Wall Township Public Schools	Board Approval Date: 8/19/25
Course Title: Grade 4 - Mathematics	
Course Description: This course focuses on building fluency with multi-digit addition, subtraction, multiplication, and division; developing understanding of fractions and their equivalence; and applying concepts of area, perimeter, and measurement.. Aligned with the New Jersey Student Learning Standards, instruction emphasizes problem-solving, real-world applications, and mathematical reasoning to prepare students for success in upper elementary grades.	

New Jersey Student Learning Standards

Standards for Mathematical Practice	
• Make sense of problems and persevere in solving them. • Reason abstractly and quantitatively. • Construct viable arguments & critique others' reasoning. • Model with mathematics.	1. Use appropriate tools strategically. 2. Attend to precision. 3. Look for and make use of structure. 4. Look for and express regularity in repeated reasoning.
Structure and Content Summary K-5	
1. Counting and Cardinality 2. Operations and Algebraic Thinking 3. Number and Operations in Base Ten	1. Measurement and Data 2. Number and Operation — Fractions 3. Geometry

Course Sequence & Pacing

Unit Title	Instructional Periods
Unit 1: Whole Numbers: Place Value, Comparison, Addition, and Subtraction	25
Unit 2: Operations: Multiplication, Division, and Algebraic Thinking	24
Unit 3: Multi-Digit Operations and Measurement: Multiplication, Division, Perimeter, and Area	26
Unit 4: Fractions, Decimals, and Measurement: Addition, Subtraction, and Multiplication	55
Unit 5: Geometry and Measurement: Figures, Classification, and Symmetry	24

Unit 1

Desired Results

Unit 1 Title: Whole Numbers: Place Value, Comparison, Addition, and Subtraction

Unit Summary: This unit extends students' understanding of adding and subtracting whole numbers.

Learning Standards

NJSLS

4.NBT.A.1 - Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
4.NBT.A.2 – Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
4.NBT.A.3 - Use place value understanding to round multi-digit whole numbers to any place.
4.NBT.B.4 - With accuracy and efficiency, add and subtract multi-digit whole numbers using the standard algorithm.

Interdisciplinary Connections

Career Readiness, Life Literacies, & Key Skills

- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process
- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

Computer Science & Design Thinking

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

Interdisciplinary Connections:

NJSLS - ELA 2023

- RI.IT.4.3. Describe the impact of individuals and events throughout the course of a text, explaining events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on evidence in the text.
- SL.PE.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

NJSLS - SCIENCE 2020

- 4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes and climate change have on humans.
- 3-5-ETS1-1 / ETS1-2 – Define a design problem and generate multiple solutions.

Learning Targets

Unit Essential Questions:	Unit Enduring Understandings:

• How does understanding place value help us read, write, and compare large numbers? • What patterns exist in our number system, and how can they help us understand the value of digits? • How can place value understanding help us round, add, and subtract multi-digit numbers accurately?	• The base-ten place value system allows us to represent, interpret, and compare multi-digit numbers efficiently. • Each digit in a number has a value that is ten times greater than the digit to its right and one-tenth the value of the digit to its left. • A strong understanding of place value helps us make reasonable estimates, round numbers, and perform operations with accuracy and efficiency.

Vocabulary:

addend digit estimate (verb) less than symbol (<) regroup standard form	algorithm difference expanded form period reasonable sum	clarify equal sign (=) greater than symbol (>) place value represent word form	compare estimate (noun) justify position round

Students will be able to:

• Use a place-value chart to understand the value of each digit in a number.
• Identify the value of a digit based on its position in a number.
• Demonstrate how moving from one place to the next greatest place changes the value of a digit by a multiple of ten.
• Show that any number can be represented in different ways.
• Use standard form, word form, and expanded form to read and write multi-digit whole numbers.
• Use symbols (>, <, =) to show the relationship between two multi-digit numbers.
• Compare multi-digit numbers in order to solve word problems.
• Round multi-digit whole numbers to any place.
• Explain how to round a multi-digit whole number to a specific place.
• Use place-value strategies to add two or more multi-digit whole numbers.
• Develop fluency with the standard algorithm for addition when adding multi-digit whole numbers up to 999,999.
• Use an estimating strategy with rounded numbers to check for reasonableness of a sum.
• Use place-value strategies to add two or more multi-digit whole numbers.
• Develop fluency with the standard algorithm for addition when adding multi-digit whole numbers up to 999,999.
• Use an estimating strategy with rounded numbers to check for reasonableness of a sum.

Learning Activities:
Climate Change Alignment

- Activity Title: "Place Value for the Planet" - Students will explore real-world climate data (presented in age-appropriate, rounded numbers) to practice place value, number comparison, rounding, and multi-digit operations. The goal is to use math skills to understand changes in Earth's temperature, sea levels, and CO_2 emissions over time — and reflect on how math can help us make sense of environmental data.

Diversity & Inclusion Alignment (N.J.S.A. 18A:35-4.36a)

- Read and discuss the STEM Story Spotlight on Richard Tapia
- Read and discuss Explore session Lesson 4

Assessment Evidence
Formative Assessments: Comprehension Checks, Standard Mastery, Exit Tickets, NJ Assessment Practice Tests
Summative Assessments: Unit 1 Assessment
Common Benchmark Assessments: BOY i-Ready Diagnostic, Universal Screener for Number Sense (USNS)
Alternative Assessments: Unit 1 Math in Action, Literacy Connection

Core Instructional & Supplemental Materials		
i-Ready Math Gr. 4 Textbook	**iReady My Path**	**Fluency Skills and Practice**

Accommodations and Modifications:
Students with Disabilities, English Language Learners,
Students at Risk of Failure, Students with 504s, Gifted & Talented Students

Specific Strategies and Practices that Support Students with Disabilities:

Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, the instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner.

- Small group/One to one
- Additional time - Review of directions
- Student restates information

- Space for movement or breaks
- Extra visual and verbal cues and prompts, Verbal and visual cues regarding directions and staying on task
- Preferential seating
- Follow a routine/schedule, Rest breaks
- Checklists, Immediate feedback

Specific Strategies and Practices that Support English Language Learners

English language learner (ELL) is a national-origin-minority student who is limited-English-proficient. This term is often preferred over limited-English-proficient (LEP) as it highlights accomplishments rather than deficits.

- Pre-teaching of vocabulary and concepts, Teacher modeling
- Personal Glossary
- Extended Time
- Simplified/Verbal Instructions
- Visual learning- including graphic organizers

Students at Risk of Failure

- Home/School Connection
- Alternative Assessments
- Learning Contracts
- Leveled Rubrics and Tiered Activities
- Work Alone Choice, Group Work Choice

Students with 504 Plans

- Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
- 504 plans are formal plans that schools develop to give kids the support they need and covers any condition that limits daily activities in a major way.
- Students' accommodations are outlined in their individual 504 plan.

Specific Strategies and Practices that Support Gifted & Talented Students

It is critical that all teachers are able to recognize a high-ability student who may need more depth and complexity in instruction.

- Homogeneous Grouping
- Small Group In-Depth Instruction
- Differentiated Online Practice
- Alternative Assessments
- Pre-Assess to provide Differentiated Instruction to Accelerate Learning
- Supplemental Reading
- Engaging projects

Unit 2

Desired Results

Unit 2 Title: Operations: Multiplication, Division, and Algebraic Thinking

Unit Summary: This unit extends students' understanding of multiplication and division.

Learning Standards

NJSLS:

4.OA.A.1 – Interpret a multiplication equation as a comparison, e.g., interpret as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

4.OA.A.2 - Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

4.OA.A.3 - Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

4.OA.B.4 – Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

4.OA.C.5 - Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.

Interdisciplinary Connections

Career Readiness, Life Literacies, & Key Skills

- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process
- 9.4.2.CT.3: Use a variety of types of thinking to solve problems
- 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global

Computer Science & Design Thinking

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

Interdisciplinary Connections

NJSLS - ELA 2023

- RI.IT.4.3. Describe the impact of individuals and events throughout the course of a text, explaining events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on evidence in the text.
- SL.PE.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

NJSLS - SCIENCE 2020

- 4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

NJSLS - Social Studies 2020

- 6.1.5.EconEM.3: Describe how supply and demand influence price and output of products.

Learning Targets

Unit Essential Questions:

- How can understanding multiplication and division help us solve problems involving comparisons?
- Why is it important to know basic multiplication facts when identifying factors of a number?
- How can we use rules to recognize, generate, or extend number and shape patterns?

Unit Enduring Understandings:

- Multiplicative comparisons involve thinking about how many times larger or smaller one quantity is compared to another and can be solved using multiplication or division.
- Knowing multiplication facts helps us efficiently determine factor pairs and understand number relationships.
- Patterns in numbers and shapes follow rules that can be identified, used, and extended to make predictions and solve problems.

Vocabulary:

alternate	clarify	confirm	divide
division	equation	estimate (verb)	expression
factor	multiplicative comparison	multiplication	multiply
opinion	pattern	reasonable	remainder
repeat	rule	symbol	unknown

Students will be able to:

- Use a multiplication equation to represent the relationship between two numbers as a multiplicative comparison.
- Identify a multiplication equation as showing two ways to describe a product as a comparison between two factors.
- Write an equation to represent a multiplicative comparison described in a word problem.
- Write a word problem using a multiplicative comparison to describe a given multiplication equation.
- Use drawings and symbols to represent a word problem involving multiplicative comparison.
- Use equations to solve for the unknown in multiplicative comparison problems.
- Solve word problems involving multiplicative comparisons by using multiplication or division.

- Distinguish between multiplicative comparison and additive comparison.
- Use basic multiplication facts to list all the factors of a number.
- Use basic multiplication facts to determine whether a number is a multiple of another number.
- Apply understanding of multiples and factors to solving problems.
- Identify a number as prime or composite. • Use rules to generate or extend a number pattern.
- Use manipulatives or drawings to show a shape pattern.
- Describe, analyze, and extend patterns in numbers and shapes.
- Use equations with a letter standing for the unknown to represent multi-step word problems and solve these equations.
- Interpret the remainder in a division word problem.
- Use estimation strategies to check that an answer is reasonable.

Learning Activities:

Climate Change Alignment

- Activity Title: "Math for a Greener Future" - In this project-based activity, students act as "Eco-Data Analysts" for a fictional group called *Kidz for the Climate*, using math to explore real-world environmental issues. Through climate-related word problems involving tree planting, recycling, energy use, and pollution, students apply multiplication, division, multi-step problem solving, and pattern recognition. They distinguish between multiplicative and additive comparisons, represent problems with equations, and analyze number patterns and factors. The project concludes with a "Climate Math Report," where students present their math-based findings and propose a realistic, numbers-driven action to help the environment.

Diversity & Inclusion Alignment (N.J.S.A. 18A:35-4.36a)

- Read and discuss Explore session Lesson 7, 8

Asian American & Pacific Islanders Alignment (N.J Law S4021)

- Activity Title: "Mathematicians Who Made a Difference" - In this project-based activity, students take on the role of mathematician researchers to explore the lives and contributions of diverse figures in STEM, including individuals with disabilities and those from the LGBTQ+ community, in alignment with NJ Law S4021. Each student or group is assigned a historical or contemporary mathematician and completes a math challenge based on that person's real-world impact—such as calculating rocket trajectories like Katherine Johnson, analyzing patterns like Maryam Mirzakhani, or solving multiplicative comparisons inspired by Temple Grandin's animal science work. Students apply 4.OA skills through word problems, equations, factors, and patterns, then present their work in a "Mathematicians Who Made a Difference" showcase that highlights both their math reasoning and what they learned about their assigned figure's identity and legacy.

Assessment Evidence

Formative Assessments: Comprehension Checks, Standard Mastery, Exit Tickets, Mid Unit Assessments, NJ Assessment Practice Tests

Summative Assessments: Unit 2 Assessment
Common Benchmark Assessments: BOY i-Ready Diagnostic, Universal Screener for Number Sense (USNS)
Alternative Assessments: Unit 2 Math in Action, Literacy Connection

Core Instructional & Supplemental Materials
i-Ready Math Gr. 4 Textbook
iReady My Path
Fluency Skills and Practice

Accommodations and Modifications: Students with Disabilities, English Language Learners, Students at Risk of Failure, Students with 504s, Gifted & Talented Students

Specific Strategies and Practices that Support Students with Disabilities:

Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, the instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner.

- Small group/One to one
- Additional time - Review of directions
- Student restates information
- Space for movement or breaks
- Extra visual and verbal cues and prompts, Verbal and visual cues regarding directions and staying on task
- Preferential seating
- Follow a routine/schedule, Rest breaks
- Checklists, Immediate feedback

Specific Strategies and Practices that Support English Language Learners

English language learner (ELL) is a national-origin-minority student who is limited-English-proficient. This term is often preferred over limited-English-proficient (LEP) as it highlights accomplishments rather than deficits.

- Pre-teaching of vocabulary and concepts, Teacher modeling
- Personal Glossary
- Extended Time
- Simplified/Verbal Instructions
- Visual learning- including graphic organizers

Students at Risk of Failure

- Home/School Connection
- Alternative Assessments
- Learning Contracts
- Leveled Rubrics and Tiered Activities
- Work Alone Choice, Group Work Choice

Students with 504 Plans

- Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
- 504 plans are formal plans that schools develop to give kids the support they need and covers any condition that limits daily activities in a major way.
- Students' accommodations are outlined in their individual 504 plan.

Specific Strategies and Practices that Support Gifted & Talented Students

It is critical that all teachers are able to recognize a high-ability student who may need more depth and complexity in instruction.

- Homogeneous Grouping
- Small Group In-Depth Instruction
- Differentiated Online Practice
- Alternative Assessments
- Pre-Assess to provide Differentiated Instruction to Accelerate Learning
- Supplemental Reading
- Engaging projects

Unit 3

Desired Results

Unit 3 Title: Multi-Digit Operations and Measurement: Multiplication, Division, Perimeter, and Area

Unit Summary: This unit extends students' understanding of multi-digit operations and measurement.

Learning Standards

NJSLS:

4.NBT.B.5 - Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

4.NBT.B.6 - Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

4.M.A.1 - Know relative sizes of measurement units within one system of units including km, m, cm. mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.

4.M.A.3 - Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

Interdisciplinary Connections

Career Readiness, Life Literacies, & Key Skills

9.4.2.CT.3: Use a variety of types of thinking to solve problems

Computer Science & Design Thinking

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

Interdisciplinary Connections

NJSLS - ELA 2023

- RI.IT.4.3. Describe the impact of individuals and events throughout the course of a text, explaining events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on evidence in the text.
- RI.TS.4.4. Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.
- SL.PE.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

NJSLS - SCIENCE 2020

- 4-ESS2-2. Analyze and interpret data to make sense of phenomena using logical reasoning.
- 4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes and climate change have on humans.

NJSLS - Social Studies 2020
• 6.1.5.EconNE.4: Explain how creativity and innovation resulted in scientific achievement and inventions in many cultures during different historical periods.

Learning Targets

Unit Essential Questions:	**Unit Enduring Understandings:**
• How does understanding place value help us multiply and divide multi-digit numbers? • Why is it important to understand how measurement units relate to each other? • How can we use what we know about measurement and operations to solve real-world problems? • How do formulas help us find the area and perimeter of rectangles?	• A strong understanding of place value helps us efficiently multiply and divide multi-digit numbers. • Measurement units are related, and larger units can be broken into smaller units. Understanding these relationships allows for accurate conversions. • Knowing how to apply operations and formulas in measurement helps us solve everyday problems involving length, area, and perimeter. Area and perimeter of rectangles can be found using specific formulas, which simplify and standardize the problem-solving process.

Vocabulary:

area dividend estimate (verb) label multiply perimeter reasonable row	convert division factor metric system partial process reasonableness	customary system divisor factors of a number multiple partial products product remain	divide estimate (noun) formula multiplication partial quotients quotient remainder

Students will be able to:

- Multiply whole numbers of up to four digits by one-digit whole numbers.
- Use arrays, area models, and partial products to multiply.

- Use estimation to determine whether answers are reasonable.
- Multiply a two-digit number by a two-digit number.
- Use area models and partial products to multiply.
- Use estimation to determine whether an answer is reasonable.
- Identify relative sizes of measurements within one system.
- Identify the units of measurement within a measurement system.
- Convert measurements from a larger unit to a smaller unit within the same system.
- Use a conversion table showing equivalent measurements within the same system.
- Multiply whole numbers of up to four digits by one-digit whole numbers.
- Multiply a two-digit number by a two-digit number.
- Divide up to three-digit dividends by one-digit divisors, with remainders.
- Use rectangular arrays and area models to divide.
- Use the relationship between multiplication and division to estimate and find a quotient.
- Use place-value understanding and properties of operations to divide.
- Divide up to four-digit dividends by one-digit divisors, with remainders.
- Use area models and partial quotients to divide.
- Use the relationship between multiplication and division to estimate and find a quotient.
- Use place-value understanding and properties of operations to divide.
- Use the formula for perimeter of a rectangle to solve problems.
- Use the formula for the area of a rectangle to solve problems.

Learning Activities:
Amistad Alignment

- Activity Title: “Building Freedom: Math Behind Historic Black Communities” - In this interdisciplinary math project, students take on the role of community planners to honor and recreate historically significant African American neighborhoods, such as Weeksville or Rosewood, aligning with the NJ Amistad Law. Using multiplication, division, measurement conversions, and area and perimeter formulas, students solve real-world problems related to designing homes, schools, and community spaces. They calculate materials needed, convert units, and draw building layouts using equations, area models, and tables. The project culminates in a “Freedom Builders Showcase,” where students present their community block designs and explain how math supported the development and resilience of these historic Black communities.

Diversity & Inclusion Alignment (N.J.S.A. 18A:35-4.36a)

- Read and discuss the STEM Story Spotlight on Lonnie Johnson
- Read and discuss Explore session Lesson 11
- Read and discuss Develop session Lesson 14, 15, 16
- Read and discuss Real World Connection Lesson 12

Assessment Evidence
Formative Assessments: Comprehension Checks, Standard Mastery, Exit Tickets, Mid Unit Assessments, NJ Assessment Practice Tests
Summative Assessments: Unit 3 Unit Assessment
Common Benchmark Assessments: MOY i-Ready Diagnostic
Alternative Assessments: Unit 3 Math in Action, Literacy Connection

Core Instructional & Supplemental Materials
i-Ready Math Gr. 4 Textbook
iReady My Path
Fluency Skills and Practice

Accommodations and Modifications:
Students with Disabilities, English Language Learners,
Students at Risk of Failure, Students with 504s, Gifted & Talented Students

Specific Strategies and Practices that Support Students with Disabilities:

Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, the instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner.

- Small group/One to one
- Additional time - Review of directions
- Student restates information
- Space for movement or breaks
- Extra visual and verbal cues and prompts, Verbal and visual cues regarding directions and staying on task
- Preferential seating
- Follow a routine/schedule, Rest breaks
- Checklists, Immediate feedback

Specific Strategies and Practices that Support English Language Learners

English language learner (ELL) is a national-origin-minority student who is limited-English-proficient. This term is often preferred over limited-English-proficient (LEP) as it highlights accomplishments rather than deficits.

- Pre-teaching of vocabulary and concepts, Teacher modeling

- Personal Glossary
- Extended Time
- Simplified/Verbal Instructions
- Visual learning- including graphic organizers

Students at Risk of Failure

- Home/School Connection
- Alternative Assessments
- Learning Contracts
- Leveled Rubrics and Tiered Activities
- Work Alone Choice, Group Work Choice

Students with 504 Plans

- Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
- 504 plans are formal plans that schools develop to give kids the support they need and covers any condition that limits daily activities in a major way.
- Students' accommodations are outlined in their individual 504 plan.

Specific Strategies and Practices that Support Gifted & Talented Students

It is critical that all teachers are able to recognize a high-ability student who may need more depth and complexity in instruction.

- Homogeneous Grouping
- Small Group In-Depth Instruction
- Differentiated Online Practice
- Alternative Assessments
- Pre-Assess to provide Differentiated Instruction to Accelerate Learning
- Supplemental Reading
- Engaging projects

Unit 4

Desired Results

Unit 4 Title: Fractions, Decimals, and Measurement: Addition, Subtraction, and Multiplication

Unit Summary: This unit introduces students to operations with fractions and decimals. Students also extend their understanding of measurement while solving problems about time, money, length, liquid volume, mass, and weight.

Learning Standards

NJSLS:

4.NF.A.1 - Explain why a fraction is equivalent to a fraction by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

4.NF.A.2 - Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

4.NF.B.3a - Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

4.NF.B.3b - Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.

4.NF.B.3c – Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.

4.NF.B.3d – Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

4.NF.B.4e - Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

4.NF.B.4f - Understand a multiple of as a multiple of, and use this understanding to multiply a fraction by a whole number.

4.NF.B.4g - Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.

4.NF.C.5 – Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.

4.NF.C.6 - Use decimal notation for fractions with denominators 10 or 100.

4.NF.C.7 - Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.

4.M.A.2 - Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Interdisciplinary Connections

Career Readiness, Life Literacies, & Key Skills
Career Readiness, Life Literacies, & Key Skills • 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process • 9.4.2.CT.3: Use a variety of types of thinking to solve problems • 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global
Computer Science & Design Thinking • 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim. • 8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies. • 8.1.5.NI.2: Describe physical and digital security measures for protecting sensitive personal information.
Interdisciplinary Connections ***NJSLS - ELA 2023*** • RI.IT.4.3. Describe the impact of individuals and events throughout the course of a text, explaining events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on evidence in the text. • SL.PE.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly. ***NJSLS - Science 2023*** • 4-ESS1-1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. ***NJSLS - Social Studies 2020*** • 6.1.5.EconEM.3: Describe how supply and demand influence price and output of products.

Learning Targets

Unit Essential Questions:	Unit Enduring Understandings:
• How are fractions similar to whole numbers, and how can that understanding help us solve problems? • How can we use models and number sense to build, break apart, and solve problems with fractions? • How are fractions and decimals related, and how can understanding that relationship help us compare them?	• Fractions are numbers that represent parts of a whole and follow similar rules to whole numbers when adding, subtracting, multiplying, and comparing. • Understanding how to model and decompose fractions helps us make sense of and solve real-world problems. • Fractions and decimals are related representations of numbers, and understanding both helps us compare and communicate quantities more precisely.

Vocabulary:

altogether	batch	benchmark fraction	common denominator
compare	confidence	connection	construct
convert	counterexample	data	decimal
decimal point	decompose	denominator	discuss
equal	equal sign (=)	equation	equivalent fraction
expression	farther	fraction	given
greater than symbol (>)	hundredths	length	less than symbol (<)
line plot	liquid volume	location	mass
mixed number	model	multiplication	multiply
numerator	occur	product	rest
shade	tenths	unit fraction	weight

Students will be able to:

- Understand the value of a fraction.
- Understand how a fraction model represents a fraction.
- Use models to demonstrate that two fractions are equivalent.
- Represent equivalent fractions using models.
- Multiply and divide to find equivalent fractions.
- Use symbols (>, <, =) to compare fractions with different numerators and different denominators.
- Recognize that fractions with different denominators and the same numerators represent different values.
- Use common denominators and benchmark fractions to compare fractions with different denominators.
- Recognize that to compare two fractions both must refer to the same whole.
- Understand fraction addition as joining parts.
- Understand fraction subtraction as separating parts.
- Extend understanding of addition and subtraction of whole numbers to addition and subtraction of fractions.
- Use fraction models to add and subtract fractions with like denominators.
- Add and subtract fractions with denominators.
- Decompose fractions as a sum of fractions with the same denominators in more than one way.
- Use fraction models, number lines, and equations to represent word problems.
- Decompose fractions greater than 1 into a fraction equivalent to a whole number and a fraction less than 1.

- Write a mixed number as a fraction and write a fraction greater than 1 as a mixed number.
- Add and subtract mixed numbers with like denominators.
- Write and solve an equation with mixed numbers with like denominators in order to solve a word problem.
- Make a line plot that displays data in fractional units.
- Solve addition word problems by using a line plot.
- Solve subtraction word problems by using a line plot.
- Multiply a unit fraction (numerator of 1) by a whole number.
- Multiply a fraction with a numerator greater than 1 by a whole number.
- Solve word problems that involve multiplying a fraction by a whole number.
- Write a fraction that has a denominator of 10 as an equivalent fraction with a denominator of 100.
- Explain the relationship between tenths and hundredths.
- Add two fractions with denominators of 10 and 100.
- Compare two decimals to hundredths, using the >, <, = symbols.
- Solve word problems involving comparisons of decimals in tenths and in hundredths.
- Solve word problems involving time and money.
- Convert larger units of measure to smaller units in order to solve word problems about time.
- Convert amounts of money in bills and coins to solve word problems about money.
- Write and solve equations in order to solve word problems involving time and money.
- Solve word problems involving length, liquid volume, mass, and weight.
- Convert larger units of measure to smaller units in order to solve measurement word problems.
- Write and solve equations in order to solve measurement word problems.

Learning Activities:

Amistad

- Activity Title: "Fractions Through Freedom Quilts" - This project engages students in exploring fraction concepts through the historical context of the Underground Railroad, aligning with NJ Law 18A:35-28. Students will study traditional quilt patterns believed to have been used as signals for freedom, then use fraction skills to recreate these patterns on grid paper and in fabric or paper quilt squares. Throughout the activity, students will generate and identify equivalent fractions (4.NF.A.1), compare fractions (4.NF.A.2), decompose fractions (4.NF.B.3b), and solve fraction addition, subtraction, and multiplication problems (4.NF.B.3–4). They will integrate decimals (4.NF.C.6–7) and measurement conversions (4.M.A.2) when calculating fabric dimensions, area, and perimeter for their quilt designs. This cross-curricular project blends mathematics, history, and art to deepen understanding of fractions while honoring African American heritage and the resilience of those who sought freedom.

Climate Change

- Activity: "Design a Sustainable School Garden" – Students will design a model of a sustainable school garden that helps the environment through native plants, composting, and water collection. Using fractions, they will plan the garden layout by dividing the space into sections, finding equivalent fractions, and comparing sizes. They will add, subtract, and multiply fractions to figure out planting areas, seed amounts, and garden rows, and convert fractions to decimals for ordering supplies. Measurement problems will include distances, soil volume, and water needs. This project connects math skills to real-world climate action by showing how gardens can reduce emissions, save resources, and support wildlife.

Diversity & Inclusion Alignment (N.J.S.A. 18A:35-4.36a)

- Read and discuss the STEM Story Spotlight on Sylvia Acevedo
- Read and discuss Explore session Lesson 25, 28
- Read and discuss Develop session Lesson 18, 24

Assessment Evidence
Formative Assessments: Comprehension Checks, Standard Mastery, Exit Tickets, Mid Unit Assessments, NJ Assessment Practice Tests
Summative Assessments: Unit 4 Unit Assessment
Common Benchmark Assessments:
Alternative Assessments: Unit 4 Math in Action, Literacy Connection

Core Instructional & Supplemental Materials		
i-Ready Math Gr. 4 Textbook	**iReady My Path**	**Fluency Skills and Practice**

Accommodations and Modifications:
Students with Disabilities, English Language Learners,
Students at Risk of Failure, Students with 504s, Gifted & Talented Students

Specific Strategies and Practices that Support Students with Disabilities:

Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, the instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner.

- Small group/One to one
- Additional time - Review of directions

- Student restates information
- Space for movement or breaks
- Extra visual and verbal cues and prompts, Verbal and visual cues regarding directions and staying on task
- Preferential seating
- Follow a routine/schedule, Rest breaks
- Checklists, Immediate feedback

Specific Strategies and Practices that Support English Language Learners

English language learner (ELL) is a national-origin-minority student who is limited-English-proficient. This term is often preferred over limited-English-proficient (LEP) as it highlights accomplishments rather than deficits.

- Pre-teaching of vocabulary and concepts, Teacher modeling
- Personal Glossary
- Extended Time
- Simplified/Verbal Instructions
- Visual learning- including graphic organizers

Students at Risk of Failure

- Home/School Connection
- Alternative Assessments
- Learning Contracts
- Leveled Rubrics and Tiered Activities
- Work Alone Choice, Group Work Choice

Students with 504 Plans

- Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
- 504 plans are formal plans that schools develop to give kids the support they need and covers any condition that limits daily activities in a major way.
- Students' accommodations are outlined in their individual 504 plan.

Specific Strategies and Practices that Support Gifted & Talented Students

It is critical that all teachers are able to recognize a high-ability student who may need more depth and complexity in instruction.

- Homogeneous Grouping
- Small Group In-Depth Instruction
- Differentiated Online Practice
- Alternative Assessments & Engaging projects
- Pre-Assess to provide Differentiated Instruction to Accelerate Learning
- Supplemental Reading

Unit 5

Desired Results

Unit 5 Title: Geometry and Measurement: Figures, Classification, and Symmetry

Unit Summary: This unit extends students' understanding of adding and subtracting whole numbers and points, lines, line segments, rays, and angles.

Learning Standards

NJSLS:

4.G.A.1 - Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

4.G.A.2 – Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category and identify right triangles.

4.G.A.3 – Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

4.M.B.4a – Recognize that an angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through of a circle is called a "one-degree angle," and can be used to measure angles.

4.M.B.4b - Recognize that an angle that turns through one-degree angles is said to have an angle measure of degrees.

4.M.B.5 - Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

4.M.B.6 - Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Interdisciplinary Connections

Career Readiness, Life Literacies, & Key Skills *(CLKS - 9.1 -5.5…)***:**

- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process
- 9.4.2.CT.3: Use a variety of types of thinking to solve problems
- 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global

Computer Science & Design Thinking (*CS & DT 8.1.5…***):**

- 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.
- 8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.
- 8.1.5.NI.2: Describe physical and digital security measures for protecting sensitive personal information.

Interdisciplinary Connections (*SS/Sci -6.1.5…, Sci* **):**

NJSLS - ELA 2023

- RI.IT.4.3. Describe the impact of individuals and events throughout the course of a text, explaining events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on evidence in the text.
- SL.PE.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

NJSLS - Science 2023

- 4-PS3-2 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

Learning Targets

Unit Essential Questions:	**Unit Enduring Understandings:**
• How can understanding points, lines, angles, and other geometric figures help us describe and classify shapes? • How can benchmark angles and tools like protractors help us estimate and measure angles? • How do properties like angle size and the presence of parallel or perpendicular lines help us classify geometric figures?	• Geometric figures such as points, lines, line segments, rays, and angles have specific properties that help us recognize and classify shapes. • Benchmark angles and protractors are useful tools for estimating and accurately measuring angles. • Understanding angles and line relationships—such as parallel and perpendicular lines—helps us identify and categorize two-dimensional shapes based on their attributes.

Vocabulary:

acute angle compose exactly line segment parallel lines polygon right angle trapezoid (exclusive)	angle decompose hexagon line up parallelogram protractor right triangle trapezoid (inclusive)	assumption degree isosceles triangle obtuse angle perpendicular lines ray section vertex	characteristic equilateral triangle line obtuse triangle point relationship scalene triangle

Students will be able to:

- Identify and draw points, lines, line segments, rays, and angles and identify them in two-dimensional figures.
- Recognize an angle as a geometric shape.
- Identify acute, right, and obtuse angles in two-dimensional figures.
- Identify and draw parallel and perpendicular lines, distinguish between the two, and identify them in two-dimensional figures.
- Recognize the relationship between the measure of an angle and the part of a circle that the angle turns through.
- Use a protractor to measure an angle.
- Use benchmark angle measures to estimate the measure of an angle.
- Draw an angle of a specific degree.
- Recognize that an angle can be decomposed into several smaller angles.
- Recognize that several smaller angles can be combined to form a larger angle.
- Add and subtract to find angle measures.
- Use addition and subtraction to solve word problems about angle measures.
- Sort two-dimensional figures based on parallel or perpendicular sides and on acute, obtuse, or right angles.
- Recognize that triangles can be classified based on the lengths of their sides (isosceles, equilateral, scalene).
- Name a triangle based on the kind of angles it has (acute, obtuse, right).
- Recognize lines of symmetry in two-dimensional figures.
- Draw lines of symmetry in two-dimensional figures.

Learning Activities:

Asian American & Pacific Islanders Alignment

- Activity Title: “Geometry Through Culture” In this lesson, students will explore the rich cultural contributions of Asian American and Pacific Islander communities through their traditional art and architecture, aligning with NJ Law S4021. They will analyze images of AAPI-inspired designs to identify and classify geometric elements such as points, lines, angles (right, acute, obtuse), parallel and perpendicular lines, and lines of symmetry. Using protractors, students will measure and sketch angles, solve problems involving angle addition and subtraction, and apply their knowledge by creating their own AAPI-inspired geometric designs. This lesson integrates cultural appreciation with key 4th-grade geometry standards, fostering both mathematical skills and awareness of AAPI heritage.

Climate Change Alignment:

- Activity Title: “Design a Solar-Powered Community Park” - In this project, students will become environmental engineers tasked with designing a solar-powered community park that promotes sustainability and climate resilience. Using geometry skills, they will draw and label lines, angles, and shapes; classify two-dimensional figures; identify symmetry; and measure angles to create an accurate and functional park layout. Students will incorporate features such as solar panel stations, garden beds, bike paths, and shaded rest areas, applying measurement and design principles to ensure their park is both practical and eco-friendly. By presenting their final designs, students will demonstrate how renewable energy, efficient land use, and sustainable planning can help address climate change while reinforcing their understanding of key geometry and measurement concepts.

Diversity & Inclusion Alignment (N.J.S.A. 18A:35-4.36a)

- Read and discuss the STEM Story Spotlight on Fred Begay
- Read and discuss Explore session Lesson 33
- Read and discuss Develop session Lesson 34

Assessment Evidence
Formative Assessments: Comprehension Checks, Standard Mastery, Exit Tickets, Mid Unit Assessments, NJ Assessment Practice Test
Summative Assessments: Unit 5 Unit Assessment
Common Benchmark Assessments: EOY i-Ready Diagnostic, Universal Screener for Number Sense (USNS)
Alternative Assessments: Unit 5 Math in Action, Literacy Connection

Core Instructional & Supplemental Materials
i-Ready Math Gr. 4 Textbook
iReady My Path
Fluency Skills and Practice

Accommodations and Modifications:
Students with Disabilities, English Language Learners,
Students at Risk of Failure, Students with 504s, Gifted & Talented Students

Specific Strategies and Practices that Support Students with Disabilities:
Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, the instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner.

- Small group/One to one
- Additional time - Review of directions
- Student restates information
- Space for movement or breaks
- Extra visual and verbal cues and prompts, Verbal and visual cues regarding directions and staying on task
- Preferential seating
- Follow a routine/schedule, Rest breaks

- Checklists, Immediate feedback

Specific Strategies and Practices that Support English Language Learners

English language learner (ELL) is a national-origin-minority student who is limited-English-proficient. This term is often preferred over limited-English-proficient (LEP) as it highlights accomplishments rather than deficits.

- Pre-teaching of vocabulary and concepts, Teacher modeling
- Personal Glossary
- Extended Time
- Simplified/Verbal Instructions
- Visual learning- including graphic organizers

Students at Risk of Failure

- Home/School Connection
- Alternative Assessments
- Learning Contracts
- Leveled Rubrics and Tiered Activities
- Work Alone Choice, Group Work Choice

Students with 504 Plans

- Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
- 504 plans are formal plans that schools develop to give kids the support they need and covers any condition that limits daily activities in a major way.
- Students' accommodations are outlined in their individual 504 plan.

Specific Strategies and Practices that Support Gifted & Talented Students

It is critical that all teachers are able to recognize a high-ability student who may need more depth and complexity in instruction.

- Homogeneous Grouping
- Small Group In-Depth Instruction
- Differentiated Online Practice
- Alternative Assessments
- Pre-Assess to provide Differentiated Instruction to Accelerate Learning
- Supplemental Reading
- Engaging projects