Madison Public Schools
Grade 4 Mathematics Curriculum

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Course Overview

Description

Grade 4 Mathematics is a full year course aligned to the fourth grade New Jersey Student Learning Standards. Instruction will focus on three critical areas:

- developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends
- developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers
- understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry

The Standards for Mathematical Practice are incorporated in each unit to ensure students are developing procedural fluency, problem solving skills, and productive dispositions towards Mathematics. A Singapore Approach to Mathematics will be implemented to allow students to cover material in depth. The Singapore Mathematics Framework focuses on skills, concepts, processes, metacognition, and student attitudes. Students will move through topics using a Concrete-Pictorial-Abstract (CPA) progression to develop conceptual understanding. Students will regularly complete hands-on explorations, participate in classroom discussions, and record their thinking in journals. Successful completion of this course will require students to not only acquire mathematical skills, but to also apply them in real world situations.

Goals

This course aims to:

- encourage students to become abstract thinkers who make sense of quantities and their relationships
- develop students' ability to communicate mathematical ideas precisely and effectively
- develop students' ability to cooperatively discuss and critique ideas of one another
- enable students to become strategic mathematical problem solvers and persevere in solving problems
- build student confidence and interest in Mathematics
- empower students to monitor their thinking and regulate their learning
- develop students' ability to use, apply, and model mathematics to solve problems arising in everyday life, society, and the workplace

Materials

Core: Math in Focus Textbook 4A and 4B (Teacher and Student Editions)
Supplemental: Extra Practice 4A & 4B, Enrichment 4A & 4B, Reteach 4A and 4B, Fact Fluency Resource, Unit assessments in unit plans, Freckle

Resources

The unit plan outline contains formative assessments, number talks, exploration activities, journal entries, independent practice, differentiation options, and summative assessments. Teachers may supplement their assessment practices by developing assignments through Edulastic.

Benchmark Assessments

Students will take the Star Mathematics assessment at least 3 times during the school year.

Modifications and Adaptations for Special Needs Learners
(Gifted and Talented Students, English Language Learners, Students with Special Needs, At-Risk Students, and Students with 504 Plans)

Scope and Sequence
(Pacing Guide)

Unit Number	Topic of Study	Duration (Weeks Taught)
1	Place Value, Rounding, Multi-Digit Addition and Subtraction	5 weeks
2	Multi-Digit Multiplication and Division, Factors, and Multiples	6 weeks
3	Fractions	7 weeks
4	Decimals	3 weeks
5	Area and Perimeter	2 weeks
6	Lines and Angles	2 weeks
7	Properties of Shapes	2 weeks
8	Measurement	3 weeks

Unit 1 Overview

Unit Title: Place Value, Factors, and Multiples

Unit Summary: In this unit, students will extend their understanding of base ten to the hundred-thousands place. They will represent numbers in multiple ways, compare two or more numbers, and round numbers to a given place value. Students will add and subtract larger numbers fluently, and use all the unit skills to solve real world application problems.

Suggested Pacing: 24 lessons

Learning Targets

Unit Essential Questions:
- What does knowing place value help us to do?
- How will we know when we need an exact answer, and when is an estimate sufficient?

Unit Enduring Understandings:
- Place value is used to round numbers.
- Place value can be used to compare and order numbers.
- Place value skills can be applied to finding patterns for numbers.

Evidence of Learning

Formative Assessments: A variety of formative assessments will be used throughout the lesson, including Number Talks, Exploration Activities, Class Discussion, Journal Entries, and Independent Practice.

Summative Assessment: Chapter 1 assessment**.**
The unit assessments contain a variety of multiple choice, multiple select, and open ended questions that assess student understanding of the objectives and NJ Student Learning Standards listed below.

Alternative Assessment: Students will have the opportunity to demonstrate their learning by completing the unit performance task. Teachers may reference the embedded rubric to determine mastery.

Objectives (Students will be able to…)	Key Concepts (Students will know…)	Suggested Assessments	Standards (NJSLS)
Read and write numbers to 1,000,000 in standard form, word form, and expanded form. State the place and value of each digit in a given number. Add and subtract multi-digit numbers fluently.	Understand the value of and compare numbers up to 1,000,000. *Vocabulary:* hundred thousand million period	Sample Assessments include: Create your own six digit number. You can only use each digit once. Write the number in standard, word, and expanded forms.	**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. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division. **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.B.4.** Fluently add and subtract multi-digit whole numbers using the standard algorithm.

			Math Practices **SMP 1** Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 4** Model with mathematics. **SMP 5** Use appropriate tools strategically. **SMP 6** Attend to precision. **SMP 7** Look for and make use of structure. **SMP 8** Look for and express regularity in repeated reasoning. **Career Readiness, Life Literacies, and Key Skills** **9.4.5.DC.5**: Model safe, legal, and ethical behavior when using online or offline technology. **Interdisciplinary Connections** **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively **Computer Science:** **8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
Compare and order numbers, and identify how much more or less one number is compared to another. Find rules for and create number patterns. Round numbers. Add and subtract multi-digit numbers fluently.	Round numbers to a given place value. *Vocabulary:* estimate	Sample Assessments include: Write 4,803 4,702 4,601 What is the rule? What place values are affected? What are the next two numbers in the sequence? What is 85,210 rounded to the nearest thousand?	**4.OA.A.3:** Use the four operations with whole numbers to solve problems. **4.OA.C.5:** Generate and analyze patterns. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule. **4.NBT.A. 3.** Use place value understanding to round multi-digit whole numbers to any place. **Math Practices** **SMP 1** Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 4** Model with mathematics. **SMP 7** Look for and make use of structure. **SMP 8** Look for and express regularity in repeated reasoning. **Interdisciplinary Connections** **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively

Unit 2 Overview

Unit Title: Multiplication and Division

Unit Summary: In this unit, students will perform multiplication with single and double digit numbers and division by single digit divisors. Various strategies based on place value, along with the standard algorithm will be emphasized. Students will also learn about prime and composite numbers and be able to find the greatest common factor and the least common multiple of two or more numbers. Students will solve real world problems involving the operations and interpret remainders in real world situations.

Suggested Pacing: 29 lessons

Learning Targets

Unit Essential Questions:
- How are strategies useful in solving computation problems?
- Why does it help to know inverse relationships?
- What types of problems involve multiplication and division in the answer?
- Why do we need factors and multiples?
- Why do we need to distinguish a number as being prime or composite?
- How does finding factors or multiples of a number help us to solve problems?

Unit Enduring Understandings:
- The standard algorithm is one way to get the answer to an addition or subtraction problem.
- One should use an alternate strategy to check the answer to a problem.
- Place value helps to understand the appropriate size of an answer.
- Multiplication involving whole numbers (greater than 1) makes the answer become larger than either number.
- Factors of a number are less than or equal to the number.
- Multiples of a number are greater than or equal to the number.
- Whether a number is prime or composite is unrelated to the size of the number.
- When solving word problems, remainders must be interpreted.

Evidence of Learning

Formative Assessments: A variety of formative assessments will be used throughout the lesson, including Number Talks, Exploration Activities, Class Discussion, Journal Entries, and Independent Practice.

Summative Assessment: Chapter 2 assessment.
The unit assessments contain a variety of multiple choice, multiple select, and open ended questions that assess student understanding of the objectives and NJ Student Learning Standards listed below.

Because multiplication and division are critical skills for mathematics, additional summative assessments have been developed to be used after teaching the multiplication and division sections of this chapter.

Alternative Assessments: Students will have the opportunity to demonstrate their learning by completing the unit performance task. Teachers may reference the embedded rubric to determine mastery.

Objectives (Students will be able to...)	Key Concepts (Students will know…)	Suggested Assessments	Standards (NJSLS)
Multiply ones, tens, and hundreds without regrouping. Multiply ones, tens, and hundreds with regrouping. Use different methods to multiply up to 4-digit numbers by 1-digit numbers, with or without regrouping. Multiply ones, tens, and hundreds mentally. Multiply by 10s. Multiply two 2 digit numbers using an area model. Multiply two 2 digit numbers using partial products. Multiply two 2 digit numbers using the standard algorithm. Use related multiplication facts to divide. Use related multiplication facts to divide multiples of 10 and 100.	Multiply a 4 digit number by a 1 digit number. Multiply a 2 or 3 digit number by a 2 digit number. Estimate products (ie: "is my answer reasonable?"), and use related math facts to support this thinking. *Vocabulary:* partial product area model algorithm	Sample Assessments include: Use an area model to solve 15 x 23. Copy explore problem with "bowtie" to show partial product. Solve 38 x 52 using an area model and partial products. Explain how both methods are related.	**4.OA.A.1.** Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 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.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. ***Math Practices*** **SMP 1** Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 3** Construct viable arguments and critique the reasoning of others. **SMP 4** Model with mathematics. **SMP 5** Use appropriate tools strategically. **SMP 6** Attend to precision. **SMP 7** Look for and make use of structure. ***Interdisciplinary Connections*** **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
Divide 2-digit numbers without regrouping or remainders. Divide 2 digit numbers by 1 digit numbers with regrouping, with or without remainders. Divide a 3-digit number by a 1-digit number with regrouping and with or without remainders. Divide up to a 4-digit number by a 1-digit number with regrouping, and with or without remainders.	Estimate products and quotients (ie: "is my answer reasonable?), and use related math facts to support this thinking. Find the quotient and remainder in a division problem. Divide 2, 3, or 4 digit numbers by a single digit. Use various strategies to divide multi-digit numbers with and without remainders.	Sample Assessments include: Show your work as you divide 432 by 4. What special procedure do you need to remember as you find this quotient?	**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. ***Math Practices*** **SMP 1** Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 3** Construct viable arguments and critique the reasoning of others. **SMP 4** Model with mathematics. **SMP 6** Attend to precision. **SMP 7** Look for and make use of structure.
Use bar models to solve one and two step word problems involving multiplication and division. Identify prime and composite numbers.	Solve word problems involving all four operations, and use models to support this work. Know that factors of whole numbers are less than the number in question.	Sample Assessments include: Use bar models to support your work: Martin loads 8 boxes that weigh 37 pounds each onto a shelf. He then loads 4 boxes that weigh 28 pounds each onto the same	**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.

Find factors and multiples.	Know that multiples of whole numbers are greater than the number in question. Interpret remainders in division word problems. *Vocabulary:* algorithm quotient remainder factor common factor greatest common factor (GCF) prime number composite number multiple common multiple least common multiple (LCM)	shelf. How much weight is the shelf supporting? Write 2 numbers that are prime. Write 2 numbers that are composite. Explain why these numbers are prime or composite. Prove they are. List the first twelve multiples of 4 and 6. Circle the common multiples. Highlight the least common multiple.	**4.OA.A.3.** Solve multistep 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.A.4.** Recognize and find factors and multiples of whole numbers. Determine whether a given whole number is prime or composite. ***Career Readiness, Life Literacies, and Key Skills*** **9.1.5.FP.3** Analyze how spending choices and decisions-making can result in positive or negative consequences. **9.1.PB.2** Describe choices consumers have with money (eg, save, donate, spend). ***Math Practices*** **SMP 1** Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 3** Construct viable arguments and critique the reasoning of others. **SMP 4** Model with mathematics. **SMP 5** Use appropriate tools strategically. **SMP 6** Attend to precision. ***Interdisciplinary Connections*** **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. ***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.

Unit 3 Overview

Unit Title: Fractions

Unit Summary: In this unit, students will develop an understanding of fractions. They will learn strategies to create equivalent fractions and perform operations with fractions. Students will extend their understanding of unit fractions by utilizing them to compose and decompose fractions. Students will learn how to multiply fractions by whole numbers and apply those skills to solve real world problems.

Suggested Pacing: 35 lessons

Learning Targets

Unit Essential Questions:
- Why does one need to use fractions?
- Why does one need to find equivalent fractions?
- How are operations performed with fractions?
- When would one need to add, subtract, or multiply a fraction?

Unit Enduring Understandings:
- Equivalent fractions represent the same amount of a whole.
- Fraction comparisons are only valid when they refer to the same whole.
- In order to find the fraction equivalent to one half, the numerator must be the denominator divided by 2; or the denominator must be 2 times the numerator.
- A fraction (with a numerator greater than 1) is made up of unit fractions, e.g. $3/7 = 1/7 + 1/7 + 1/7$.
- Addition and subtraction of fractions is joining and separating parts referring to the same whole.
- A fraction a/b is a multiple of 1/b.
- A line plot is a visual representation of a set of data.

Evidence of Learning

Formative Assessments: Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice

Summative Assessment: Chapter 3 assessment.
This unit assessment contains a variety of multiple choice, multiple select, and open ended questions that assess student understanding of the objectives and NJ Student Learning Standards listed below.

Alternative Assessment: Students will have the opportunity to demonstrate their learning by completing the unit performance task. Teachers may reference the embedded rubric to determine mastery.

Objectives (Students will be able to...)	Key Concepts (Students will know...)	Suggested Assessments	Standards (NJSLS)
Read, write, and identify fractions of wholes with more than 4 parts. Identify the numerator and denominator. Use models to identify equivalent fractions.	Use models to represent fractions, improper fractions, and mixed numbers. Compose and decompose fractions using unit fractions. Use various strategies to create equivalent fractions.	Sample Assessments include: Use an area model to solve 15 x 23. Copy explore problem with "bowtie" to show partial product. Solve 38 x 52 using	**4.NF.A.1.** Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) 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

		an area model and partial products. Explain how both methods are related.	denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. 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.
Use a number line to identify equivalent fractions and mixed numbers. Use multiplication and division to find equivalent fractions. Write fractions and mixed numbers in simplest form Compare and order like and unlike fractions using benchmark fractions. Compare and order like and unlike fractions. Show fractions as models or points or distances on a numberline. Compare unlike fractions using multiplication and division.	Use various strategies to compare and order fractions. *Vocabulary:* like fractions unlike fractions common denominator common numerator benchmark numerator denominator		***Math Practices*** **SMP 1** Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 3** Construct viable arguments and critique the reasoning of others. **SMP 4** Model with mathematics. **SMP 5** Use appropriate tools strategically. **SMP 6** Attend to precision. **SMP 7** Look for and make use of structure. ***Interdisciplinary Connections*** **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
Add two or three fractions with sums to 1. Subtract a like fraction from another like fraction or one whole. Find equivalent fractions to add or subtract unlike fractions where one denominator is a multiple of the other. Write a mixed number for a model and draw models to represent mixed numbers. Simplify fractions and mixed numbers. Write an improper fraction for a model. Express mixed numbers as improper fractions. Use models to rename improper fractions as mixed numbers and whole numbers. Use division to rename improper fractions as mixed numbers or whole numbers. Use multiplication to rename a mixed number as an improper fraction. Add fractions to get mixed-number sums. Subtract fractions from whole numbers.	Add and subtract like fractions Add and subtract fractions by using equivalent fractions so that fractions have like denominators. *Vocabulary:* simplify simplest form mixed number improper fraction	Sample Assessments include: Add 1 4/5 and 3 2/5. Use two strategies. 7 1/8 - 4 3/8 Explain why you need to rename.	**4.NF.B.3.** Understand a fraction a/b with a > 1 as a sum of fractions 1/b. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. 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. Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8. c. 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.4.** Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4). b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.) c. 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. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie? ***Math Practices***

			SMP 1 Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 3** Construct viable arguments and critique the reasoning of others. **SMP 4** Model with mathematics. **SMP 5** Use appropriate tools strategically. **SMP 6** Attend to precision. **SMP 7** Look for and make use of structure. ***Interdisciplinary Connections*** **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
Use a model to show a fraction of a set. Use multiplication to find a fraction of a set Multiply a fraction and a whole number. Solve Real-World Problems involving fractions by using addition and subtraction. Solve Real-World Problems involving fractions by finding the fraction of the set, finding the total using multiplication and division, and using multiplication and division to find a fraction of a set. Use and represent data in a line plot.	Use various strategies to multiply fractions. Interpret and solve word problems involving fractions. Read, interpret, and create line plots to represent data. *Vocabulary:* line plot	Sample Assessments include: Is 6/5 a multiple of 1/5? Is 7/4 a multiple of 1/2? Explain.	**4.NF.B.3.d.** 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.MD.B 4.** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot, find and interpret the difference in length between the longest and shortest specimens in an insect collection. ***Career Readiness, Life Literacies, and Key Skills*** **9.4.5.IML.2.** Create a visual representation to organize information about a problem or issue **9.4.5.IML.3.** Represent the same data in multiple visual formats in order to tell a story about the data ***Math Practices*** **SMP 1** Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 3** Construct viable arguments and critique the reasoning of others. **SMP 4** Model with mathematics. **SMP 5** Use appropriate tools strategically. **SMP 6** Attend to precision. **SMP 7** Look for and make use of structure. ***Interdisciplinary Connections*** **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. ***Computer Science and Design Thinking*** **8.1.5.DA.1.** Collect, organize, and display data in order to highlight relationships or support a claim. **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.

Unit 4 Overview

Unit Title: Decimals

Unit Summary: In this unit students will develop an understanding of decimal place values. They will recognize equivalent tenths and hundredths as well as write fractions and mixed numbers as decimals. Students will compare and order decimals realizing that comparisons are only accurate when referring to the same whole.

Suggested Pacing: 13 lessons

Learning Targets

Unit Essential Questions:
- Why does one need to change a fraction to a decimal?
- When is it easier to use the decimal form of a fraction?
- Why would decimal forms of a fraction need to be compared?

Unit Enduring Understandings:
- Decimals and fractions are related.
- Fractions with a denominator of 10 or 100 can be written in decimal form.
- Comparisons of decimals are valid only when the two decimals refer to the same whole

Evidence of Learning

Formative Assessments: Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice

Summative Unit Assessment: Chapter 4 assessment.
This unit assessment contains a variety of multiple choice, multiple select, and open ended questions that assess student understanding of the objectives and NJ Student Learning Standards listed below.

Alternative Assessment: Students will have the opportunity to demonstrate their learning by completing the unit performance task. Teachers may reference the embedded rubric to determine mastery.

Objectives (Students will be able to...)	Key Concepts (Students will know...)	Suggested Assessments	Standards (NJSLS)
Read and write tenths in decimal form. Read and write hundredths in decimal form. Compare and order decimals. Complete number patterns involving decimals. Round decimals to the nearest whole or tenth place. Express fractions and mixed numbers as decimals. Express decimals as fractions and mixed numbers. Add tenths and hundredths. Write decimals to show their place values.	Understand equivalent fractions and decimals. Understand decimal place value to know equivalent tenths and hundredths. Use place value to compare, order, and round decimals. Understand that decimals can have placeholder zeros. *Vocabulary:* decimal decimal point decimal place tenth hundredth	Sample Assessments include: Use equivalent fractions to prove that .3 = .30. Round 3.85 to the nearest whole and tenth.	**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. For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100. **4.NF.C.6.** Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram. **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. ***Career Readiness, Life Literacies, and Key Skills*** **9.4.5.CT.4.** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global. ***Math Practices*** **SMP 1** Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 3** Construct viable arguments and critique the reasoning of others. **SMP 4** Model with mathematics. **SMP 5** Use appropriate tools strategically. **SMP 6** Attend to precision. **SMP 7** Look for and make use of structure. **SMP 8** Look for and express regularity in repeated reasoning. ***Interdisciplinary Connections*** **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

Unit 5 Overview
Unit Title: Area and Perimeter
Unit Summary: In this unit, students will develop an understanding of area and perimeter and utilize various strategies to calculate area and perimeter to solve real world problems. Students will also use strategies to find the area and perimeter of composite figures.
Suggested Pacing: 9 lessons

Learning Targets
Unit Essential Questions: ● How are area and perimeter different? ● What types of information can we learn by finding area or perimeter?
Unit Enduring Understandings: ● The size of the unit used to measure has an effect on the number of units in the answer. ● Area and perimeter measure different things therefore the types of label on the answers are different. ● The region covered by square units in an array is the same as the area of the rectangle.

Evidence of Learning
Formative Assessments: Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice
Summative Assessment: Chapter 6 assessment. *This unit assessment contains a variety of multiple choice, multiple select, and open ended questions that assess student understanding of the objectives and NJ Student Learning Standards listed below.*
Alternative Assessment: Students will have the opportunity to demonstrate their learning by completing the unit performance task. Teachers may reference the embedded rubric to determine mastery.

Objectives (Students will be able to...)	Key Concepts (Students will know...)	Suggested Assessments	Standards (NJSLS)
Find the area and perimeter of a rectangle or square using a formula. Find the unknown side of a figure given its area or perimeter and one known side. Find the area and perimeter of composite figures. Solve real world problems involving area and perimeter of squares, rectangles, and composite figures.	Understand and calculate the area and perimeter of squares and rectangles. Solve real world problems involving area and perimeter *Vocabulary:* area perimeter formula composite figure	Sample Assessments include: A rug has an area of 108 sq. ft. One side is 9 feet long. What is the length of the missing side? Then, find the perimeter of this figure.	**4.MD.A.3.** Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. ***Career Readiness, Life Literacies, and Key Skills*** **9.4.5.CT.4.** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global. ***Math Practices*** **SMP 1** Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 3** Construct viable arguments and critique the reasoning of others. **SMP 4** Model with mathematics. **SMP 5** Use appropriate tools strategically. **SMP 6** Attend to precision. **SMP 7** Look for and make use of structure. **SMP 8** Look for and express regularity in repeated reasoning. ***Interdisciplinary Connections*** **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. ***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.

Unit 6 Overview

Unit Title: Lines and Angles

Unit Summary: In this unit, students will learn about angles, lines, and shapes. Angles will be understood in relation to the 360 degrees in a circle. Students will identify, measure, and classify angles. Students will use symbols to represent unknown angles and addition and subtraction to solve for unknown angles. Parallel, perpendicular, vertical, and horizontal lines will be explored.

Suggested Pacing: (# of days/lessons) 12 lessons

Learning Targets

Unit Essential Questions:
- Why would one need to measure an angle?
- How do tools help with precision?

Unit Enduring Understandings:
- The measure of an angle is the measure of the turn.
- We can use addition or subtraction to find unknown parts of angles or the measure of a larger angle composed of two or more smaller angles.
- Using a protractor and drawing tools enables us to accurately measure and draw objects and angles.

Evidence of Learning

Formative Assessments: Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice

Summative Assessment: Chapter 7 assessment.
This unit assessment contains a variety of multiple choice, multiple select, and open ended questions that assess student understanding of the objectives and NJ Student Learning Standards listed below.

Alternative Assessment: Students will have the opportunity to demonstrate their learning by completing the unit performance task. Teachers may reference the embedded rubric to determine mastery.

Objectives (Students will be able to...)	Key Concepts (Students will know...)	Suggested Assessments	Standards (NJSLS)
Estimate whether the measure of an angle is less than or greater than a right angle. Estimate and measure angles with a protractor. Use a protractor to draw acute, right, and obtuse angles. Relate 1/4, 1/2, 3/4 and full turns to the number of right angles. Understand that an angle that turns through 1/360 of a circle is called a "one-degree angle." Find unknown angles using addition or subtraction. Solve addition and subtraction problems to find unknown angles on a diagram in real-world problems. Draw perpendicular line segments. Draw parallel line segments. Identify horizontal and vertical lines.	Identify and classify angles. Understand how the measure of an angle relates to a circle. Understand the properties of quadrilaterals. Find missing angle measurements in a shape or real world diagram. Identify and draw vertical, horizontal, perpendicular, and parallel lines. *Vocabulary:* degree ray line line segment protractor outer scale inner scale acute obtuse right angle turn straight angle drawing triangle parallel perpendicular	Sample Assessments include: Ask students to draw and name an angle. Tell whether they made their angle up with segments or rays. Draw a line segment and then draw a line segment parallel to it. Name and label the segments. Repeat with a different orientation.	**4.MD.C.6.** Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. **4.MD.C.7.** 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. **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. ***Career Readiness, Life Literacies, and Key Skills*** **9.4.5.CT.4.** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global. ***Math Practices*** **SMP 1** Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 3** Construct viable arguments and critique the reasoning of others. **SMP 4** Model with mathematics. **SMP 5** Use appropriate tools strategically. **SMP 6** Attend to precision. **SMP 7** Look for and make use of structure. **SMP 8** Look for and express regularity in repeated reasoning. ***Interdisciplinary Connections*** **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

Unit 7 Overview

Unit Title: Properties of Shapes

Unit Summary: In this unit, students will explore number patterns and interpret data. Given a number pattern, students will be able to identify the rule and continue the pattern. Students will be able to create a line plot and interpret data displayed in a line plot. Students will investigate where patterns are seen in everyday life and interpret data in real life situations.

Students will understand the properties of squares and rectangles to classify and name shapes.

Suggested Pacing: 8 lessons

Learning Targets

Unit Essential Questions:
- Why does one need to classify shapes?
- Why does one need to identify lines of symmetry?

Unit Enduring Understandings:
- Characteristics of a figure enables one to identify it by a name.

Evidence of Learning

Formative Assessments: Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice

Summative Assessment: Chapter 8 assessment.
This unit assessment contains a variety of multiple choice, multiple select, and open ended questions that assess student understanding of the objectives and NJ Student Learning Standards listed below.

Alternative Assessment: Students will have the opportunity to demonstrate their learning by completing the unit performance task. Teachers may reference the embedded rubric to determine mastery.

Objectives (Students will be able to…)	Key Concepts (Students will know…)	Suggested Assessments	Standards (NJSLS)
Classify triangles by their angle measures. Classify quadrilaterals by their properties. Identify lines of symmetry and symmetric shapes. Draw lines of symmetry. Complete shapes and patterns involving symmetry.	Understand and apply the properties of squares and rectangles. Identify a line of symmetry of a figure. *Vocabulary:* quadrilateral acute triangle obtuse triangle right triangle square rectangle parallelogram symmetry	Sample Assessments include: Compare and contrast a square and a rectangle. Draw a figure that has at least one line of symmetry and one figure that has no lines of symmetry.	**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. ***Career Readiness, Life Literacies, and Key Skills*** **9.4.5.CT.4.** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global. ***Math Practices*** **SMP 1** Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 3** Construct viable arguments and critique the reasoning of others. **SMP 4** Model with mathematics. **SMP 5** Use appropriate tools strategically. **SMP 6** Attend to precision. **SMP 7** Look for and make use of structure. **SMP 8** Look for and express regularity in repeated reasoning. ***Interdisciplinary Connections*** **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

Unit 8 Overview

Unit Title: Measurement

Unit Summary: In this unit, students will develop an understanding of length, mass, and volume in both the customary and metric systems. They will understand that, when converting from larger to smaller units, a greater number of small units is required, and a smaller number of larger units is required when converting from smaller to larger units. Students will convert time and learn how to use the 24 hour clock. Students apply these conversions between units of measure and solve real world word problems involving distance, time, volume, and mass.

Suggested Pacing: 12 lessons

Learning Targets

Unit Essential Questions:
- What can be measured?
- Why does one need to measure things?
- What units are appropriate for measurement?

Unit Enduring Understandings:
- The size of the unit used to measure has an effect on the number of units in the answer.
- Different areas of the world and different professions may use one or both systems of measure.

Evidence of Learning

Formative Assessment: Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice

Summative Assessment: Chapter 5 assessment.
This unit assessment contains a variety of multiple choice, multiple select, and open ended questions that assess student understanding of the objectives and NJ Student Learning Standards listed below.

Alternative Assessments: Students will have the opportunity to demonstrate their learning by completing the unit performance task. Teachers may reference the embedded rubric to determine mastery.

As an alternative to the full unit test, teachers may use the modified unit assessments which break apart the customary and metric units of measure. Each assessment draws on questions from the unit test with additional questions on measurement included to more completely assess the standards.

Objectives (Students will be able to...)	Key Concepts (Students will know...)	Suggested Assessments	Standards (NJSLS)
Convert metric units of length. Convert customary units of length. Convert metric units of mass. Convert customary units of mass. Convert metric units of liquid capacity/volume. Convert units of time. Convert between the 12 hour (AM/PM) and 24 hour clock systems. Use the four operations to solve word problems involving distance, time, volume, and mass. Represent measurement quantities using line diagrams and bar models.	Convert units of length, mass, liquid capacity/volume, and time. Solve real world word problems involving distance, time, volume, mass, and money. *Vocabulary:* Customary units of distance - inch, foot, yard, mile Customary units of mass - ounce, pound, ton Customary units of liquid volume - fluid ounce, cup, pint, quart, gallon Metric units of distance - centimeter, meter, kilometer Metric units of mass - milligram, gram, kilogram Metric units of liquid measure - milliliter, liter Units of time - second, minute, hour	Sample Assessments include: Mrs. Lopez has 2 1/4 pounds of meat. She buys another 1 3/4 pounds. She plans on saving the meat in small containers that hold 4 ounces of meat each. How many containers will she need? Ben and Jerry are doing a problem. Ben says that 12,100 mL is equal to 12 L, 100 mL. Jerry says it is equal to 121 L. Who is right? Explain.	**4.MD.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. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ... **4.MD.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. ***Career Readiness, Life Literacies, and Key Skills*** **9.4.5.CT.4.** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global. ***Math Practices*** **SMP 1** Make sense of problems and persevere in solving them. **SMP 2** Reason abstractly and quantitatively. **SMP 3** Construct viable arguments and critique the reasoning of others. **SMP 4** Model with mathematics. **SMP 5** Use appropriate tools strategically. **SMP 6** Attend to precision. **SMP 7** Look for and make use of structure. **SMP 8** Look for and express regularity in repeated reasoning. ***Interdisciplinary Connections*** **NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. **ETSS1-2 Engineering Design:** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.