

Madison Public Schools

Grade 3 Mathematics Curriculum

Written by:

Allison Altieri and Caitlin Manley
Lauren Gambino and Anthony Finn

Revised by

Tina Smith

Reviewed by:

Daniel J. Ross, Esq.
Asst. Superintendent

Approval date:

August 24, 2021

Members of the Board of Education:

John Regan, President
Pam Yousey, Vice President
Richard Bruno
Sarah Fischer
David Irwin
Thomas Piskula
Heather Reddy
Stephen Tindall
Mark Schwarz, Superintendent

Madison Public Schools
359 Woodland Road
Madison, NJ 07940
www.madisonpublicschools.org

Course Overview

Description

Grade 3 Mathematics is a full year course aligned to the third grade New Jersey Student Learning Standards. Instruction will focus on four critical areas:

- developing understanding of multiplication and division and strategies for multiplication and division within 100
- developing understanding of fractions, especially unit fractions (fractions with numerator 1)
- developing understanding of the structure of rectangular arrays and of area
- describing and analyzing two-dimensional shapes

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/workbook 3A and 3B (Teacher and Student Editions), ST Math

Supplemental: Extra Practice & Homework Grade 3 (online), Enrichment Grade 3 (online), Reteach Grade 3 (online), Fact fluency Grade 3, Ed your friend in learning platform, Unit assessments in unit plans, Freckle.

Resources

The unit plans contain formative assessment, number talks, exploration activities, journal entries, independent practice, and summative assessments.

Benchmark Assessments

Students will take the Star Mathematics assessment a minimum of 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	Addition and Subtraction within 10,000	8
2	Multiplication and Division	6
3	Using Bar Models: The four operations	2
4	Fractions	4
5	Area and Perimeter	4
6	Measurement: Time, Volume, Mass and Data	7
7	Shapes	3

Unit 1 Overview			
Unit Title: Addition and Subtraction within 10,000			
Unit Summary: In this unit, students will work with whole numbers to add and subtract within 10,000. Various strategies based on place value and the standard algorithm will be discussed. Students will also learn to round to a given place value, compare and order numbers within 10,000, and solve real world problems involving addition and subtraction.			
Suggested Pacing: 35 days			
Learning Targets			
Unit Essential Questions: <ul style="list-style-type: none"> Why is place value important? 			
Unit Enduring Understandings: <ul style="list-style-type: none"> the place that a digit is located assigns a value to that digit. to compare two numbers, one must compare the digits in each place, starting with the largest place. properties of operations are used as strategies for solving addition and subtraction problems. knowing how addition and subtraction are related helps us to solve math problems. 			
Evidence of Learning			
Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice			
Summative Assessments: Chapter 1, 2 and 3 unit assessments. These 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 Assessments: Students will have the opportunity to demonstrate their learning by completing chapter 1, 2 and 3 Performance Tasks in student textbook/workbook.			

Objectives (Students will be able to...)	Key Concepts (Students will know...)	Suggested Assessments	Standards (NJSLs)
Chapter 1: Numbers to 10,000 Count to 10,000 Understand place value to 10,000 Read, write, round, compare, and order numbers to 10,000 Rounding numbers to the nearest ten or hundred	Count by 1s, 10s, 100s, and 1,000 to 10,000. Use base ten blocks and a place value chart to read, write, and represent numbers to 10,000 Read and write numbers to 10,000 in standard form, expanded form, and word form. Recognize the value of the digits in each place value of a 4-digit number. Use base ten blocks to compare and order numbers; use place value to compare and order numbers	Create a 4-digit number, write in standard form, word form and expanded form. Give the value of each digit in your number. Create a 4 digit number, place the number on a number line. Using a number line round your number to the nearest ten and hundred.	3.NBT.A.1. Use place value understanding to round whole numbers to the nearest 10 or 100. Math Practices SMP 1 Make sense of problems and persevere in solving them. SMP 2 Reasons 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. SMP 8 Look for and express regularity in repeated reasoning.

	<p>Look for a pattern to complete a number sequence</p> <p>Use number lines and place value understanding to round to the nearest ten</p> <p>Use number lines and place value understanding to round to the nearest hundred</p> <p><i>Vocabulary:</i> ten thousand, number line, rule, round, estimate</p>		<p><u>Interdisciplinary Connections:</u></p> <p>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.</p> <p><u>Career Readiness, Life Literacies, and Key Skills:</u></p> <p>9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology.</p>
<p>Chapter 2: Addition within 10,000</p> <p>Add within 10,000</p> <p>Solve real world problems involving addition</p>	<p>Identify arithmetic patterns in addition.</p> <p>Add 2-digit numbers mentally using different strategies.</p> <p>Use addition strategies and algorithm to add numbers within 1,000</p> <p>Add multi-digit numbers without regrouping</p> <p>Add multi-digit numbers with regrouping in ones, tens, and hundreds</p> <p>Use bar models to solve up to two step real-world problems involving addition</p> <p>Estimate to check the reasonableness of answers by rounding the numbers in calculations involving addition</p> <p><i>Vocabulary:</i> equation, associative property, identity property,</p>	<p>Roll 4 dice, create a 4-digit number, (repeat) now add the two numbers together. Create a word problem to go with your numbers.</p>	<p>3.NBT.A.2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</p> <p>3.OA.D. 8 Solve two-step word problems using the four operations. 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.</p> <p>3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.</p>
<p>Chapter 3: Subtraction within 10,000</p> <p>Subtraction within 10,000</p> <p>Solve real world problems involving subtraction</p>	<p>Subtract 2-digit numbers mentally using different strategies</p> <p>Use subtraction strategies and algorithm to subtract numbers within 1,000</p> <p>Subtract up to 4-digit numbers without regrouping</p> <p>Subtract up to 4-digit numbers with regrouping in ones, tens and hundreds</p> <p>Use bar models to solve up to two-step real-world problems involving subtraction</p> <p>Estimate to check reasonableness of answers by rounding the numbers in calculations involving subtraction</p> <p><i>Vocabulary:</i> difference</p>	<p>Roll 4 dice, create a 4-digit number, repeat using 3 dice to create a 3 digit number . Subtract the 3-digit number from the 4-digit number. Create a word problem to go with your numbers.</p>	<p>3.NBT.A.1. Use place value understanding to round whole numbers to the nearest 10 or 100.</p> <p>3.NBT.A.2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</p> <p>3.OA.D. 8 Solve two-step word problems using the four operations. 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.</p>

Unit 2 Overview	
Unit Title: Multiplication and Division	
<p>Unit Summary: In this unit, students will extend their understanding of equal groups of objects from second grade to multiplication of numbers within 100. They will learn various strategies based on place value for multiplying numbers, including the use of known facts to solve unknown facts. Students will apply these strategies to solve real world problems. Students will also develop an understanding of quotative (grouping) and partitive (sharing) division. They will apply this knowledge to interpret quotients in real world situations. Students will understand how multiplication and division are related to find missing numbers in a number sentence.</p>	
Suggested Pacing: 26 Days	
Learning Targets	
<p>Unit Essential Questions:</p> <ul style="list-style-type: none"> • How are multiplication and division related? • How can one use properties as strategies to solve problems? • How can patterns be used to solve problems? • How can one use the relationship between multiplication and division to find products and quotients? • How can one use properties as strategies to solve problems? • How can patterns be used to solve problems? 	
<p>Unit Enduring Understandings:</p> <ul style="list-style-type: none"> • the total number of objects, when grouped, can be found most efficiently by multiplication. • when two out of three numbers are known in an equation, there is exactly one number, represented by the unknown, which will make the statement true. • using properties can make problems easier. • there are strategies to find patterns in a sequence of numbers. • equations can model real-world problems. • there is an inverse relationship between multiplication and division. • there are two different interpretations to a division problem. 	
Evidence of Learning	
Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice	
Summative Assessments: 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 Assessments: Students will have the opportunity to demonstrate their learning by completing chapter 4 Performance Task in student textbook/workbook.	

Objectives (Students will be able to...)	Key Concepts (Students will know...)	Suggested Assessments	Standards (NJSLs)
<p>Utilize various strategies to multiply single digit numbers.</p> <p>Use mental math to multiply by 1, 10, 100.</p>	<p>Represent multiplication as equal groups, repeated addition, and skip counting.</p> <p>Use number lines to multiply.</p> <p>Build arrays and write related multiplication sentences.</p> <p>Understand and apply the multiplication property of one.</p> <p>Multiply by 4, 6, 7, 8, 9, 11 & 12 by skip counting, drawing arrays, or using repeated addition.</p> <p>Use multiplication facts they know to find other multiplication facts.</p> <p>Identify arithmetic patterns in multiplication.</p> <p>Multiply ones, tens, and hundreds mentally.</p> <p><i>Vocabulary:</i> array models, product, distributive property, associative property, area model</p>	<p>Students will be given a multiplication problem and asked to model different ways to solve the problem (e.g., number lines, arrays and skip counting)</p> <p>Students will be asked to identify the unknown number in a multiplication problem (e.g. $7 \times ? = 56$ the unknown should not necessarily be the solution to the problem)</p>	<p>3.OA.A.1. Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. For example, describe and/or represent a context in which a total number of objects can be expressed as 5×7.</p> <p>3.OA.A.4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$, $5 = \div 3$, $6 \times 6 = ?$.</p> <p>3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80, 5×60) using strategies based on place value and properties of operations.</p> <p>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 7 Look for and make use of structure. SMP 8 Look for and express regularity in repeated reasoning.</p> <p><u>Interdisciplinary Connection:</u></p> <p>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.</p> <p><u>Career Readiness, Life Literacies, and Key Skills</u></p> <p>9.1.5.FP.2: Identify the elements of being a good steward of money.</p> <p>9.1.5.FP.3: Analyze how spending choices and decision-making can result in positive or negative consequences.</p> <p>9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.</p>
<p>Use multiplication facts to find and write related division facts.</p>	<p>Use multiplication facts to find related division facts.</p>	<p>Students will choose (or be given) a multiplication fact and will be asked to identify all</p>	<p>3.OA.A.2. Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when</p>

	<p>Write a multiplication equation and a related division equation.</p> <p><i>Vocabulary:</i> quotient</p>	<p>related multiplication and division facts.</p>	<p>56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe and/or represent a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.</p> <p>3.OA.C.6. Understand division as an unknown-factor problem. For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.</p> <p>3.OA.C.7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.</p>
--	--	---	---

Unit 3 Overview	
Unit Title: Using Bar Models: The Four Operations	
Unit Summary: In this unit, students will extend their knowledge of part-whole bar models used for adding to or taking away from a set, and comparison bar models used to illustrate more than or less than. Students will use a combination of both types of model to solve two-step problems. Both multiplication and division are based on the concept of equal groups, or the part-whole concept where each group —or unit—is one part of a whole. Students will learn how to use a unitary approach to represent such a situation. Students will compare sets where one whole is a multiple of another whole. This will be extended to compare up to three sets. Students will be able to show that they fully understand the four operations and how to use them in the context of a real-world situation.	
Suggested Pacing: 8 days	
Learning Targets	
Unit Essential Questions: <ul style="list-style-type: none"> How can bar models be used to solve real world problems? 	
Unit Enduring Understandings: <ul style="list-style-type: none"> there are different ways to express multiplication and division using a bar model the language of “two times as many” and how that can be expressed in a model. using a unitary approach can help when problem solving bar models are a great tool when solving multi-step real-world problems. 	
Evidence of Learning	
Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice	
Summative Assessments: 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 Assessments: Students will have the opportunity to demonstrate their learning by completing chapter 6 Performance Task in student textbook/workbook.	

Objectives (Students will be able to...)	Key Concepts (Students will know...)	Suggested Assessments	Standards (NJSLs)
Solve real-world multiplication problems. Solve real-world division problems. Solve one and two step word problems involving multiplication, division, addition, and subtraction.	Use bar models to solve real-world multiplication problems Use bar models to solve real-world division problems Use bar models to solve two-step word problems using the four operations. <i>Vocabulary:</i> twice	Students will be given a problem such as the following: Maya saved 3 times as much money as Daniel. Hailey saved \$16 less than Daniel. What is a possible amount of money Maya saved? Students will be required to draw a bar model to show their thinking..	3.OA.A.3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 3.OA.D.8. Solve two-step word problems using the four operations. Represent these problems

			<p>using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p> <p>Math Practices SMP 2 Reason abstractly and quantitatively. SMP 4 Model with mathematics. SMP 6 Attend to precision. SMP 7 Look for and make use of structure.</p> <p><u>Interdisciplinary Connections:</u></p> <p>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</p> <p><u>Computer Science:</u></p> <p>8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of data.</p>
--	--	--	---

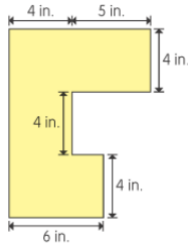
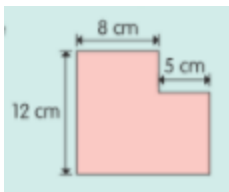
Unit 4 Overview	
Unit Title: Fractions	
Unit Summary: In this unit, students will develop an understanding of fractions as part of a whole. They will compare fractions using benchmark fractions, models, and number lines and use multiplication and division to create equivalent fractions.	
Suggested Pacing: 16 days	
Learning Targets	
Unit Essential Questions: <ul style="list-style-type: none"> Why do we need fractions? 	
Unit Enduring Understandings: <ul style="list-style-type: none"> other numbers exist in addition to whole numbers. the number one can be broken down into fractional parts that are also numbers. 	
Evidence of Learning	
Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice	
Summative Assessments: 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 Assessments: Students will have the opportunity to demonstrate their learning by completing chapter 7 Performance Task in student textbook/workbook.	

Objectives (Students will be able to...)	Key Concepts (Students will know...)	Suggested Assessments	Standards (NJSLS)
Understand Unit fractions Understand a fraction as part of a whole.	Read, write, and identify unit fractions for halves, thirds, fourths, sixths, and eighths. Show fractions and wholes using fraction models, fraction circles, tiles, and number lines. Read, write, and identify fractions of whole with more than 4 parts; identify numerator and denominator. Express whole numbers as fractions; recognize fractions that are equal to whole numbers. Vocabulary: whole, fraction, numerator, denominator, unit fraction,	Students will select a fraction and then show their fraction in the form of a model and place it on a number line	3.NF.A.2b. Represent a fraction a/b on a number line diagram by marking off a length $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line. 3.NF.A.3.c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram. 3.G.A.2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal

			<p>area, and describe the area of each part as $\frac{1}{4}$ of the area of the shape.</p> <p><i>Math Practices</i> SMP 1 Make sense of problems and persevere in solving them. SMP 2 Reason abstractly and quantitatively. SMP 4 Model with mathematics. SMP 6 Attend to precision. SMP 7 Look for and make use of structure. SMP 8 Look for and express regularity in repeated reasoning.</p> <p><u>Interdisciplinary Connections</u></p> <p>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.</p>
Use a variety of strategies to create equivalent fractions	<p>Use models to identify equivalent fractions; use a number line to identify equivalent fractions.</p> <p>Use multiplication and division to find equivalent fractions.</p> <p><i>Vocabulary:</i> equivalent fractions,</p>	Students will select a fraction and will model different ways to find equivalent fractions (such as using number lines or multiplication/division)	<p>3.NF.A3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <p>3.NF.A.3a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.</p> <p>3.NF.A.3b. Recognize and generate simple equivalent fractions, e.g., $\frac{1}{2} = \frac{2}{4}$, $\frac{4}{6} = \frac{2}{3}$. Explain why the fractions are equivalent, e.g., by using a visual fraction model.</p>
Use a variety of strategies to compare and order fractions.	<p>Compare and order fractions; show fractions using models of the same size; compare and order fractions as points or distances on a number line; compare and order fractions using benchmark fractions.</p> <p><i>Vocabulary:</i> like fractions</p>	Students will be given 3 fractions and will be asked to compare and order them using either a model, number line or benchmark fraction	<p>3.NF.A.3d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.</p>

Unit 5 Overview	
Unit Title: Area and Perimeter	
Unit Summary: In this unit, students will learn about the area of plane figures. Students will understand a unit square as a square with side lengths of 1 unit and an area of 1 square unit. Students will find the area of rectangles and squares by using unit squares and by relating addition and multiplication to area. They will work with standard and non-standard units of measurement. Students will also use area models to demonstrate the distributive property. Real world problems involving the area of plane figures will also be covered in this unit. Students will also learn about perimeter as a linear measure and discover various ways to calculate perimeter. The relationship between perimeter and area will be examined as students realize shapes with the same perimeter do not necessarily have the same area.	
Suggested Pacing: 16 days	
Learning Targets	
Unit Essential Questions: <ul style="list-style-type: none"> • Why do we need to measure the area of a surface? • How do we find areas of irregular shapes? • What types of problems involve area? • What types of problems involve perimeter? 	
Unit Enduring Understandings: <ul style="list-style-type: none"> • area measurement involves covering a surface. • area is measured in square units. • area is related to the operations of multiplication and division. • area is a square measure. • perimeter is a linear measure 	
Evidence of Learning	
Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice	
Summative Assessments: Chapter 9 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 chapter 9 Performance Task in student textbook/workbook.	

Objectives (Students will be able to...)	Key Concepts (Students will know...)	Suggested Assessments	Standards (NJSLS)
Understand the concept of area Use a variety of strategies to calculate the area of squares and rectangles.	Understand the meaning of area. Understand a unit square has a side length of 1 unit and an area of 1 square unit.	Students will be given an area and asked to create a plane figure with the given area using squares and half squares (on grid paper). The student will then create a rectangle of the	3.MD.C.5. Recognize area as an attribute of plane figures and understand concepts of area measurement. 3.MD.C. 6.

<p>Solve real world problems involving the area of plane figures.</p>	<p>Use square units (sq. cm, sq. m, sq. in, sq. ft) to find the area of plane figures made of squares and half squares.</p> <p>Compare areas of plane figures and make plane figures of the same area.</p> <p>Use square centimeters, square inches, square meters and square feet to find and compare the area of plane figures.</p> <p>Find the area of rectangles using multiplication and addition.</p> <p>Find the area of composite figures by separating it into rectangles.</p> <p><i>Vocabulary:</i> area, square units, square centimeter (cm²), square inch (in²), square meter (m²), square foot (ft²)</p>	<p>same area using their multiplication knowledge.</p> <p>Students will be given a composite figure and asked to find the total area of the figure, by dividing into rectangles. (Example of a composite figure.)</p> 	<p>Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard units).</p> <p>3.MD.C.7. Relate area to the operations of multiplication and addition.</p> <p><i>Math Practices</i> 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 5 Use appropriate tools strategically. SMP 6 Attend to precision. SMP 8 Look for and express regularity in repeated reasoning.</p> <p><u>Interdisciplinary Connections</u></p> <p>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.</p> <p><u>Career Readiness, Life Literacies, and Key Skills</u></p> <p>9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global</p>
<p>Understand perimeter.</p>	<p>Understand the meaning of perimeter.</p> <p>Find the perimeter of plane figures formed using small squares.</p> <p>Compare the area and perimeters of two plane figures.</p> <p>Find the perimeter of a plane figure by adding its sides.</p> <p>Choose appropriate tools and units of length to measure perimeter.</p> <p>Solve problems involving perimeter.</p> <p><i>Vocabulary:</i> perimeter</p>	<p>Students will be given a plane figure and asked to find the perimeter.</p> <p>Students will be asked to analyze a perimeter problem. Kwan found the perimeter of the figure using only the information shown. The figure is not drawn to scale. Explain how he did it.</p> 	<p>3.MD.D. Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.</p> <p>3.MD.D.8. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.</p>

Unit 6 Overview	
Unit Title: Measurement (Time, Volume, Mass and Data)	
Unit Summary: In this unit, students will learn to tell time to the nearest minute and convert between minutes and minutes and hours. They will solve real world problems involving elapsed time. Students will learn to measure and estimate masses and volumes. Students will learn to interpret data from graphs and create graphs to represent data in real world situations.	
Suggested Pacing: 30 days	
Learning Targets	
Unit Essential Questions: <ul style="list-style-type: none"> • Why does one need to measure? • How does one measure liquids? • How does one measure mass? • How can representing data help us to interpret it and draw conclusions? • How can one determine the best representation to display data? 	
Unit Enduring Understandings: <ul style="list-style-type: none"> • measurement involves units that must match in order to add or subtract them. • different scales are needed to represent various data. 	
Evidence of Learning	
Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice	
Summative Assessments: Chapter 10, 8, & 11 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 chapter 10, 8 & 11 Performance Tasks in student textbook/workbook.	

Objectives (Students will be able to...)	Key Concepts (Students will know...)	Suggested Assessments	Standards (NJSLs)
Chapter 10: Time Solve real world problems involving time.	Write and tell time to the nearest minute. Use the terms “past” and “to” to tell time Convert between minutes and hours and minutes. Add and subtract time with and without regrouping. Find end time, start time, or elapsed time. Solve real-world problems	Students will use a number line to show a start time and end time of a chosen activity and will then calculate the elapsed time of the event.	3.MD.A.1. Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram. <i>Math Practices</i> SMP 1 Make sense of problems and persevere in solving them. SMP 2 Reasons abstractly and quantitatively. SMP 4 Model with mathematics. SMP 5 Use appropriate tools strategically. SMP 6 Attend to precision.

	<p>involving time.</p> <p><i>Vocabulary:</i> past, hour (h), minute (min), elapsed time, timeline</p>		SMP 8 Look for and express regularity in repeated reasoning.
<p>Chapter 8: Measurement</p> <p>Solve real world problems involving mass and volume.</p>	<p>Estimate and find actual masses of objects by using different scales</p> <p>Convert units of measurement between kilograms and grams</p> <p>Estimate and find the volumes of liquids and capacities of containers</p> <p>Convert units of measurement between liters and milliliters</p> <p>Use bar models, addition, subtraction, multiplication and division, to solve one-step real-world problems involving measurement.</p> <p><i>Vocabulary:</i> volume, liter, milliliter, capacity</p>	<p>Students will be asked to draw a bar model to help them solve the following: <i>The capacity of a cup is 230 milliliters.</i> <i>The capacity of a bottle is 4 times the capacity of the cup.</i> <i>What is the total capacity of the cup and the bottle?</i> <i>Give your answer in liters and milliliters.</i></p>	<p>3.MD.A.2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.</p>
<p>Chapter 11: Data: Graphs and Line plots</p> <p>Create graphs to represent and interpret data.</p>	<p>Make picture graphs with scales to present data.</p> <p>Read and interpret picture graphs with scales</p> <p>Make bar graphs with scales to present data</p> <p>Read and interpret data from bar graphs with scales</p> <p>Use a ruler to estimate and measure given lengths to the nearest quarter, half, or whole inch.</p> <p>Record data in a tally chart</p> <p>Show data on a line plot where the horizontal scale is marked off in whole numbers, halves or quarters.</p>	<p>Students will collect data from their classmates, create a table to organize their data and then choose the graph to present their data. Students will create 2 questions for their peers to interpret their data.</p>	<p>3.MD.B.3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</p> <p>3.MD.B.4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.</p> <p><u>Interdisciplinary Connections:</u></p> <p>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.</p> <p>NJSLSA.SL5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.</p> <p><u>Career Readiness, Life Literacies, and Key Skills:</u></p> <p>9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.</p>

			<p>9.4.5.IML.3 Represent the same data in multiple visual formats in order to tell a story about the data.</p> <p><i>Computer Science:</i></p> <p>8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.</p> <p>8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of data.</p>
--	--	--	---

Unit 7 Overview	
Unit Title: Shapes	
Unit Summary: In this unit, students will learn about shapes and the attributes that define them. While exploring shapes, students will learn about angles and parallel lines.	
Suggested Pacing: 11 days	
Learning Targets	
Unit Essential Questions: <ul style="list-style-type: none"> What characteristics define a polygon? 	
Unit Enduring Understandings: <ul style="list-style-type: none"> shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). 	
Evidence of Learning	
Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as Number Talks, Exploration Activities, Class Discussion, Journal Entries, Independent Practice	
Summative Assessments: Chapter 12 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 chapter 12 Performance Task in student textbook/workbook.	

Objectives (Students will be able to...)	Key Concepts (Students will know...)	Suggested Assessments	Standards (NJSLs)
Understand shapes can be classified based on various attributes	Find angles in plane shapes and real world objects Compare angles to a right angle Define and identify perpendicular lines Define and identify parallel lines Identify open and closed figures Identify polygons Identify special polygons; classify polygons by the number of sides, vertices, and angles Identify special quadrilaterals; classify quadrilaterals by parallel sides, length of sides, and angles; draw quadrilaterals that do not fit into subcategories	Students will be given a plane figure (polygon or quadrilateral) and will be asked to identify the figure and list its attributes, number of sides, number of angles, number of vertices as well as identify parallel sides, types of angle and side lengths (e.g. two sides of equal length)	3.MD.D.8. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. 3.G.A.1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. <i>Math Practices:</i>

	<p>Classify polygons and quadrilaterals based on number of sides, length of sides, parallel sides, and types of angles</p> <p><i>Vocabulary:</i> point, line segment, line, endpoint, right angle, perpendicular, parallel, open plane figure, closed plane figure, polygon, vertex, parallelogram, rhombus</p>		<p>SMP 3 Construct viable arguments and critique the reasoning of others. SMP 4 Model with mathematics. SMP 6 Attend to precision. SMP 8 Look for and express regularity in repeated reasoning.</p> <p><u>Interdisciplinary Connections</u></p> <p>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.</p>
--	--	--	--