

Lakewood School District Curriculum Guide

7th Grade	Content Area: Mathematics
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Original Adoption: 2023 NJSLs English Language Arts and English as a Second Language (8-21-24); Math NJSLs Mathematics (8-21-24); 2020 NJSLs Science, Social Studies, Career Readiness, Life Literacies & Key Skills, Computer Design & Thinking, Visual & Performing Arts, World Language, Comprehensive Health and Physical Education (5-11-22)

Created By:

Recommended Pacing Guide

Unit 1 Rational Number Operations	37 days
Unit 2 Ratios	16 days
Unit 3 Percents	10 days
Unit 4 Expressions and Equations	43 days
Unit 5 Graphing Proportional Relationships	14 days
Unit 6 Geometry	17 days
Unit 7 Statistics and Probability	7 days

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).

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Unit 1 Rational Number Operations	37 days
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New Jersey Learning Standards-Mathematics

7.NS.1	<p><i>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.</i></p> <ol style="list-style-type: none"> a. <i>Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.</i> b. <i>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 inverse). Interpret sums of rational numbers by describing real-world contexts.</i> c. <i>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.</i> d. <i>Apply properties of operations as strategies to add and subtract rational numbers.</i>
7.NS.2:	<p><i>Apply and extend previous understanding of multiplication and division and of fractions to multiply and divide rational numbers.</i></p> <ol style="list-style-type: none"> a. <i>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.</i> b. <i>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.</i> c. <i>Apply properties of operations as strategies to multiply and divide rational numbers.</i> d. <i>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.</i>
7.NS.3:	<p><i>Solve real-world and mathematical problems involving the four operations with rational numbers.</i></p>

Standards of Mathematical Practices

<p>MP1. Make sense of problems and persevere in solving them</p>	<ul style="list-style-type: none"> ● Find meaning in problems ● Look for entry points ● Analyze, conjecture and plan solution pathways ● Monitor and adjust ● Verify answers ● Ask themselves the question: “Does this make sense?”
<p>MP2. Reason abstractly and quantitatively.</p>	<ul style="list-style-type: none"> ● Make sense of quantities and their relationships in problems ● Learn to contextualized and decontextualized ● Create coherent representations of problems
<p>MP3. Construct viable arguments and critique the reasoning of others.</p>	<ul style="list-style-type: none"> ● Understand and use information to construct arguments ● Make and explore the truth of conjectures ● Recognize and use counterexamples

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	<ul style="list-style-type: none"> ● Justify conclusions and respond to arguments of others
MP4. Model with Mathematics.	<ul style="list-style-type: none"> ● Apply mathematics to problems in everyday life ● Make assumptions and approximations ● Identify quantities in a practical situation ● Interpret results in the context of the situation and reflect on whether the results make sense
MP5. Use appropriate tools strategically	<ul style="list-style-type: none"> ● Consider the available tools when solving problems ● Are familiar with tools appropriate for their grade or course (pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer programs, digital content located on a website, and other technological tools) ● Make sound decisions of which of these tools might be helpful
MP6. Attend to precision.	<ul style="list-style-type: none"> ● Communicate precisely to others ● Use clear definitions, state the meaning of symbols and are careful about specifying units of measure and labeling axes ● Calculate accurately and efficiently
MP7. Look for and make use of structure.	<ul style="list-style-type: none"> ● Discern patterns and structures ● Can step back for an overview and shift perspective ● See complicated things as single objects or as being composed of several objects

Social and Emotional Learning Standards

Self-Awareness	<ul style="list-style-type: none"> ● Recognize one’s personal traits, strengths, and limitations ● Recognize the importance of self-confidence in handling daily tasks and challenges
Self-Management	<ul style="list-style-type: none"> ● Recognize the skills needed to establish and achieve personal and educational goals ● Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one’s goals
Social Awareness	<ul style="list-style-type: none"> ● Demonstrate an understanding of the need for mutual respect when viewpoints differ
Responsible Decision-Making	<ul style="list-style-type: none"> ● Develop, implement and model effective problem solving and critical thinking skills

Interdisciplinary Connections

ELA Standards	
<ul style="list-style-type: none"> ● SL.PE.7.1. 	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others’ ideas and expressing their own clearly.
<ul style="list-style-type: none"> ● L.SS.7.1. 	Demonstrate command of the system and structure of the English language when writing or speaking.

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Science Standards	
<ul style="list-style-type: none"> ● MS-PS1-2 	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred
<ul style="list-style-type: none"> ● MS-ESS2-5 	Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.

Computer Science & Design Thinking

8.1 Computer Science

- 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.

8.2 Design Thinking

- 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
- 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.
- 8.2.8.ED.3: Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).

Career Readiness, Life Literacies & Key Skills

9.1 Personal Financial Literacy

- 9.1.5.EG.1: Explain and give examples of what is meant by the term “tax.”
- 9.1.8.FI.4: Analyze the interest rates and fees associated with financial products.
- 9.1.8.FP.7: Identify the techniques and effects of deceptive advertising.

9.4 Life Literacies & Key Skills

- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.
- 9.4.8.TL.3: Select appropriate tools to organize and present information digitally.

Evidence of Student Learning

<p>Formative Tasks:</p> <ul style="list-style-type: none"> ● Oral Questioning ● Student Conference ● Self-Assessment ● Hand Signals ● Communicators ● Graphic Organizers ● Teacher Observation ● DOL ● Quiz Classwork ● NJSLA Released questions ● Problem of the Day 	<p>Alternative Assessments:</p> <ul style="list-style-type: none"> ● Teacher-Created Projects ● https://www.illustrativemathematics.org/ ● https://www.khanacademy.org/ ● https://www.engageny.org ● https://www.iready/teacher toolbox.org
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Summative Assessments: <ul style="list-style-type: none"> ● Unit Tests ● Midterm Exam ● Final Exam 	Benchmark Assessments: <ul style="list-style-type: none"> ● iReady ● Quarterly Benchmarks ● Beginning/End of Year Assessment ● Unit Common Assessment
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Knowledge & Skills

Enduring Understandings: <ul style="list-style-type: none"> ● Rational numbers can be represented on a number line, and their position and direction help us understand addition and subtraction. ● The rules for adding and subtracting positive and negative numbers are grounded in patterns, real-world contexts, and the structure of the number system. ● Signed numbers allow us to describe and analyze changes, direction, and comparisons in meaningful situations. ● The rules for multiplying and dividing rational numbers extend naturally from whole-number operations and patterns. ● Rational numbers can be expressed in different but equivalent forms, and choosing the right form supports efficient problem solving. ● Multiplying and dividing rational numbers helps model real-world contexts involving rates, scaling, and repeated changes. ● Real-world problems often require more than one operation, and understanding the relationships between operations helps us plan effective solution strategies. ● Successful problem solving includes checking for reasonableness through estimation, mental math, and critical evaluation of results. 	Essential Questions: <ul style="list-style-type: none"> ● How does the number line help us make sense of adding and subtracting positive and negative numbers? ● Why do real-world situations often require us to represent values with signs, and what does the sign tell us about the quantity? How can we use models, diagrams, and reasoning to justify the rules for adding and subtracting integers and rational numbers? ● Why do the rules for multiplying and dividing positive and negative numbers make sense when we think about patterns and real contexts? How does rewriting a rational number in different forms help us solve problems more efficiently? ● In what ways do multiplication and division with rational numbers show up in everyday situations, and how can we use them to make predictions or comparisons? ● How do we decide which operations and strategies are most efficient when solving multi-step real-world problems? ● How can rational numbers help us model situations that involve change, comparison, or accumulation? ● What makes a solution reasonable, and how can estimation or mental math help us check our work?
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Content <i>Students will know...</i> <ul style="list-style-type: none"> ● The meaning of a negative number. ● When adding negatives to positives (or vice versa) one needs to make zero pairs ● When adding negatives to negatives or positives 	Skills <i>Students will be able to ...</i> <ul style="list-style-type: none"> ● Explain the meaning of a negative number. Students will be able to assign a positive, negative or zero value to real life situations. <ul style="list-style-type: none"> ● Add negative and positive numbers by making zero pairs.
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<p>to positives one only needs to count the total number of negatives/positives</p> <ul style="list-style-type: none"> ● Subtracting a positive number is the same as adding a negative. ● Subtracting a negative number is the same as adding a positive. ● Multiplying by a negative -1 is like finding the opposite of a number. ● We can solve the division problem by finding the missing factor of a multiplication problem. ● Real life scenarios can be modeled by expressions involving operations on integers and rational numbers. ● A rational number is any number that can be represented as a/b where a and b are both integers. 	<ul style="list-style-type: none"> ● Model an addition problem on the number line. ● Subtract integers by treating subtraction as adding of the inverse. ● Multiply integers. ● Divide integers ● Solve real life problems that involve adding, subtracting, multiplying and dividing integers. ● interpret division of integers as a rational number. ● Explain the sign of a rational number (and how the signs of the numerator/denominator affect the sign of the entire number). ● Understand that a quantity cannot be divided by 0, and that a rational number with 0 in the denominator is undefined. ● Fluently multiply and divide rational numbers. ● Apply the properties of operations to identify equivalent expressions. ● Convert Rational numbers to decimal form
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Core Instructional & Supplemental Materials

<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● <u>7.EE.B.3 Discounted Books</u> ● <u>7.EE.B.3 Shrinking</u> ● <u>7.EE.B.4 Fishing Adventures 2</u> ● <u>7.EE.B.4, 7.NS.A.1 Bookstore Account</u> ● <u>7.EE.B.4b Sports Equipment Set</u> ● <u>7.RP.A.1 Cooking with the Whole Cup</u> ● <u>7.RP.A.2 Sore Throats, Variation 1</u> ● <u>7.RP.A.2 Buying Coffee</u> ● <u>7.RP.A.2c Gym Membership Plans</u> ● <u>7.G.A.1 Floor Plan</u> ● <u>7.G.A.1 Map distance</u> ● <u>7.SP.1-2 Mr. Briggs's Class Likes Math</u> ● <u>7.SP.3-4 College Athletes</u> ● <u>7.SP.5-8 Activities</u> 	<p>Supplemental resources:</p> <ul style="list-style-type: none"> ● https://www.illustrativemathematics.org/ ● https://www.khanacademy.org/ ● http://www.coolmath.com/ ● http://www.mobymax.com/ ● https://www.tenmarks.com/ ● https://www.ixl.com/math ● https://nj.digitalitemlibrary.com/home ● Mathematicians ● https://www.radicalmath.org/math-social-justice ● African Americans in Math ● Alan Turing Gizmos Grades 6-8
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Suggested Accommodations

<p>English Language Learners:</p> <ul style="list-style-type: none"> ● Multi-Sensory Instruction ● Flexible Grouping ● Small Group Instruction ● Peer Buddies ● Graphic Organizers ● Chunking Information ● Scaffolded Questioning
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- Manipulatives/Concrete Models
- Build Background/Vocabulary
- Math Word Wall/Word Bank
- Gradual Release Model
- Visual Cues
- Visual Models
- Technology Integration
- Hands-On/Experiential Activities
- Native language support when possible
- Sheltered English Instructional Strategies
- Provide additional time

Special Education/Students with Disabilities:

- Extra help opportunities provided
- Credit Recovery
- Allow use of a calculator, when appropriate
- Modified length and time frame of assignments
- Alternate assessments with extended time
- Provide guided notes and study guides as needed
- Preferential Seating
- Extra Practice
- Directions repeated, clarified, and reworded
- Breakdown task into manageable units
- Differentiated instruction
- Use of manipulatives
- Math tool paper available
- Cooperative learning groups
- Supplemental books
- Repeat, reword or clarify directions
- Small group instruction as needed
- Instructional technology as needed/required
- Effective teacher questioning; ranging from fact recall to higher order critical thinking questions

504 Plans:

- Extra help opportunities provided
- Credit Recovery
- Allow use of a calculator, when appropriate
- Modified length and time frame of assignments
- Alternate assessments with extended time
- Provide guided notes and study guides as needed
- Preferential Seating
- Extra Practice
- Directions repeated, clarified, and reworded
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- Cooperative learning groups

- Supplemental books
- Repeat, reword or clarify directions
- Small group instruction as needed
- Instructional technology as needed/required
- Effective teacher questioning; ranging from fact recall to higher order critical thinking questions

Gifted and Talented:

- Cooperative Learning Groups
- Enriched Assignments
- Tiered Assignments
- Word Problems
- NJSLA questions
- Model Curriculum Questions
- Inquiry Based Project
- Interest Based/Choice Activities

Students at Risk of Failure:

- Extended Time
- Multi-Sensory Instruction
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Graphic Organizers
- Chunking Information
- Scaffolded Questioning
- Tiered Activities
- Manipulatives/Concrete Models
- Build Background/Vocabulary
- Math Word Wall/Word Bank
- Modified Assignments
- Gradual Release Model
- Preferential Seating
- Brain Breaks
- Visual Cues
- Visual Models
- Technology Integration
- Assistive Technology
- Credit Recovery

Economically Disadvantaged:

- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters

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- Prompting and cueing
- Activate schema
- Build background knowledge

Culturally Diverse:

- Create pictures, posters, art, books, maps, flags, etc to hang in the classroom.
- Create an emotionally positive classroom climate.
- Bring in guest speakers
- Create effective communication
- Model and teach cultural respect
- Build relationships with students by interviewing students to understand their background

Unit 2 Ratios	16 days
<u>New Jersey Learning Standards-Mathematics</u>	
7.RP.1	<i>Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person w $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction: $\frac{\frac{1}{2}}{\frac{1}{4}}$ miles per hour, equivalently 2 miles per hour.</i>
7.RP.3:	<i>Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</i>

<u>Standards of Mathematical Practices</u>	
MP1. Make sense of problems and persevere in solving them	<ul style="list-style-type: none"> ● Find meaning in problems ● Look for entry points ● Analyze, conjecture and plan solution pathways ● Monitor and adjust ● Verify answers ● Ask themselves the question: “Does this make sense?”
MP2. Reason abstractly and quantitatively.	<ul style="list-style-type: none"> ● Make sense of quantities and their relationships in problems ● Learn to contextualized and decontextualized ● Create coherent representations of problems
MP3. Construct viable arguments and critique the reasoning of others.	<ul style="list-style-type: none"> ● Understand and use information to construct arguments ● Make and explore the truth of conjectures

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	<ul style="list-style-type: none"> ● Recognize and use counterexamples ● Justify conclusions and respond to arguments of others
MP4. Model with Mathematics.	<ul style="list-style-type: none"> ● Apply mathematics to problems in everyday life ● Make assumptions and approximations ● Identify quantities in a practical situation ● Interpret results in the context of the situation and reflect on whether the results make sense
MP5. Use appropriate tools strategically	<ul style="list-style-type: none"> ● Consider the available tools when solving problems ● Are familiar with tools appropriate for their grade or course (pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer programs, digital content located on a website, and other technological tools) ● Make sound decisions of which of these tools might be helpful
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Self-Management	<ul style="list-style-type: none"> ● Recognize the skills needed to establish and achieve personal and educational goals ● Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one’s goals
Social Awareness	<ul style="list-style-type: none"> ● Demonstrate an understanding of the need for mutual respect when viewpoints differ
Responsible Decision-Making	<ul style="list-style-type: none"> ● Develop, implement and model effective problem solving and critical thinking skills

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<u>Interdisciplinary Connections</u>	
ELA Standards	
<ul style="list-style-type: none"> ● RL.MF.7.6. 	Compare and contrast texts (e.g., a written story, drama, or poem) to its audio, filmed, staged, or multimedia version and analyze the unique qualities of different mediums, including the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).
<ul style="list-style-type: none"> ● W.IW.7.2. 	Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
Science Standards	
<ul style="list-style-type: none"> ● MS-PS1-2 	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred
<ul style="list-style-type: none"> ● MS-ESS3-1 	Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.

<u>Computer Science & Design Thinking</u>	
<u>8.1 Computer Science</u>	
<ul style="list-style-type: none"> ● 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim. 	
<u>8.2 Design Thinking</u>	
<ul style="list-style-type: none"> ● 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models. ● 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task. ● 8.2.8.ED.3: Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch). 	

<u>Career Readiness, Life Literacies & Key Skills</u>	
<u>9.1 Personal Financial Literacy</u>	
<ul style="list-style-type: none"> ● 9.1.5.EG.1: Explain and give examples of what is meant by the term “tax.” ● 9.1.8.FI.4: Analyze the interest rates and fees associated with financial products. ● 9.1.8.FP.7: Identify the techniques and effects of deceptive advertising. 	
<u>9.4 Life Literacies & Key Skills</u>	
<ul style="list-style-type: none"> ● 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems. ● 9.4.8.TL.3: Select appropriate tools to organize and present information digitally. 	

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Evidence of Student Learning	
<p>Formative Tasks:</p> <ul style="list-style-type: none"> ● Oral Questioning ● Student Conference ● Self-Assessment ● Hand Signals ● Communicators ● Graphic Organizers ● Teacher Observation ● DOL ● Quiz Classwork ● NJSLA Released questions ● Problem of the Day 	<p>Alternative Assessments:</p> <ul style="list-style-type: none"> ● Teacher-Created Projects ● https://www.illustrativemathematics.org/ ● https://www.khanacademy.org/ ● https://www.engageny.org ● https://www.iready/teacher toolbox.org
<p>Summative Assessments:</p> <ul style="list-style-type: none"> ● Unit Tests ● Midterm Exam ● Final Exam 	<p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● iReady ● Quarterly Benchmarks ● Beginning/End of Year Assessment ● Unit Common Assessment

Knowledge & Skills	
<p>Enduring Understandings:</p> <ul style="list-style-type: none"> ● Unit rates provide a consistent way to compare quantities and make decisions in real-world situations. ● Proportional relationships can be represented and analyzed through tables, graphs, equations, and verbal descriptions, and unit rate is the foundation for understanding those relationships. ● Understanding unit rates helps students interpret real-world contexts involving speed, price, density, scale, and efficiency. ● Proportional reasoning helps make sense of real-world situations involving percent increase and decrease, discounts, markups, tax, interest, and measurement conversions. ● Multiple representations such as tables, equations, and diagrams support efficient problem solving and deepen conceptual understanding of proportional situations. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ● How does finding a unit rate help us compare different situations fairly and accurately? ● In what ways do tables, graphs, and verbal descriptions help us understand and communicate proportional relationships? ● Why is unit rate an important tool for interpreting real-world scenarios such as speed, cost, scale, and efficiency? ● How can proportional reasoning help us make informed decisions in everyday situations involving discounts, tax, interest, and percent change? ● How do different representations—tables, equations, diagrams, and graphs—support our ability to solve complex percent and ratio problems? ● What strategies help us determine whether a solution to a real-world proportional problem is reasonable or makes sense?

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<ul style="list-style-type: none"> Evaluating the reasonableness of solutions is essential when working with real-world problems, especially when results influence decisions or predictions. 	
<p>Content Students will know...</p> <ul style="list-style-type: none"> Proportions are comparisons between two quantities. Proportions can be used to solve multi-step problems Percents are proportions where we compare a number to 100. Percent problems can be solving used the percent as a multiplier in one or two steps A rational number is any number that can be represented as a/b where a and b are both integers. 	<p>Skills Students will be able to ...</p> <ul style="list-style-type: none"> solve rate problems by applying the given rate. (6th grade) solve unit rate problems by using double number line models. (6th grade) solve rate problems where they first need to find the unit rate and then apply it. (6th grade) solve rate problems where the rates are presented as fractions, using double number line models. solve rate problems where the rates are presented as fractions, using double number line models. solve multi-step ratio problems. Convert ratios to a percent as a means for comparison. Solve single step percent problems Solve multi-step percent problems using a one or two step process Apply the properties of operations to identify equivalent expressions. Convert Rational numbers to decimal form

Core Instructional & Supplemental Materials
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<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> 7.EE.B.3 Discounted Books 7.EE.B.3 Shrinking 7.EE.B.4 Fishing Adventures 2 7.EE.B.4, 7.NS.A.1 Bookstore Account 7.EE.B.4b Sports Equipment Set 7.RP.A.1 Cooking with the Whole Cup 7.RP.A.2 Sore Throats, Variation 1 7.RP.A.2 Buying Coffee 7.RP.A.2c Gym Membership Plans 7.G.A.1 Floor Plan 	<p>Supplemental resources:</p> <ul style="list-style-type: none"> https://www.illustrativemathematics.org/ https://www.khanacademy.org/ http://www.coolmath.com/ http://www.mobymax.com/ https://www.tenmarks.com/ https://www.ixl.com/math https://nj.digitalitemlibrary.com/home https://www.radicalmath.org/math-social-justice African Americans in Math
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- [7.G.A.1 Map distance](#)
- [7.SP.1-2 Mr. Briggs's Class Likes Math](#)
- [7.SP.3-4 College Athletes](#)
- [7.SP.5-8 Activities](#)

- [Alan Turing Gizmos Grades 6-8](#)

Suggested Accommodations

English Language Learners:

- Multi-Sensory Instruction
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Graphic Organizers
- Chunking Information
- Scaffolded Questioning
- Manipulatives/Concrete Models
- Build Background/Vocabulary
- Math Word Wall/Word Bank
- Gradual Release Model
- Visual Cues
- Visual Models
- Technology Integration
- Hands-On/Experiential Activities
- Native language support when possible
- Sheltered English Instructional Strategies
- Provide additional time

Special Education/Students with Disabilities:

- Extra help opportunities provided
- Credit Recovery
- Allow use of a calculator, when appropriate
- Modified length and time frame of assignments
- Alternate assessments with extended time
- Provide guided notes and study guides as needed
- Preferential Seating
- Extra Practice
- Directions repeated, clarified, and reworded
- Breakdown task into manageable units
- Differentiated instruction
- Use of manipulatives
- Math tool paper available
- Cooperative learning groups
- Supplemental books
- Repeat, reword or clarify directions
- Small group instruction as needed
- Instructional technology as needed/required
- Effective teacher questioning; ranging from fact recall to higher order critical thinking questions

504 Plans:

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- Credit Recovery
- Allow use of a calculator, when appropriate
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- Instructional technology as needed/required
- Effective teacher questioning; ranging from fact recall to higher order critical thinking questions

Gifted and Talented:

- Cooperative Learning Groups
- Enriched Assignments
- Tiered Assignments
- Word Problems
- NJSLA questions
- Model Curriculum Questions
- Inquiry Based Project
- Interest Based/Choice Activities

Students at Risk of Failure:

- Extended Time
- Multi-Sensory Instruction
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Graphic Organizers
- Chunking Information
- Scaffolded Questioning
- Tiered Activities
- Manipulatives/Concrete Models
- Build Background/Vocabulary
- Math Word Wall/Word Bank
- Modified Assignments
- Gradual Release Model
- Preferential Seating
- Brain Breaks

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7th Grade	Content Area: Mathematics
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- Visual Cues
- Visual Models
- Technology Integration
- Assistive Technology
- Credit Recovery

Economically Disadvantaged:

- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cueing
- Activate schema
- Build background knowledge

Culturally Diverse:

- Create pictures, posters, art, books, maps, flags, etc to hang in the classroom.
- Create an emotionally positive classroom climate.
- Bring in guest speakers
- Create effective communication
- Model and teach cultural respect
- Build relationships with students by interviewing students to understand their background

Unit 3 Percent Problems	10 days
<u>New Jersey Learning Standards-Mathematics</u>	
7.RP.3:	<i>Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</i>

<u>Standards of Mathematical Practices</u>	
MP1. Make sense of problems and persevere in solving them	<ul style="list-style-type: none"> ● Find meaning in problems ● Look for entry points ● Analyze, conjecture and plan solution pathways ● Monitor and adjust ● Verify answers ● Ask themselves the question: “Does this make sense?”

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MP2. Reason abstractly and quantitatively.	<ul style="list-style-type: none"> ● Make sense of quantities and their relationships in problems ● Learn to contextualized and decontextualized ● Create coherent representations of problems
MP3. Construct viable arguments and critique the reasoning of others.	<ul style="list-style-type: none"> ● Understand and use information to construct arguments ● Make and explore the truth of conjectures ● Recognize and use counterexamples ● Justify conclusions and respond to arguments of others
MP4. Model with Mathematics.	<ul style="list-style-type: none"> ● Apply mathematics to problems in everyday life ● Make assumptions and approximations ● Identify quantities in a practical situation ● Interpret results in the context of the situation and reflect on whether the results make sense
MP5. Use appropriate tools strategically	<ul style="list-style-type: none"> ● Consider the available tools when solving problems ● Are familiar with tools appropriate for their grade or course (pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer programs, digital content located on a website, and other technological tools) ● Make sound decisions of which of these tools might be helpful
MP6. Attend to precision.	<ul style="list-style-type: none"> ● Communicate precisely to others ● Use clear definitions, state the meaning of symbols and are careful about specifying units of measure and labeling axes ● Calculate accurately and efficiently
MP7. Look for and make use of structure.	<ul style="list-style-type: none"> ● Discern patterns and structures ● Can step back for an overview and shift perspective ● See complicated things as single objects or as being composed of several objects

Social and Emotional Learning Standards	
Self-Awareness	<ul style="list-style-type: none"> ● Recognize one’s personal traits, strengths, and limitations ● Recognize the importance of self-confidence in handling daily tasks and challenges
Self-Management	<ul style="list-style-type: none"> ● Recognize the skills needed to establish and achieve personal and educational goals ● Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one’s goals
Social Awareness	<ul style="list-style-type: none"> ● Demonstrate an understanding of the need for mutual respect when viewpoints differ
Responsible Decision-Making	<ul style="list-style-type: none"> ● Develop, implement and model effective problem solving and critical thinking skills

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<u>Interdisciplinary Connections</u>	
ELA Standards	
<ul style="list-style-type: none"> ● RL.MF.7.6. 	Compare and contrast texts (e.g., a written story, drama, or poem) to its audio, filmed, staged, or multimedia version and analyze the unique qualities of different mediums, including the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).
<ul style="list-style-type: none"> ● W.IW.7.2. 	Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
Science Standards	
<ul style="list-style-type: none"> ● MS-PS1-2 	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred
<ul style="list-style-type: none"> ● MS-ESS3-1 	Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.

<u>Computer Science & Design Thinking</u>
<p><u>8.1 Computer Science</u></p> <ul style="list-style-type: none"> ● 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.
<p><u>8.2 Design Thinking</u></p> <ul style="list-style-type: none"> ● 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models. ● 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task. ● 8.2.8.ED.3: Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).

<u>Career Readiness, Life Literacies & Key Skills</u>
<p><u>9.1 Personal Financial Literacy</u></p> <ul style="list-style-type: none"> ● 9.1.5.EG.1: Explain and give examples of what is meant by the term “tax.” ● 9.1.8.FI.4: Analyze the interest rates and fees associated with financial products. ● 9.1.8.FP.7: Identify the techniques and effects of deceptive advertising.
<p><u>9.4 Life Literacies & Key Skills</u></p> <ul style="list-style-type: none"> ● 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems. ● 9.4.8.TL.3: Select appropriate tools to organize and present information digitally.

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Evidence of Student Learning	
<p>Formative Tasks:</p> <ul style="list-style-type: none"> ● Oral Questioning ● Student Conference ● Self-Assessment ● Hand Signals ● Communicators ● Graphic Organizers ● Teacher Observation ● DOL ● Quiz Classwork ● NJSLA Released questions ● Problem of the Day 	<p>Alternative Assessments:</p> <ul style="list-style-type: none"> ● Teacher-Created Projects ● https://www.illustrativemathematics.org/ ● https://www.khanacademy.org/ ● https://www.engageny.org ● https://www.iready/teacher toolbox.org
<p>Summative Assessments:</p> <ul style="list-style-type: none"> ● Unit Tests ● Midterm Exam ● Final Exam 	<p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● iReady ● Quarterly Benchmarks ● Beginning/End of Year Assessment ● Unit Common Assessment

Knowledge & Skills	
<p>Enduring Understandings:</p> <ul style="list-style-type: none"> ● Proportional reasoning helps make sense of real-world situations involving percent increase and decrease, discounts, markups, tax, interest, and measurement conversions. ● Multiple representations such as tables, equations, and diagrams support efficient problem solving and deepen conceptual understanding of proportional situations. ● Evaluating the reasonableness of solutions is essential when working with real-world problems, especially when results influence decisions or predictions. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ● How can proportional reasoning help us make informed decisions in everyday situations involving discounts, tax, interest, and percent change? ● How do different representations—tables, equations, diagrams, and graphs—support our ability to solve complex percent and ratio problems? ● What strategies help us determine whether a solution to a real-world proportional problem is reasonable or makes sense?
<p>Content <i>Students will know...</i></p> <ul style="list-style-type: none"> ● <i>Proportions are comparisons between two quantities. Proportions can be used to solve multi-step problems</i> 	<p>Skills <i>Students will be able to ...</i></p> <ul style="list-style-type: none"> ● solve rate problems by applying the given rate. (6th grade)

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<ul style="list-style-type: none"> ● <i>Percents are proportions where we compare a number to 100.</i> ● <i>Percent problems can be solved using bar models in 1 or two steps</i> ● <i>Percent problems can be solving used the percent as a multiplier in one or two steps</i> 	<ul style="list-style-type: none"> ● solve unit rate problems by using double number line models. (6th grade) ● solve rate problems where they first need to find the unit rate and then apply it. (6th grade) ● solve multi-step ratio problems. ● Convert ratios to a percent as a means for comparison. ● Solve single step percent problems ● Solve multi-step percent problems using a one or two step process
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Core Instructional & Supplemental Materials

<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● <u>7.EE.B.3 Discounted Books</u> ● <u>7.EE.B.3 Shrinking</u> ● <u>7.EE.B.4 Fishing Adventures 2</u> ● <u>7.EE.B.4, 7.NS.A.1 Bookstore Account</u> ● <u>7.EE.B.4b Sports Equipment Set</u> ● <u>7.RP.A.1 Cooking with the Whole Cup</u> ● <u>7.RP.A.2 Sore Throats, Variation 1</u> ● <u>7.RP.A.2 Buying Coffee</u> ● <u>7.RP.A.2c Gym Membership Plans</u> ● <u>7.G.A.1 Floor Plan</u> ● <u>7.G.A.1 Map distance</u> ● <u>7.SP.1-2 Mr. Briggs's Class Likes Math</u> ● <u>7.SP.3-4 College Athletes</u> ● <u>7.SP.5-8 Activities</u> 	<p>Supplemental resources:</p> <ul style="list-style-type: none"> ● <u>https://www.illustrativemathematics.org/</u> ● <u>https://www.khanacademy.org/</u> ● <u>http://www.coolmath.com/</u> ● <u>http://www.mobymax.com/</u> ● <u>https://www.tenmarks.com/</u> ● <u>https://www.ixl.com/math</u> ● <u>https://nj.digitalitemlibrary.com/home</u> ● <u>https://www.radicalmath.org/math-social-justice</u> ● <u>African Americans in Math</u> ● <u>Alan Turing Gizmos Grades 6-8</u>
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Suggested Accommodations

<p>English Language Learners:</p> <ul style="list-style-type: none"> ● Multi-Sensory Instruction ● Flexible Grouping ● Small Group Instruction ● Peer Buddies ● Graphic Organizers ● Chunking Information ● Scaffolded Questioning ● Manipulatives/Concrete Models ● Build Background/Vocabulary
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- Math Word Wall/Word Bank
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- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cueing
- Activate schema

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Content Area: Mathematics

- Build background knowledge

Culturally Diverse:

- Create pictures, posters, art, books, maps, flags, etc to hang in the classroom.
- Create an emotionally positive classroom climate.
- Bring in guest speakers
- Create effective communication
- Model and teach cultural respect
- Build relationships with students by interviewing students to understand their background

Unit 4 Expressions and Equations	43 days
<u>New Jersey Learning Standards-Mathematics</u>	
7.EE.1	<i>Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients</i>
7.EE.2	<i>Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."</i>
7.EE.3	<i>Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.</i>
7.EE.4	<i>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.</i> <ol style="list-style-type: none"> <i>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 with accuracy and fluency. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?</i> <i>Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.</i>

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<u>Standards of Mathematical Practices</u>	
MP1. Make sense of problems and persevere in solving them	<ul style="list-style-type: none"> ● Find meaning in problems ● Look for entry points ● Analyze, conjecture and plan solution pathways ● Monitor and adjust ● Verify answers ● Ask themselves the question: “Does this make sense?”
MP2. Reason abstractly and quantitatively.	<ul style="list-style-type: none"> ● Make sense of quantities and their relationships in problems ● Learn to contextualized and decontextualized ● Create coherent representations of problems
MP3. Construct viable arguments and critique the reasoning of others.	<ul style="list-style-type: none"> ● Understand and use information to construct arguments ● Make and explore the truth of conjectures ● Recognize and use counterexamples ● Justify conclusions and respond to arguments of others
MP4. Model with Mathematics.	<ul style="list-style-type: none"> ● Apply mathematics to problems in everyday life ● Make assumptions and approximations ● Identify quantities in a practical situation ● Interpret results in the context of the situation and reflect on whether the results make sense
MP5. Use appropriate tools strategically	<ul style="list-style-type: none"> ● Consider the available tools when solving problems ● Are familiar with tools appropriate for their grade or course (pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer programs, digital content located on a website, and other technological tools) ● Make sound decisions of which of these tools might be helpful
MP6. Attend to precision.	<ul style="list-style-type: none"> ● Communicate precisely to others ● Use clear definitions, state the meaning of symbols and are careful about specifying units of measure and labeling axes ● Calculate accurately and efficiently
MP7. Look for and make use of structure.	<ul style="list-style-type: none"> ● Discern patterns and structures ● Can step back for an overview and shift perspective ● See complicated things as single objects or as being composed of several objects

Social and Emotional Learning Standards
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Self-Awareness	<ul style="list-style-type: none"> ● Recognize one’s personal traits, strengths, and limitations ● Recognize the importance of self-confidence in handling daily tasks and challenges
Self-Management	<ul style="list-style-type: none"> ● Recognize the skills needed to establish and achieve personal and educational goals ● Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one’s goals
Social Awareness	<ul style="list-style-type: none"> ● Demonstrate an understanding of the need for mutual respect when viewpoints differ
Responsible Decision-Making	<ul style="list-style-type: none"> ● Develop, implement and model effective problem solving and critical thinking skills

<u>Interdisciplinary Connections</u>	
ELA Standards	
<ul style="list-style-type: none"> ● RL.MF.7.6. 	Compare and contrast texts (e.g., a written story, drama, or poem) to its audio, filmed, staged, or multimedia version and analyze the unique qualities of different mediums, including the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).
<ul style="list-style-type: none"> ● W.IW.7.2. 	Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
Science Standards	
<ul style="list-style-type: none"> ● MS-PS2-1 	Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects.
<ul style="list-style-type: none"> ● MS-PS2-2 	Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.

<u>Computer Science & Design Thinking</u>
<p>8.1 Computer Science</p> <ul style="list-style-type: none"> ● 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.
<p>8.2 Design Thinking</p> <ul style="list-style-type: none"> ● 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models. ● 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task. ● 8.2.8.ED.3: Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).

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Content Area: Mathematics

Career Readiness, Life Literacies & Key Skills

9.1 Personal Financial Literacy

- 9.1.5.EG.1: Explain and give examples of what is meant by the term “tax.”
- 9.1.8.FI.4: Analyze the interest rates and fees associated with financial products.
- 9.1.8.FP.7: Identify the techniques and effects of deceptive advertising.

9.4 Life Literacies & Key Skills

- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.
- 9.4.8.TL.3: Select appropriate tools to organize and present information digitally.

Evidence of Student Learning

Formative Tasks:

- Oral Questioning
- Student Conference
- Self-Assessment
- Hand Signals
- Communicators
- Graphic Organizers
- Teacher Observation
- DOL
- Quiz Classwork
- NJSLA Released questions
- Problem of the Day

Alternative Assessments:

- Teacher-Created Projects
- <https://www.illustrativemathematics.org/>
- <https://www.khanacademy.org/>
- <https://www.engageny.org>
- [https://www.iready/teacher toolbox.org](https://www.iready/teacher%20toolbox.org)

Summative Assessments:

- Unit Tests
- Midterm Exam
- Final Exam

Benchmark Assessments:

- iReady
- Quarterly Benchmarks
- Beginning/End of Year Assessment
- Unit Common Assessment

Knowledge & Skills

Enduring Understandings:

- The properties of operations allow us to manipulate expressions without changing their value.
- Rewriting expressions can make problem solving more efficient and reveal structure within a problem.

Essential Questions:

- How can we use properties of operations to rewrite expressions in ways that make them easier to work with?
- Why do different algebraic expressions sometimes represent the same quantity?
- How can rewriting expressions help us solve real-world problems more efficiently?

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- Different algebraic expressions can represent the same situation, and the chosen form highlights specific relationships.
- Rewriting an expression helps us make sense of quantities and the real-world meaning behind mathematical relationships.
- Solving real-world problems often requires multiple steps and careful selection of operations.
- Sound reasoning and estimation help verify whether solutions involving rational numbers are accurate and reasonable.
- Mathematics provides tools for modeling and analyzing quantitative situations in daily life.
- Equations and inequalities are powerful tools for representing and analyzing real-world problems involving unknown values.
- Solving an equation or inequality provides insight into relationships between quantities.
- Mathematical models help us make predictions, analyze constraints, and make informed decisions.

- How does rewriting expressions help us see patterns or connections that are not obvious at first?
- How can algebraic structure help us understand and interpret the meaning of a problem?
- Why might one form of an expression be more useful than another in a given context?
- How do we choose which operations and strategies to use when solving real-world multistep problems?
- What makes a solution reasonable, and how can we check whether our answer makes sense?
- How do real-world situations involving rational numbers influence the way we model and solve problems?
- How can equations and inequalities help us represent and solve real-world situations involving unknown quantities?
- What do solutions to equations and inequalities tell us about real contexts?
- How can we determine when an equation or an inequality is the best model for a situation?

Content

Students will know...

- Solving equations is the process by which we find the values for the variable that make the equations true.
- In an expression, a variable can take on any value. An equation introduces a constraint which now makes the variable take on one or a limited number of values.
- Expressions are simplified by various means.
- Equations can be solved using the properties of equality and inverse operations.
- Equations can be used to solve real world problems
- Solutions to inequalities are a range of numbers that make the inequality true

Skills

Students will be able to ...

- Create single variable expressions with rational coefficients for a given scenario.
- combine like terms in a variable expression.
- Distribute a variable expression.
- Factor a variable expression.
- compare the value of writing a variable expression in a different form.
- Solve algebraic word problems using arithmetic methods.
- Find the single value of x that makes an equation true.
- Solve equations with integer coefficients by modeling the process on a balance scale.
- solve equations with *integer* coefficients by identifying the operations on x and then inverting the operations to isolate the variable.
- Solve equations with rational coefficients by reasoning about the inverse operation.
- Solve variable equations that involve combining like terms.

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	<ul style="list-style-type: none"> ● Solve variable equations that involve distributing and combining like terms. ● Solve real word percent problems where they are asked to find the original value by creating double number lines. ● Create and solve inequalities to solve real life problems. ● Graph the solutions of the inequalities.
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Core Instructional & Supplemental Materials

<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● <u>7.EE.B.3 Discounted Books</u> ● <u>7.EE.B.3 Shrinking</u> ● <u>7.EE.B.4 Fishing Adventures 2</u> ● <u>7.EE.B.4, 7.NS.A.1 Bookstore Account</u> ● <u>7.EE.B.4b Sports Equipment Set</u> ● <u>7.RP.A.1 Cooking with the Whole Cup</u> ● <u>7.RP.A.2 Sore Throats, Variation 1</u> ● <u>7.RP.A.2 Buying Coffee</u> ● <u>7.RP.A.2c Gym Membership Plans</u> ● <u>7.G.A.1 Floor Plan</u> ● <u>7.G.A.1 Map distance</u> 	<p>Supplemental resources:</p> <ul style="list-style-type: none"> ● <u>https://www.illustrativemathematics.org/</u> ● <u>https://www.khanacademy.org/</u> ● <u>http://www.coolmath.com/</u> ● <u>http://www.mobymax.com/</u> ● <u>https://www.tenmarks.com/</u> ● <u>https://www.ixl.com/math</u> ● <u>https://nj.digitalitemlibrary.com/home</u> ● <u>https://www.radicalmath.org/math-social-justice</u> ● <u>African Americans in Math</u> ● <u>Alan Turing Gizmos Grades 6-8</u>
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Suggested Accommodations

<p>English Language Learners:</p> <ul style="list-style-type: none"> ● Multi-Sensory Instruction ● Flexible Grouping ● Small Group Instruction ● Peer Buddies ● Graphic Organizers ● Chunking Information ● Scaffolded Questioning ● Manipulatives/Concrete Models ● Build Background/Vocabulary ● Math Word Wall/Word Bank ● Gradual Release Model ● Visual Cues ● Visual Models ● Technology Integration ● Hands-On/Experiential Activities ● Native language support when possible ● Sheltered English Instructional Strategies
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- Provide additional time

Special Education/Students with Disabilities:

- Extra help opportunities provided
- Credit Recovery
- Allow use of a calculator, when appropriate
- Modified length and time frame of assignments
- Alternate assessments with extended time
- Provide guided notes and study guides as needed
- Preferential Seating
- Extra Practice
- Directions repeated, clarified, and reworded
- Breakdown task into manageable units
- Differentiated instruction
- Use of manipulatives
- Math tool paper available
- Cooperative learning groups
- Supplemental books
- Repeat, reword or clarify directions
- Small group instruction as needed
- Instructional technology as needed/required
- Effective teacher questioning; ranging from fact recall to higher order critical thinking questions

504 Plans:

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Gifted and Talented:

- Cooperative Learning Groups
- Enriched Assignments
- Tiered Assignments

- Word Problems
- NJSLA questions
- Model Curriculum Questions
- Inquiry Based Project
- Interest Based/Choice Activities

Students at Risk of Failure:

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- Assistive Technology
- Credit Recovery

Economically Disadvantaged:

- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cueing
- Activate schema
- Build background knowledge

Culturally Diverse:

- Create pictures, posters, art, books, maps, flags, etc to hang in the classroom.
- Create an emotionally positive classroom climate.
- Bring in guest speakers
- Create effective communication
- Model and teach cultural respect
- Build relationships with students by interviewing students to understand their background

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7th Grade	Content Area: Mathematics
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Unit 5 Graphing Proportional Relationships	14 days
<u>New Jersey Learning Standards-Mathematics</u>	
7. RP.2	<p><i>Recognize and represent proportional relationships between quantities</i></p> <p><i>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.</i></p> <p><i>b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</i></p> <p><i>c. Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.</i></p> <p><i>d. 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.</i></p>

<u>Standards of Mathematical Practices</u>	
MP1. Make sense of problems and persevere in solving them	<ul style="list-style-type: none"> ● Find meaning in problems ● Look for entry points ● Analyze, conjecture and plan solution pathways ● Monitor and adjust ● Verify answers ● Ask themselves the question: “Does this make sense?”
MP2. Reason abstractly and quantitatively.	<ul style="list-style-type: none"> ● Make sense of quantities and their relationships in problems ● Learn to contextualized and decontextualized ● Create coherent representations of problems
MP3. Construct viable arguments and critique the reasoning of others.	<ul style="list-style-type: none"> ● Understand and use information to construct arguments ● Make and explore the truth of conjectures ● Recognize and use counterexamples ● Justify conclusions and respond to arguments of others

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7th Grade	Content Area: Mathematics
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MP4. Model with Mathematics.	<ul style="list-style-type: none"> ● Apply mathematics to problems in everyday life ● Make assumptions and approximations ● Identify quantities in a practical situation ● Interpret results in the context of the situation and reflect on whether the results make sense
MP5. Use appropriate tools strategically	<ul style="list-style-type: none"> ● Consider the available tools when solving problems ● Are familiar with tools appropriate for their grade or course (pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer programs, digital content located on a website, and other technological tools) ● Make sound decisions of which of these tools might be helpful
MP6. Attend to precision.	<ul style="list-style-type: none"> ● Communicate precisely to others ● Use clear definitions, state the meaning of symbols and are careful about specifying units of measure and labeling axes ● Calculate accurately and efficiently
MP7. Look for and make use of structure.	<ul style="list-style-type: none"> ● Discern patterns and structures ● Can step back for an overview and shift perspective ● See complicated things as single objects or as being composed of several objects

Social and Emotional Learning Standards

Self-Awareness	<ul style="list-style-type: none"> ● Recognize one’s personal traits, strengths, and limitations ● Recognize the importance of self-confidence in handling daily tasks and challenges
Self-Management	<ul style="list-style-type: none"> ● Recognize the skills needed to establish and achieve personal and educational goals ● Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one’s goals
Social Awareness	<ul style="list-style-type: none"> ● Demonstrate an understanding of the need for mutual respect when viewpoints differ
Responsible Decision-Making	<ul style="list-style-type: none"> ● Develop, implement and model effective problem solving and critical thinking skills

Interdisciplinary Connections

ELA Standards	
<ul style="list-style-type: none"> ● L.SS.7.1. 	Demonstrate command of the system and structure of the English language when writing or speaking.
<ul style="list-style-type: none"> ● W.IW.7.2. 	Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

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7th Grade	Content Area: Mathematics
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Science Standards	
<ul style="list-style-type: none"> ● MS-PS3-1 	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
<ul style="list-style-type: none"> ● MS-PS3-5 	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object

Computer Science & Design Thinking

8.1 Computer Science

- 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.

8.2 Design Thinking

- 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
- 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.
- 8.2.8.ED.3: Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).

Career Readiness, Life Literacies & Key Skills

9.1 Personal Financial Literacy

- 9.1.5.EG.1: Explain and give examples of what is meant by the term “tax.”
- 9.1.8.FI.4: Analyze the interest rates and fees associated with financial products.
- 9.1.8.FP.7: Identify the techniques and effects of deceptive advertising.

9.4 Life Literacies & Key Skills

- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.
- 9.4.8.TL.3: Select appropriate tools to organize and present information digitally.

Evidence of Student Learning

Formative Tasks:

- Oral Questioning
- Student Conference
- Self-Assessment
- Hand Signals
- Communicators
- Graphic Organizers
- Teacher Observation
- DOL

Alternative Assessments:

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- <https://www.engageny.org>
- https://www.iready/teacher_toolbox.org

Lakewood School District Curriculum Guide

7th Grade	Content Area: Mathematics
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<ul style="list-style-type: none"> ● Quiz Classwork ● NJSLA Released questions ● Problem of the Day 	
Summative Assessments: <ul style="list-style-type: none"> ● Unit Tests ● Midterm Exam ● Final Exam 	Benchmark Assessments: <ul style="list-style-type: none"> ● iReady ● Quarterly Benchmarks ● Beginning/End of Year Assessment ● Unit Common Assessment

Knowledge & Skills

<p>Enduring Understandings:</p> <ul style="list-style-type: none"> ● Proportional relationships can be represented in multiple ways, and each representation highlights different features of the relationship. ● The constant of proportionality describes how one quantity changes with respect to another and is essential for comparing situations. Recognizing proportionality helps us analyze patterns, make predictions, and solve real-world problems involving comparison, scaling, and rates. ● Graphs of proportional relationships have distinct characteristics, including passing through the origin and having a constant rate of change. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ● How can we recognize whether a relationship between two quantities is proportional? ● Why is the constant of proportionality an important feature of proportional relationships? ● How do tables, graphs, equations, and verbal descriptions help us understand and compare proportional situations? ● What real-world situations can be modeled effectively with proportional relationships, and why?
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<p>Content <i>Students will know...</i></p> <ul style="list-style-type: none"> ● Graph different amounts where the ratio is the same will result in a straight line ● The slope of a straight line can be represented many ways all that is equivalent to the unit rate. <ul style="list-style-type: none"> ● The slope will be the same no matter which two points you find it from because it is a rate. ● The unit rate can be found on the graph in multiple places: at the point (1,k), by dividing y/x and by finding the rates between two points. 	<p>Skills <i>Students will be able to ...</i></p> <ul style="list-style-type: none"> ● Generalize a rule for finding unit rates in order to solve real life multi-step unit rate problems. ● Determine whether two or more ratios are in proportion. ● Find the unit rate from a scenario or table and use it to create an equation for a proportional relationship. ● Graph proportional relationships represented as a scenario or table.
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Lakewood School District Curriculum Guide

7th Grade

Content Area: Mathematics

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7th Grade	Content Area: Mathematics
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Unit 6 Geometry	17 days
<u>New Jersey Learning Standards-Mathematics</u>	
7.G.1.	<i>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.</i>
7.G.2.	<i>Draw (freehand, with ruler and protractor, and with technology) 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.</i>
7.G.3.	<i>Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.</i>
7.G.4.	<i>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</i>
7.G.5.	<i>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.</i>
7.G.6.	<i>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.</i>

<u>Standards of Mathematical Practices</u>	
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MP5. Use appropriate tools strategically	<ul style="list-style-type: none"> ● Consider the available tools when solving problems ● Are familiar with tools appropriate for their grade

Lakewood School District Curriculum Guide

7th Grade	Content Area: Mathematics
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	<p>or course (pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer programs, digital content located on a website, and other technological tools)</p> <ul style="list-style-type: none"> ● Make sound decisions of which of these tools might be helpful
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Science Standards	
● MS-PS1-2	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
● MS-ESS3-1	Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.

Lakewood School District Curriculum Guide

7th Grade

Content Area: Mathematics

Computer Science & Design Thinking

8.1 Computer Science

- 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.

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Summative Assessments:

- Unit Tests
- Midterm Exam
- Final Exam

Benchmark Assessments:

- iReady
- Quarterly Benchmarks
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- Unit Common Assessment

Knowledge & Skills

Enduring Understandings:

- Accurate constructions reveal important geometric properties and relationships.
- Given conditions determine whether a geometric figure is uniquely defined or flexible. Geometric reasoning helps explain how shapes relate to one another and how constraints affect possible figures.
- Geometric figures can be classified by the conditions that define them.
- Not all combinations of side lengths and angles produce a valid triangle, and constraints determine uniqueness.
- Cross sections connect 3D shapes to their 2D components and reveal structural properties.
- The orientation of a slice determines the resulting 2D shape.
- Circle measurements are connected through predictable, proportional relationships.
- Formulas provide efficient tools for solving problems involving circular regions and distances.
- Supplementary, complementary, vertical, and adjacent angles follow consistent relationships that support problem solving.
- Algebraic equations can represent and solve geometric angle relationships.
- Area, surface area, and volume relationships help us describe and quantify 2D and 3D space.
- Nets connect two-dimensional representations to three-dimensional solids and support accurate measurement.

Essential Questions:

- How do precise tools and constructions help us understand relationships within geometric figures?
- What conditions determine whether a unique triangle, multiple triangles, or no triangle is possible?
- How can we use geometric reasoning to describe relationships among angles, sides, and lines?
- How can specific measurements and constraints determine the type of triangle that can be formed?
- Why do some sets of measurements create one triangle, while others create many or none?
- How does slicing a 3D figure produce different 2D shapes?
- How can cross sections help us understand and visualize the structure of 3D objects?
- How are the radius, diameter, circumference, and area of a circle related?
- How do angle relationships help us find unknown measurements?
- How can equations be used to model and solve angle problems?
- Why are formulas useful for solving real-world problems involving circular shapes?
- How do we apply area, surface area, and volume formulas to solve real-world and mathematical problems?
- How do nets help us understand and calculate surface area?

Content

Students will know...

- *The formulas used to find area, surface area, and volume of figures and circumference of circles.*
- *How to find unknown measures and the sum of angles in polygons.*
- *Fundamental angle relationships.*
- *Changes in dimensions affect area and volume.*
- *Proportional relationships by using scale drawings.*

Skills

Students will be able to ...

- *Find the volume of rectangular and triangular prisms. Find the volume of cylinders, cones, and pyramids.*
- *Find the surface area of prisms, cylinders, and pyramids. Find the volume and surface area of composite figures.*
- *Classify and identify angles and find missing measures.*
- *Classify and identify triangles/quadrilaterals and find missing measures.*
- *Solve problems involving scale drawings of geometric figures.*

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7th Grade

Content Area: Mathematics

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Unit 7 Statistics & Probability	7 days
<u>New Jersey Learning Standards-Mathematics</u>	
7.SP.1	<i>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.</i>
7.SP.2	<i>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. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.</i>
7.SP.3	<i>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. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.</i>
7.SP.4	<i>Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.</i>
7.SP.5	<i>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.</i>
7.SP.6	<i>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. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.</i>
7.SP.7	<i>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.</i>
7.SP.7a	<i>Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.</i>
7.SP.7b	<i>Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?</i>
7.SP.8	<i>Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</i>
7.SP.8a	<i>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.</i>

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7.SP.8b	<i>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.</i>
7.SP.8c	<i>Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?</i>

<u>Standards of Mathematical Practices</u>	
MP1. Make sense of problems and persevere in solving them	<ul style="list-style-type: none"> ● Find meaning in problems ● Look for entry points ● Analyze, conjecture and plan solution pathways ● Monitor and adjust ● Verify answers ● Ask themselves the question: "Does this make sense?"
MP2. Reason abstractly and quantitatively.	<ul style="list-style-type: none"> ● Make sense of quantities and their relationships in problems ● Learn to contextualized and decontextualized ● Create coherent representations of problems
MP3. Construct viable arguments and critique the reasoning of others.	<ul style="list-style-type: none"> ● Understand and use information to construct arguments ● Make and explore the truth of conjectures ● Recognize and use counterexamples ● Justify conclusions and respond to arguments of others
MP4. Model with Mathematics.	<ul style="list-style-type: none"> ● Apply mathematics to problems in everyday life ● Make assumptions and approximations ● Identify quantities in a practical situation ● Interpret results in the context of the situation and reflect on whether the results make sense
MP5. Use appropriate tools strategically	<ul style="list-style-type: none"> ● Consider the available tools when solving problems ● Are familiar with tools appropriate for their grade or course (pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer programs, digital content located on a website, and other technological tools) ● Make sound decisions of which of these tools might be helpful
MP6. Attend to precision.	<ul style="list-style-type: none"> ● Communicate precisely to others ● Use clear definitions, state the meaning of symbols and are careful about specifying units of measure and labeling axes ● Calculate accurately and efficiently

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MP7. Look for and make use of structure.	<ul style="list-style-type: none"> ● Discern patterns and structures ● Can step back for an overview and shift perspective ● See complicated things as single objects or as being composed of several objects
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Social and Emotional Learning Standards	
Self-Awareness	<ul style="list-style-type: none"> ● Recognize one’s personal traits, strengths, and limitations ● Recognize the importance of self-confidence in handling daily tasks and challenges
Self-Management	<ul style="list-style-type: none"> ● Recognize the skills needed to establish and achieve personal and educational goals ● Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one’s goals
Social Awareness	<ul style="list-style-type: none"> ● Demonstrate an understanding of the need for mutual respect when viewpoints differ
Responsible Decision-Making	<ul style="list-style-type: none"> ● Develop, implement and model effective problem solving and critical thinking skills

Interdisciplinary Connections	
ELA Standards	
● L.SS.7.1.	Demonstrate command of the system and structure of the English language when writing or speaking.
● W.IW.7.2.	Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
Science Standards	
● MS-PS2-2	Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.
● MS-ESS3-2	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

Computer Science & Design Thinking	
8.1 Computer Science	
<ul style="list-style-type: none"> ● 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim. 	
8.2 Design Thinking	
<ul style="list-style-type: none"> ● 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models. ● 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task. ● 8.2.8.ED.3: Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch). 	

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Career Readiness, Life Literacies & Key Skills

9.1 Personal Financial Literacy

- 9.1.5.EG.1: Explain and give examples of what is meant by the term “tax.”
- 9.1.8.FI.4: Analyze the interest rates and fees associated with financial products.
- 9.1.8.FP.7: Identify the techniques and effects of deceptive advertising.

9.4 Life Literacies & Key Skills

- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.
- 9.4.8.TL.3: Select appropriate tools to organize and present information digitally.

Evidence of Student Learning

Formative Tasks:

- Oral Questioning
- Student Conference
- Self-Assessment
- Hand Signals
- Communicators
- Graphic Organizers
- Teacher Observation
- DOL
- Quiz Classwork
- NJSLA Released questions
- Problem of the Day

Alternative Assessments:

- Teacher-Created Projects
- <https://www.illustrativemathematics.org/>
- <https://www.khanacademy.org/>
- <https://www.engageny.org>
- [https://www.iready/teacher toolbox.org](https://www.iready/teacher_toolbox.org)

Summative Assessments:

- Unit Tests
- Midterm Exam
- Final Exam

Benchmark Assessments:

- iReady
- Quarterly Benchmarks
- Beginning/End of Year Assessment
- Unit Common Assessment

Knowledge & Skills

Enduring Understandings:

- Reliable statistical conclusions depend on representative samples.
- Different samples from the same population can yield different results, but patterns still emerge across repeated sampling.
- Statistical inference helps us make predictions about populations when collecting data from everyone is not possible.

Essential Questions:

- How can we use a sample to make reliable conclusions about a larger population?
- What makes a sample representative, and why does that matter for the accuracy of our conclusions?
- How does variability affect the predictions we make from sample data?

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- Measures of center and variability describe the characteristics of a data set and help us compare groups.
The degree of overlap between distributions provides insight into whether one population tends to have higher or lower values than another.
- Visual representations and numerical summaries work together to strengthen statistical reasoning.
- Probability quantifies the likelihood of events and ranges from 0 to 1.
- Long-run relative frequencies tend to stabilize as the number of trials increases.
- Both theoretical and experimental probabilities provide valuable insights into patterns of chance.
- Models help organize complex outcomes and make probability easier to see, reason about, and compute.
- Compound events require understanding how multiple actions or choices combine to affect probability.
- Probability models support informed decision-making in real-world situations involving uncertainty.

- How do measures of center and variability help us compare two data sets?
What does overlap between distributions tell us about differences between groups?
- How can visual representations and numerical summaries work together to support statistical claims?
- What does probability tell us about the likelihood of future events?
- How does the long-run outcome of an experiment help us understand theoretical probability?
- Why do repeated trials help produce more reliable probability estimates?
- How do models such as lists, tables, and tree diagrams help us understand and predict outcomes?
- What strategies help us calculate and interpret probabilities for multi-step or compound events?
- How can probability models help us make informed decisions in real-world contexts?

Content

Students will know...

- *Which graph most appropriately displays a given set of data.*
- *How to make predictions based on the theoretical probability of independent or dependent events.*
- *How to determine the outcomes of an experiment and predict whether events are likely or unlikely and fair or unfair.*
- *Chance events have a probability between 0 and 1.*

Skills

Students will be able to ...

- *Find the probability of a simple event.*
- *Find the probability of compound events.*
- *Find the probability of chance events.*
- *Find sample spaces and probabilities.*
- *Use multiplication to count outcomes and find probabilities.*
- *Find the probability of independent and dependent events.*
- *Find and compare experimental and theoretical probabilities.*
- *Use experimental and theoretical probabilities to decide whether a game is fair or unfair (likely or unlikely).*
- *Predict actions of a larger group by using a sample.*

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Core Instructional & Supplemental Materials

Suggested Activities/Resources:

- [7.EE.B.3 Discounted Books](#)
- [7.EE.B.3 Shrinking](#)
- [7.EE.B.4 Fishing Adventures 2](#)
- [7.EE.B.4, 7.NS.A.1 Bookstore Account](#)
- [7.EE.B.4b Sports Equipment Set](#)
- [7.RP.A.1 Cooking with the Whole Cup](#)
- [7.RP.A.2 Sore Throats, Variation 1](#)
- [7.RP.A.2 Buying Coffee](#)
- [7.RP.A.2c Gym Membership Plans](#)
- [7.G.A.1 Floor Plan](#)
- [7.G.A.1 Map distance](#)
- [7.SP.1-2 Mr. Briggs's Class Likes Math](#)
- [7.SP.3-4 College Athletes](#)
- [7.SP.5-8 Activities](#)

Supplemental resources:

- <https://www.illustrativemathematics.org/>
- <https://www.khanacademy.org/>
- <http://www.coolmath.com/>
- <http://www.mobymax.com/>
- <https://www.tenmarks.com/>
- <https://www.ixl.com/math>
- <https://nj.digitalitemlibrary.com/home>
- <https://www.radicalmath.org/math-social-justice>
- [African Americans in Math](#)
- [Alan Turing Gizmos Grades 6-8](#)
- [Autumn Kent: Geometric Probability](#)

Suggested Accommodations

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