Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3\ (2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6\ (4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.
- **6.EE.A.4** Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for.
- **6.EE.B** Reason about and solve one-variable equations and inequalities.
- **6.EE.B.5** Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

- **6.EE.B.6** Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
- **6.EE.B.7** Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which ^{p}, ^{q} and ^{x} are all nonnegative rational numbers.
- **6.EE.B.8** Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
- **6.EE.C** Represent and analyze quantitative relationships between dependent and independent variables
- **6.EE.C.9** Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

Supporting and Additional Standards

- **6.NS.B** Compute fluently with multi-digit numbers & find common factors & multiples.
- **6.NS.B.2** With accuracy and efficiency, divide multi-digit numbers using the standard algorithm.
- **6.NS.B.3** With accuracy and efficiency, add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
- **6.RP.A.3a** Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
- **6.G.A** Solve real-world and mathematical problems involving area, surface area, and volume.

Primary Interdisciplinary Connections

English Language Arts

- **RI.MF.6.6.** Integrate information when presented in different media or formats (e.g., visually, quantitatively) to develop a coherent understanding of a topic or issue.

- **SL.PE.6.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- **SL.II.6.2.** Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
- **SL.UM.6.5.** Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.

Science

- **MS-ETS1-2** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

Computer Science and Design Thinking Standards

- **8.1.8.DA.1:** Organize and transform data collected using computational tools to make it usable for a specific purpose.
- **8.1.8.DA.3:** Identify the appropriate tool to access data based on its file format.
- **8.1.8.DA.6:** Analyze climate change computational models and propose refinements.
- **8.2.8.ED.2:** Identify the steps in the design process that could be used to solve a problem.

Career Readiness, Life Literacies, and Key Skills Standards

- **9.1.8.CP.1:** Compare prices for the same goods or services.
- **9.1.8.FP.3:** Explain how self-regulation is important to managing money (e.g., delayed gratification, impulse buying, peer pressure, etc.).
- **9.1.8.FP.4:** Analyze how familial and cultural values influence savings rates, spending, and other financial decisions.
- **9.2.8.CAP.3:** Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income.
- **9.4.8.CI.1:** Assess data gathered on varying perspectives on causes of climate change (e.g., crosscultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4).
- **9.4.8.DC.8:** Explain how communities use data and technology to develop measures to respond to effects of climate change (e.g., smart cities).
- **9.4.8.IML.3:** Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).

- **9.4.8.IML.4:** Ask insightful questions to organize different types of data and create meaningful visualizations.
- **9.4.8.TL.1:** Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.
- **9.4.8.TL.2:** Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).
- **9.4.8.TL.3:** Select appropriate tools to organize and present information digitally.
- **9.4.8.TL.4:** Synthesize and publish information about a local or global issue or event (e.g., MSLS4-5, 6.1.8.CivicsPI.3).

Evidence of Student Learning

Performance Tasks/Use of Technology

- i-Ready Math in Action
- i-Ready MyPath
- i-Ready Fluency Flight
- IXL
- Standards-based activities and tasks
  - Illustrative Math Tasks - Sixth Grade
  - Math Milestones Tasks - Sixth Grade
  - Math Is Visual videos & Tasks
- Google Slides & Forms
- Digital Review Platforms - Kahoot / Blooket
- Flipgrid
- NCTM Illuminations
- Splash Learn - Games for Kids
- ABCya! - Games for Kids
- Multiplication.com - Games

Assessments

Formative

- Exit slips
- Teacher observations/anecdotal/checklists
- i-Ready games
- Performance Assessments
- Oral Assessments/Conferencing
- Portfolio/Math Journals
- Daily Classwork
- Pre-assessments

Summative

- i-Ready Mid-Unit Assessments
- i-Ready Unit Assessments
- Digital Comprehension Checks
- Unit & Cumulative Reviews
- LinkIt Progress Monitoring Standard Assessments

Benchmark

- i-Ready Assessments (Fall, Winter, Spring)
- District-wide Common Benchmark Assessments

Alternative

- Performance Tasks
- Extension Projects

	• Written/verbal explanations • Peer assessment • Self-assessment • Untimed Fact Practice Assessment • Project Based Assessments with Scoring Rubric
Knowledge and Skills	
Content	**Skills**
Essential Questions: • What are the parts of an expression? • How can a numerical expression be written? • What is the purpose of a variable in an expression? • Does the order in which you perform an operation matter? • What is the effect of inserting parentheses into a numerical expression? • How can you write and evaluate an expression that represents a real life problem? • How do you find equivalent expressions? • What are some similarities and differences between algebraic expressions, equations, and inequalities? • What are some keywords that can be identified to help write an expression, equation, or inequality? • How is the distributive property used to solve a written expression? • How can you tell when expressions are equivalent? • What is the purpose of a variable? • What does inequality mean?	**Students will be able to:** • Apply knowledge of writing, interpreting, and evaluating numerical expressions to working with algebraic expressions. • Write expressions in different, but equivalent, forms to make sense of problems. • Perform the same operation on both sides of an equation and the two sides of the equation will still be equal. • Solve an equation by finding a value of the variable that makes the equation true. • Apply knowledge of inverse operations to help you solve equations. • Write expressions, equations and inequalities. • Expressions represent functions as verbal rules, equations, tables, and graphs. • Interpret statements of inequality as statements about the relative position of two numbers on a number-line diagram. • Evaluate expressions when given the value of the variable.

- What properties can be used to solve real-world equations showing relationships between independent and dependent variables? **Enduring Understandings:** *Students will know…" I can….."* - Write and understand numerical expressions involving whole number exponents. - Write, read and figure out expressions in which letters stand for numbers. - Write expressions using numbers and letters - Identify the parts of an expression using mathematical words (sum, term, product, factor, quotient, coefficient.) - Determine the answer to expressions when given the specific value of a variable. - Use my knowledge of the order of operations to evaluate expressions. - Use my knowledge of the order of operations to create equivalent expressions. - Identify when two expressions are equivalent. - Understand that solving an equation or inequality is like answering a question. - Use variables to represent numbers and write expressions when solving real world problems. - Write an inequality which has many solutions and represent these solutions on a number line. - Use variables to represent two quantities in a real world problem and write an equation to express the quantities. - Use graphs and tables to show the relationship between dependent and independent variables. - Solve real-world and mathematical problems by writing	- Evaluate one variable equations using inverse operations. - Write and solve equations to solve real-world problems. - Identify the independent variable and dependent variable in a relationship between two quantities. - Write an equation to represent the relationship between an independent and dependent variable. - Analyze the relationship between independent and dependent variables. - Use math vocabulary and precise language to describe writing equivalent expressions and solving equations.

<table>
<tr><td>and solving equations.
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Suggested Options for Differentiation
Multilingual Learners ● Simplify written and verbal instructions ● Provide written directions with models and diagrams when possible ● Build in more group work to allow ML students to interact and communicate with peers

- Provide vocabulary ahead of time
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- EPIC

Teacher Notes / Reflections

Geometry	**Duration:** 25 days

Standards/Learning Targets
Focus Standards (Major Standards)

- **6.G.A** Solve real-world and mathematical problems involving area, surface area, and volume.
- **6.G.A.1** Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
- **6.G.A.2** Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = l w h and V = B h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
- **6.G.A.3** Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
- **6.G.A.4** Represent three-dimensional figures (e.g., pyramid, triangular prism, rectangular prism) using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Supporting and Additional Standards
• **6.EE.A.2c** Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = \frac{1}{2}$. • **6.NS.A.1** Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(\frac{2}{3}) \div (\frac{3}{4})$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(\frac{2}{3}) \div (\frac{3}{4}) = \frac{8}{9}$ because $\frac{3}{4}$ of $\frac{8}{9}$ is $\frac{2}{3}$. (In general, $(\frac{a}{b}) \div (\frac{c}{d}) = (\frac{ad}{bc})$. How much chocolate will each person get if 3 people share $\frac{1}{2}$ lb of chocolate equally? How many 3/4-cup servings are in $\frac{2}{3}$ of a cup of yogurt? How wide is a rectangular strip of land with length $\frac{3}{4}$mi and area $\frac{1}{2}$ square mi? • **6.NS.B.2** With accuracy and efficiency, divide multi-digit numbers using the standard algorithm. • **6.NS.B.3** With accuracy and efficiency, add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. • **6.NS.C.6b** Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. • **6.NS.C.6c** Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane. • **6.NS.C.8** Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
Primary Interdisciplinary Connections
English Language Arts

• **RI.MF.6.6.** Integrate information when presented in different media or formats (e.g., visually, quantitatively) to develop a coherent understanding of a topic or issue. • **SL.PE.6.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly. • **SL.II.6.2.** Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study. • **SL.UM.6.5.** Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information. **Science** • **MS-ETS1-2** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
Computer Science and Design Thinking Standards
• **8.1.8.DA.1:** Organize and transform data collected using computational tools to make it usable for a specific purpose. • **8.1.8.DA.3:** Identify the appropriate tool to access data based on its file format. • **8.1.8.DA.6:** Analyze climate change computational models and propose refinements. • **8.2.8.ED.2:** Identify the steps in the design process that could be used to solve a problem.
Career Readiness, Life Literacies, and Key Skills Standards
• **9.1.8.CP.1:** Compare prices for the same goods or services. • **9.1.8.FP.3:** Explain how self-regulation is important to managing money (e.g., delayed gratification, impulse buying, peer pressure, etc.). • **9.1.8.FP.4:** Analyze how familial and cultural values influence savings rates, spending, and other financial decisions. • **9.2.8.CAP.3:** Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income. • **9.4.8.CI.1:** Assess data gathered on varying perspectives on causes of climate change (e.g., crosscultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4). • **9.4.8.DC.8:** Explain how communities use data and technology to develop measures to respond to effects of climate change (e.g., smart cities).

- **9.4.8.IML.3:** Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).
- **9.4.8.IML.4:** Ask insightful questions to organize different types of data and create meaningful visualizations.
- **9.4.8.TL.1:** Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.
- **9.4.8.TL.2:** Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).
- **9.4.8.TL.3:** Select appropriate tools to organize and present information digitally.
- **9.4.8.TL.4:** Synthesize and publish information about a local or global issue or event (e.g., MSLS4-5, 6.1.8.CivicsPI.3).

Evidence of Student Learning

Performance Tasks/Use of Technology	Assessments
• i-Ready Math in Action • i-Ready MyPath • i-Ready Fluency Flight • IXL • Standards-based activities and tasks ○ Illustrative Math Tasks - Sixth Grade ○ Math Milestones Tasks - Sixth Grade ○ Math Is Visual videos & Tasks • Google Slides & Forms • Digital Review Platforms - Kahoot / Blooket • Flipgrid • NCTM Illuminations • Splash Learn - Games for Kids • ABCya! - Games for Kids • Multiplication.com - Games	**Formative** • Exit slips • Teacher observations/anecdotal/checklists • i-Ready games • Performance Assessments • Oral Assessments/Conferencing • Portfolio/Math Journals • Daily Classwork • Pre-assessments **Summative** • i-Ready Mid-Unit Assessments • i-Ready Unit Assessments • Digital Comprehension Checks • Unit & Cumulative Reviews • LinkIt Progress Monitoring Standard Assessments **Benchmark** • i-Ready Assessments (Fall, Winter, Spring) • District-wide Common Benchmark Assessments **Alternative**

<table>
<tr><td></td><td>Performance Tasks
Extension Projects
Written/verbal explanations
Peer assessment
Self-assessment
Untimed Fact Practice Assessment
Project Based Assessments with Scoring Rubric</td></tr>
<tr><th colspan="2">Knowledge and Skills</th></tr>
<tr><th>Content</th><th>Skills</th></tr>
<tr><td>Essential Questions:
What is area and why is it valuable to know how to find the area for triangles, quadrilaterals, and irregular or compound polygons?
What are the characteristics of a 3D figure?
What is the formula for finding the area of a rectangular prism?
What is volume and how does it relate to rectangular prisms?
What procedures can be used for finding surface area of triangular and rectangular prisms and to what real world problems can surface area for these figures be applied?
What are strategies for drawing polygons in the coordinate plane?
How do you represent three-dimensional figures using nets?
Enduring Understandings:
Students will know…" I can….."
Compose and decompose shapes to help me find the area of right triangles, other triangles, special quadrilaterals</td><td>Students will be able to:
Use what you know about the area of a rectangle to find the area of triangles, special quadrilaterals and other two-dimensional figures.
Use what you know about finding the area of polygons to find the surface area of three-dimensional figures.
Find the areas of polygons on a coordinate plane.
Identify and draw a net for a three-dimensional figure.
Find the volume of a right rectangular prism with fractional edge lengths.</td></tr>
</table>

and polygons. ● Apply these techniques of composing and decomposing in the context of solving real-world and mathematical problems. ● Use unit cubes to find the volume of a right rectangular prism. ● Apply formulas to find the volume of a right rectangular prism with fractional edge lengths. ($V = lwh$ or $V = Bh$) ● Draw polygons in the coordinate plane when given the coordinates for the vertices. ● Use the coordinates of the vertices of a polygon on the coordinate plane to find the length of a side, joining points with the same first coordinate or the same second coordinate. ● Apply what I have learned about polygons on coordinate planes to real world and mathematical situations. ● Show how three dimensional figures can be made using two dimensional nets. ● Figure out the surface area of a three dimensional shape by using a net.	
Instructional Plan	
Suggested Activities	**Resources**
● File Cabinet Activity ● Area of a Rectangle Activity - Grass is Greener ● Area of a Triangle & Parallelogram - Covering Ground ● *Zero* by Kathryn Otoshi ● *One Grain of Rice: A Mathematical Folktale* by Demi	● Ready Mathematics Program ● i-Ready MyPath ● IXL ● Seesaw ● Class Dojo ● NJSLS and iRCL 2024 Padlet

• *Usha and the Big Digger* By Amitha Jagannath Knight • *Seven Golden Rings: A Tale of Music and Math* by Rajani Larocca • *My Rows and Piles of Coins* by Tololwa M. Mollel	• Manipulatives by iReady Lessons • Achieve the Core Coherence Map • Multiples Charts • Number Lines • Word Walls • Anchor Charts As appropriate: ○ Boom Cards ○ VB-Mapp ○ ABLLS-R ○ Connecting Math Concepts ○ Prodigy ○ SplashLearn Differentiate according to formative assessments and i-Ready Diagnostic individualized path • Resources for **on-grade** students: ○ Log into i-Ready and then follow these steps: ■ Click assess and teach ■ Click Teacher Toolbox Math ■ Click Grade Level ■ Click REINFORCE and use the resources shown • Resources for students **approaching** grade level expectations: ○ Log into i-Ready and then follow these steps: ■ Click assess and teach ■ Click Teacher Toolbox Math ■ Click Grade Level ■ Click RETEACH and use the resources shown

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- Resources for students **exceeding** grade level expectations:
  - Log into i-Ready and then follow these steps:
    - Click assess and teach
    - Click Teacher Toolbox Math
    - Click Grade Level
    - Click EXTEND and use the resources shown

Useful links / online resources

- Math Vocabulary Graphic Organizer
- NJDOE Digital Item Library

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Suggested Options for Differentiation

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Multilingual Learners

- Simplify written and verbal instructions
- Provide written directions with models and diagrams when possible
- Build in more group work to allow ML students to interact and communicate with peers
- Provide vocabulary ahead of time
- Use sentence frames to give students practice with academic language
- Pre-teach as often as possible- share videos, articles, vocabulary etc. with ML students prior to use in class
- Utilize visual charts/cues
- Highlight key words
- Provide manipulatives
- Frequently check for understanding
- Involve families in student learning
- Provide social/emotional support
- Respect cultural traditions
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals

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- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps

Special Education/504 Plans

- Follow specific students accommodations and modifications as listed in individual student IEPs
- Preferential seating.
- Provide special lighting or acoustics.
- Provide a space with minimal distractions.
- Administer a test in a small group setting.
- Behavior management support.
- Adjusted class schedules or grading.
- Extended time on tests and assignments.
- Verbal, visual, or technology aids

Gifted and Talented

- Differentiated assignments/projects/assessments
- Differentiate learning pace using curriculum acceleration
- Curriculum compacting
- Open ended/abstract questions to activate higher level thinking
- Alternative modes of communication
- Student developed extension activities
- Plan self directed inquiry
- Opportunities to push assessment/activity boundaries
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Students In Need of Academic Support:

- Ensure child has access to all appropriate academic resources both in school and at home
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Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Be flexible with assignments
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- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
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Culturally Diverse:

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- Provide social/emotional support
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- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education
- Communicate high expectations for the success of all students
- Integrate the arts into learning activities

Core Instructional and Supplemental Materials

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Teacher Notes / Reflections

Statistics and Probability	**Duration:** 25 days
Standards/Learning Targets	
Focus Standards (Major Standards)	

- **6.SP.A** Develop understanding of statistical variability.
- **6.SP.A.1** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.
- **6.SP.A.2** Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
- **6.SP.A.3** Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
- **6.SP.B** Summarize numerical data sets in relation to their context, such as by:
- **6.SP.B.4** Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- **6.SP.B.5** Summarize numerical data sets in relation to their context, such as by:
- **6.SP.B.5a** Reporting the number of observations.
- **6.SP.B.5b** Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
- **6.SP.B.5c** Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
- **6.SP.B.5d** Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Supporting and Additional Standards

- **6.NS.A** Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- **6.NS.B.2** With accuracy and efficiency, divide multi-digit numbers using the standard algorithm.
- **6.NS.B.3** With accuracy and efficiency, add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

- **6.NS.C.6** Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
- **6.EE.A.2** Write, read, and evaluate expressions in which letters stand for numbers.
- **6.EE.C** Represent and analyze quantitative relationships between dependent and independent variables
- **6.EE.C.9** Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

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○ Math Milestones Tasks - Sixth Grade ○ Math Is Visual videos & Tasks ● Google Slides & Forms ● Digital Review Platforms - Kahoot / Blooket ● Flipgrid ● NCTM Illuminations ● Splash Learn - Games for Kids ● ABCya! - Games for Kids ● Multiplication.com - Games	● Portfolio/Math Journals ● Daily Classwork ● Pre-assessments **Summative** ● i-Ready Mid-Unit Assessments ● i-Ready Unit Assessments ● Digital Comprehension Checks ● Unit & Cumulative Reviews ● LinkIt Progress Monitoring Standard Assessments **Benchmark** ● i-Ready Assessments (Fall, Winter, Spring) ● District-wide Common Benchmark Assessments **Alternative** ● Performance Tasks ● Extension Projects ● Written/verbal explanations ● Peer assessment ● Self-assessment ● Untimed Fact Practice Assessment ● Project Based Assessments with Scoring Rubric
Knowledge and Skills	
Content	**Skills**
Essential Questions: ● How can you tell whether a question is a statistical question? ● How can you describe the spread of a data set? ● What are the characteristics of a dot plot, histogram, box plot? ● How do you know which data display to choose for the	**Students will be able to:** ● Understand that data collected answers a statistical question. ● Recognize a statistical question is a one that anticipates variability ● Use what you know about the number line to organize a set of data.

best representation of the data? ● How can you describe a set of data using quantitative measures of center (median, mean, mode) and variability (range, interquartile range, mean absolute deviation) and select the one that best represents the data? ● In what other ways can you describe an average of a data set? ● How can you use distances between each data value and the mean of a data set to measure the spread of a data set? ● How are median, mean, interquartile range, mean absolute deviation, and overall pattern used to interpret data? **Enduring Understandings:** *Students will know…" I can….."* ● Understand that the data in questions involving statistics is varied as it relates to the question and answers. ● Understand that a set of data collected to answer a statistical question has an overall shape, including a center and spread, when plotted on a graph. ● Understand that a set of numerical data has a measure of center (median and/or mean) that summarizes all of its values with a single number. ● Understand that in a set of numerical data, the measure of variation describes how its values vary with a single number. ● Display numerical data on a number line, dot plots, histogram and box plot. ● Summarize data by stating the number of observations.	● Interpret data on a variety of data displays, including dot plot, histogram, and box plot. ● Summarize a data set by finding the average (mean) or middle piece of data (median). ● Describe a set of data by its center, spread, and overall shape. ● Summarize data by describing how the data were measured and their units of measurement. ● Represent data in a box plot. ● Calculate median and IQR (interquartile range) of a data set, then interpret them in different contexts. ● Calculate the mean and MAD (mean absolute deviation) of a data set, then interpret them in different contexts. ● Compare measures of center and variability, then choose measures of center and variability to summarize the data set. ● Use math vocabulary and precise language to describe sets of data.

• Summarize data by describing the attribute of what is being investigated, how it was measured and the units of measure. • Summarize data by giving numerical measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation). • Summarize data by describing the overall pattern of the data and noticing unusual deviations from the overall pattern. • Summarize data by explaining how the distribution of the data on a graph determines its measure of center (median and/or mean).	
Instructional Plan	
Suggested Activities	**Resources**

• Desmos: Finding the Mean with Balancing Bears
 	
• Unit Project *Real World Application* Climate Change
    ○ Students will research climate change and its impact over the years
    ○ Students will create a presentation using statistical questioning and measures of variability/center
    ○ Students will display their findings in an appropriate data display and explain the shape of distribution
 	
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• *One Grain of Rice: A Mathematical Folktale* by Demi
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	• Ready Mathematics Program
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	As appropriate:
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	Differentiate according to formative assessments and i-Ready Diagnostic individualized path
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