

<b>Course: Mathematics Grade 4</b>	
<b>Unit #1: Whole Numbers</b>	
<b>Grade Level: Grade 4</b>	<b>Length of Unit: 25 days</b>
<p><b>Unit Rationale:</b>          In this unit, students extend their understanding of place value. They use this understanding to work with comparing and rounding numbers. They then further their understanding of place value by using its properties to add and subtract multi-digit numbers.</p>	
<b>Stage 1 - Desired Results</b>	
<p><b>Understandings:</b></p> <p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> <li>You can use what you know about place value to read, write, and compare multi-digit numbers</li> <li>Knowing that each place in a number is ten times greater than the place to its right can help you determine the value of numbers.</li> <li>You can also use what you know about place value to round numbers, to add and subtract multi-digit numbers.</li> </ul>	<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>How does place value help us read, write, and compare numbers?</li> <li>How can using place value help determine the value of numbers?</li> <li>How can using place value help us round numbers?</li> <li>How can using place value help us add and subtract numbers?</li> </ul>
<p><b>Content:</b></p> <p><i>Students will know...</i></p> <p>LESSON 1</p> <ul style="list-style-type: none"> <li>Use a place-value chart to understand the value of each digit in a number.</li> <li>Identify the value of a digit based on its position in a number</li> <li>Demonstrate how moving from one place-value position to the next greatest position changes the value of a digit by a multiple of ten.</li> <li>Show that any number can be represented in different ways.</li> <li>Use standard form, word form, and expanded form to read and write multi-digit whole numbers.</li> </ul>	<p><b>Skills:</b></p> <p><i>Students will be able to...</i></p> <ul style="list-style-type: none"> <li>Read and write numbers using number names</li> <li>Read and write numbers using expanded form</li> <li>Compare two multi-digit whole numbers</li> <li>Round multi-digit whole numbers</li> <li>Add multi-digit whole numbers</li> <li>Subtract multi-digit whole numbers</li> </ul>

**LESSON 2**

- Use symbols ( $>$ ,  $<$ ,  $=$ ) to show the relationship between two multi-digit numbers
- Compare multi-digit numbers in order to solve word problems

**LESSON 3**

- Round multi-digit numbers to any place.
- Explain how to round a multi-digit number to a specific place value

**LESSON 4**

- 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

**LESSON 5**

- Use place-value strategies to subtract multi-digit whole numbers
- Develop fluency with the standard algorithm for subtraction when subtracting whole numbers up to 999,999
- Use addition to check differences
- Use an estimating strategy with rounded numbers to check for reasonableness of a difference

**MATH IN ACTION**

- Apply multiple skills from the unit to solve real-world problems.
- Understand whole numbers in different forms
- Understand multi-digit addition
- Understand rounding multi-digit numbers
- Estimate a sum

**Vocabulary**

period

standard form

word form

digit

expanded form

place value

compare

equal sign

greater than symbol  
 less than symbol  
 estimate (verb)  
 round  
 reasonable  
 regroup  
 addend  
 algorithm  
 sum  
 algorithm  
 difference  
 estimate (noun)

### **NJ Student Learning Standards - Mathematics**

#### **Content Standards:**

**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.

#### **The Standards for Mathematical Practice:**

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

### **Career Education (Career Readiness, Life Literacies, and Key Skills Practices and 9.2 Standards)**

**9.2.5.CAP.8:** Identify risks that individuals and households face.

**9.2.5.CAP.2:** Identify how you might like to earn an income.

#### **CLKS Practices:**

1. Demonstrate creativity and innovation
2. Utilize critical thinking to make sense of problems and persevere in solving them

**Connected Careers:**

Accountant

**Explanation of how 9.2 standards connect to the unit:**

These standards are connected to the unit through a word problem of things breaking in the household, how much money you have, and if you have enough to fix it. Students will be using subtraction and rounding through this type of word problem. They will be identifying the risk they face in a household by having to pay to get things fixed. Students can also decide how they might like to earn an income to help pay for the things needing to get fixed.

**Explanation of how CLKs connect to the unit:****Demonstrate creativity and innovation**

Students will do this by being able to solve problems in different ways. They will be able to be creative in their thinking of how they solved the problem at hand.

**Utilize critical thinking to make sense of problems and persevere in solving them**

When solving word problems students will need to make a sense of what they need to do in order to solve. Additionally, the first day in each lesson allows the students the opportunity of persevering through a problem by relying on what they have learned in the past.

**Explanation of how Connected Careers connect to the unit:**

In this unit, students learn how to use place value understanding to understand bigger numbers, add, subtract and round. They will learn the skills necessary to be an accountant, who needs to calculate and keep track of numbers.

**Interdisciplinary Standards**

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.

6.1.5.CivicsCM.3: Identify the types of behaviors that promote collaboration and problem solving with others who have different perspectives.

8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

**Explanation of how interdisciplinary standards connect to the unit:**

RI.IT.4.3.

Students will be solving word problems that are surrounding events throughout the text. They will be able to explain what happened, by stating how many people arrived.

6.1.5.CivicsCM.3

Through a discussion of the given text students will be able to see the collaboration amongst people to help the people of Easter island. Literacy and Social Studies Connection - Teacher's Guide pg. 101

- "A Short History of Easter Island," Rounding Numbers Activity Sheet

Students read about the discovery of Easter Island and the history of its inhabitants

8.1.5.AP.1:

There are different algorithms one can use for adding and subtracting. Students may not all use the same algorithm to solve. By sharing how they solved, they are able to compare and try out new strategies, and decide which works best for them.

**Technology Integration (9.4 Standards):**

9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a).

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue (e.g., 4.MD.B.4, 8.1.5.DA.3).

**Explanation of how 9.4 standards connect to the unit:**

9.4.5.CI.3: Students will solve multiple different types of problems. With these problems, they will be able to brainstorm and/or share their thinking surrounding how they solved the problem. By doing this, they are helping others see a new perspective on how to solve the problem.

9.4.5.CI.3: When rounding, a strategy used is students create a number line. This is a visual representation to help them organize their thinking and solve the problem.

**Stage 2- Assessment Evidence:**

**Assessment:**

<b>Formative</b>	Lesson Quizzes (teacher toolbox) - formative assessment Comprehension checks( online teacher toolbox) Small Group assessment (Formative) Conferring sessions (Alternative & Formative) Independent practice (Formative & Summative)
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	Additional practice pages (formative)
<b>Summative</b>	Unit review Unit Test Independent Practice
<b>Alternative</b>	Conferring sessions (Alternative & Formative)
<b>Benchmark</b>	Unit Assessment Diagnostic: September, January, and June
<b>Other</b> (optional)	Diagnostic

### Stage 3 - Learning Plan

#### Learning Activities:

##### Lesson 1: Understand Place Value

- Session 1: Explore: Place Value
- Session 2: Develop: Understanding of Place Value
- Session 3: Refine: Ideas About Place Value

##### Lesson 2: Compare Whole Numbers

- Session 1: Explore: Comparing Whole Numbers
- Session 2: Develop: Comparing Multi-Digit Numbers
- Session 3: Refine: Comparing Whole Numbers

##### Lesson 3: Round Whole Numbers

- Session 1: Explore: Rounding Whole Numbers
- Session 2: Develop: Rounding Whole Numbers
- Session 3: REfine: Rounding Whole Numbers

##### Lesson 4: Add Whole Numbers

- Session 1: Explore: Adding Whole Numbers
- Session 2: Develop: Using Strategies to Add
- Session 3: Develop: Using the Standard Algorithm to Add Greater Numbers
- Session 4: Refine: Adding Whole Numbers

##### Lesson 5: Subtract Whole Numbers

- Session 1: Explore: Subtracting Whole

#### Differentiation:

##### English Language Learners:

- ELL Support: See “Language Development” section in Lesson plan and session plan pages for each lesson
- Lesson 1 ELL activities: pg. 8, 16a
- Lesson 2 ELL activities: pg. 20, 26
- Lesson 3 ELL activities: pg. 32a, 36, 42
- Lesson 4 ELL activities: pg. 48a, 52, 58, 64
- Lesson 5 ELL activities: pg. 70a, 74, 80, 86
- Example Activities
- Listening/Speaking, Levels 1-3 (pg. 8): Point to the digit 2 in the place-value chart for Model It problems 1-2. Ask, “*when you see 2 in the ten thousands, place, value, what is its value?*” Provide a sentence frame if needed: *The value is 20,000*. Continue the process by pointing to the digit 2 in the hundred thousands place. Encourage students to respond using the sentence frame: The twos do not have the same value. (Ask: How do you know?) 200,000 is greater than 20,000.
- Speaking/Writing, Levels 2-4 (p. 12): Read Apply It problem 1. Have students form pairs and restate the problem in their own

### Numbers

- Session 2: Develop: Using Strategies to Subtract
- Session 3: Refine: Using the Standard Algorithm to Subtract Greater Numbers
- Session 4: Refine: Subtracting Whole Numbers

### Math in Action: Work with Whole Numbers

- Session 1: Study an example problem and solution
- Session 2: Persevere on your own

words to their partner. Draw a place-value chart and, as a group, record the number 36,042 on the chart. Ask guided questions to help students through their thinking process. *In the number thirty-six thousand, forty-two, I hear the number thirty-six thousand. How do we record this on the place-value chart?* When the place-value chart is completed, ask students to explain how the number on the chart is different from the one Emma recorded. Ask: What mistake did Emma make?

### ELL: Connect Language Development to Mathematics

#### **Additional ELL support:**

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Board Math: student presentations at boards

#### **Gifted and Talented:**

- Follow Reteach, Extend, Reinforce, and Personalize lessons and activities as stated in Teacher Guide on Lesson Pacing Guide

- page and at end of each Lesson Quiz page
- Extend Activities
- Lesson 1: Mystery Number
- Lesson 2: Let's Make a Comparison
- Lesson 3: Mystery Number
- Lesson 4: Addition Grids
- Lesson 5: Planning a Trip
  
- The task, "Numeral, Word and Expanded Form" can provide practice writing 5-digit numbers in standard, word, and expanded forms.
- The task, "Make the Largest Sum" provides a competitive and strategic practice of adding 5-digit numbers.
- Consider the games "Corn Shucks", "Digit Ski", "Appalachian Steps" and "Valuable Digits!", in Games for Building Conceptual Understanding and Fluency

**Special Education Students:**

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Workstations for struggling students
- Board Math: student presentations at boards

**Students with 504 plans:**

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Extend/Enrichment Activities
- Personalize/i-Ready Lessons
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Project/extended assignment options
- Multiple approaches to problem solving
- Workstations for struggling students
- Board Math: student presentations at boards

**Students at Risk of school failure:**

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving

- Workstations for struggling students
- Board Math: student presentations at boards

**Additional Differentiation: Students at risk, Special education, 504s**

- Additional Practice pages as prescribed in the Lesson Pacing Guides
- **Reteach Differentiation - Lesson 1**
- Grade 3: Lesson 1, Rounding to the nearest ten or hundred
- Grade 4: Lesson 1, Place value in multi-digit whole numbers
- **Reteach Differentiation - Lesson 2**
- Grade 3: Lesson 1, Rounding to the nearest ten or hundred
- Grade 4: Lesson 2, compare multi-digit numbers
- **Reteach Differentiation - Lesson 3**
- Grade 3: Lesson 1, Rounding to the nearest ten or hundred
- Grade 4, Lesson 3: Round multi-digit numbers
- **Reteach Differentiation - Lesson 4**
- Grade 3: Lesson 2, Three-digit addition
- Grade 4: Lesson 4, add multi-digit numbers

In addition to the strategies above, a variety of strategies are used to reach all types of learners. For an additional list of differentiation strategies:

Links to [Math Differentiation Chart](#) and [Accommodations Chart](#)

**Core and Supplementary Instructional Materials**

**Teacher Pedagogical Resources:**

ISBN-13: 978-1-7280-1465-4 - Ready Classroom Mathematics Grade 4 Teacher Guide Volume 1  
 Ready Classroom Mathematics [Teacher Toolbox](#) and Online Resources  
 Hands-on math manipulatives and digital manipulatives

The video, “[Discover Number Patterns with Skip Counting](#)” on [teachingchannel.org](https://www.teachingchannel.org) demonstrates using skip counting by large numbers such as 200 beginning in the thousands so that students practice understanding place value and noticing patterns.

**Student Materials:**

iReady Classroom Mathematics Grade 4 Student Workbooks 1 and 2, Lexile 710L  
 Chromebook  
 Manipulatives and online Math games  
 MyPath online lessons

**Notes:**

**Inclusion of Climate Change Opportunities**



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.

This unit may be leveraged to support this climate change standard by giving students multi-step word problems with adding and subtracting whole numbers, along with rounding. These word problems can include details based on natural resources. For example, “Jen bought a new hybrid car. The car uses less gas than her previous car. In her new car she has saved \$1,245 over the year in gas money. Her old car, she spent \$2,456 in gas. How much more money did she spend on gas last year?”

**Course:** Math 4

**Unit #2:** Operations

**Grade Level(s):** 4th

**Length of Unit:** 24 days

**Unit Rationale:**

**This unit extends students’ understanding of multiplication and division.**

<b>Stage 1 - Desired Results</b>	
<p><b>Enduring Understandings:</b></p> <p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> <li>You can solve problems involving multiplicative comparisons by using multiplication or division.</li> <li>Knowing your basic multiplication facts will help you find the factors of a number.</li> <li>You can use rules to generate or extend a number pattern.</li> </ul>	<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>How do multiplicative comparisons help us solve problems with multiplication or division?</li> <li>How can knowing basic multiplication facts help us find factors of a number?</li> <li>How do rules help us generate or extend number patterns?</li> </ul>
<p><b>Content:</b></p> <p><i>Students will know...</i></p> <p>LESSON 6</p> <ul style="list-style-type: none"> <li>Use a multiplication equation to represent the relationship between two numbers as a multiplicative comparison.</li> <li>Identify a multiplication equation as showing two ways to describe a product as a comparison between two factors.</li> <li>Write an equation to represent a multiplicative comparison described in a word problem.</li> <li>Write a word problem using a multiplicative comparison to describe a given multiplication equation.</li> </ul> <p>LESSON 7</p> <ul style="list-style-type: none"> <li>Use drawings and symbols to represent a word problem involving multiplicative comparison.</li> <li>Use equations to solve for the unknown in multiplicative comparison problems.</li> <li>Solve word problems involving multiplicative comparisons by using multiplication or division.</li> <li>Distinguish between multiplicative comparison and additive comparison.</li> </ul> <p>LESSON 8</p> <ul style="list-style-type: none"> <li>Use basic multiplication facts to list all the factors of a number.</li> <li>Use basic multiplication facts to determine whether a number is a multiple of another number.</li> </ul>	<p><b>Skills:</b></p> <p><i>Students will be able to...</i></p> <p>I can...</p> <ul style="list-style-type: none"> <li>Multiply and divide to solve comparison problems</li> <li>Identify factor repairs for a number</li> <li>Identify multiples of a number</li> <li>Identify prime or composite numbers</li> <li>Describe rules in number and shape patterns</li> <li>Model and solve multi-step word problems using equations</li> </ul>

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- Apply understanding of multiples and factors to solving problems.
- Identify a number as prime or composite.

## LESSON 9

- 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.

## LESSON 10

- 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 problem.
- Use estimation strategies to check that an answer is reasonable.

## MATH IN ACTION

- Apply multiple skills to solve real-world problems.
- Find factors and multiples
- Find factor pairs of a number
- Identify prime and composite numbers
- Represent factor pairs with an area model

**VOCABULARY**

multiplicative comparison

equation

factor

multiplication

multiply

symbol

unknown

divide

division

composite number

factor pair

factors of a number

multiple

prime number  
 array  
 rule  
 pattern  
 expression  
 remainder  
 estimate  
 reasonable  
 Unknown

## **NJ Student Learning Standards - Mathematics**

### **NJ Student Learning Standards**

#### **4.OA.A.1**

Interpret a multiplication equation as a comparison, e.g., interpret  $35 = 5 \times 7$  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.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 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.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. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.

#### **4.NBT.B.4**

With accuracy and efficiency, add and subtract multi-digit whole numbers using the standard algorithm.

#### 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.

#### Mathematical Practice Standards

Practice 1: Make sense of problems and persevere in solving them.

Practice 2: Reason abstractly and quantitatively.

Practice 3: Construct viable arguments and critique the reasoning of others.

Practice 4: Model with mathematics.

Practice 5: Use appropriate tools strategically.

Practice 6: Attend to precision.

Practice 7: Look for and make use of structure.

Practice 8: Look for and express regularity in repeated reasoning.

#### Career Education (Career Readiness, Life Literacies, and Key Skills Practices and 9.2 Standards)

9.2.5.CAP.7: Identify factors to consider before starting a business.

#### CLKS Practices:

1. Act as a responsible and contributing community members and employee
2. Work productively in teams while using cultural/global competence

#### Connected Careers:

Economist

#### Explanation of how 9.2 standards connect to the unit:

When introducing what a factor is, you can introduce the double meaning word of factor and how factors determine things in life. Just like, factors determine the product of a multiplication problem. You can list factors that would be when you are starting a business.

#### Explanation of how CLKs connect to the unit:

1. When students are participating in their discussion of how they solved the problem, they will be contributing to the community of the classroom. They will share their thinking with their classmates and teacher their thinking.
2. Students may be given the opportunity to solve problems with their table groups. During this time, they will work as a team to solve a problem.

**Explanation of how Connected Careers connect to the unit:**

An economist is connected to this unit because patterns will be analyzed and discussed. When being an economist you need to be looking at trends and patterns to help make decisions.

**Interdisciplinary Standards**

**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.

**6.1.5.EconNE.3:** Describe how the development of different transportation systems impacted the economies of New Jersey and the United States

**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.

**Explanation of how interdisciplinary standards connect to the unit:**

RI.IT.4.3- After reading the article, there can be a discussion on the events leading up to Ford's success. They will refer back to text for evidence to support their thinking. **Teachers Guide p. 223**

Materials: "Model T" reading and Activity Sheet Understand Multiplication as a Comparison

Students will read a passage to learn about the origin of the Model T automobile and how the assembly line affected its price.

6.1.5.EconNE.3- The article students are reading relates to the transportation system of cars. It is specifically about the Ford Motor Company and its success.

8.2.5.ED.2: In this unit, students will be collecting information regarding factors and multiples. They will be using models or sketches to help them list out the multiples and factors to help them determine the greatest common multiple or factor is.

**Technology Integration (9.4 Standards):**

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process

9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.

9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

**Explanation of how 9.4 standards connect to the unit:**

9.4.5.CT.1: In this unit, students will be looking for what the greatest common factor of a number is. When doing this, they are identifying and gathering data (factors) of a given number. They are then able to solve the problem by identifying the greatest common factor.

9.4.5.CT.4: In this unit, students will be solving multiplicative comparison problems, and interpret the remainder of a problem. In these academic problems, they are thinking critically about the problem and using different strategies to solve it.

9.4.5.CT.3: The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.

**Stage 2- Assessment Evidence:**

<b>Assessment:</b>	
<b>Formative</b>	<b>Assessment:</b> Lesson Quizzes (teacher toolbox) - formative assessment Small Group assessment (Formative) Conferring sessions (Alternative & Formative) Independent practice (Formative & Summative) Additional practice pages (formative)
<b>Summative</b>	Mid-Unit assessment Unit assessment
<b>Alternative</b>	Conferring sessions (Alternative & Formative)
<b>Benchmark</b>	Unit assessment, Diagnostic in September, January, and June
<b>Other</b> (optional)	

**Stage 3 - Learning Plan**

<b>Learning Activities:</b>	<b>Differentiation:</b>
<p>Lesson 6: Understand Multiplication as Comparison</p> <ul style="list-style-type: none"> <li>● Session 1: Explore: Multiplication as a Comparison</li> <li>● Session 2: Develop: Understanding of Multiplication as a Comparison</li> <li>● Session 3: Refine: Ideas about Multiplication as a Comparison</li> </ul> <p>Lesson 7: Multiplication and Division in Word Problems</p> <ul style="list-style-type: none"> <li>● Session 1: Explore: Multiplication and Division in Word Problems</li> <li>● Session 2: Develop: Multiplication in Word</li> </ul>	<p><b>English Language Learners:</b> Language development activities as described on following pages in Teachers’ Guide: Lesson 6: pg. 108a, 112, 116 Lesson 7: pg. 120a, 124, 130, 136 Lesson 8: pg. 142a, 146, 152, 168, 164 Lesson 9: pg. 170a, 174, 180, 186 Lesson 10: pg. 192a, 196, 202, 208, Example Activities Lesson 6: Listening/Speaking Levels 1-3</p>

## Problems

- Session 3: Develop: Division in Word Problems
- Session 4: Refine: Multiplication and Division in Word Problems

## Lesson 8: Multiples and Factors

- Session 1: Explore: Multiples and Factors
- Session 2: Develop: Multiples
- Session 3: Develop: Factors and Factor Pairs
- Session 4: Develop: Prime and Composite Numbers
- Session 5: Refine: Multiples and Factors

## Lesson 9: Number and Shape Patterns

- Session 1: Explore: Number and Shape patterns
- Session 2: Develop: Number Patterns
- Session 3: Develop: Shape Patterns
- Session 4: Refine: Number and Shape Patterns

## Lesson 10: Model and Solve Multi-Step Problems

- Session 1: Explore: Modeling and Solving Multi-Step Problems
- Session 2: Develop: Modeling Multi-Step Problems
- Session 3: Develop: Solving Multi-Step Problems
- Session 4: Refine: Modeling and Solving Multi-Step Problems

## Math in Action: Solve Multiplication Problems

- Session 1: Study an example problem and solution
- Session 2: Persevere On Your own

Read problem 5 using gestures and voice emphasis as needed. Ask, *What symbols can you draw to represent 3 times as many as 5?* Ask students to work with partners to draw a picture that represents the problems. As partners draw, ask each groups, *How do you represent 3 times as many as 5? What is the total?* Provide sentence frames: I have \_\_\_ groups of \_\_\_\_\_. There are \_\_\_ total. Ask, *What can you draw to represent 3 more than 5.* Ask partners to draw a picture that represents 4 more than 5. Ask, *What is the total?* Provide sentence frames for support.

**Lesson 10: Reading/Speaking Levels 204**

Read the TRY IT word problem aloud with students. Ask them to circle information needed to solve the problem and explain why it is important. Write the following labels: *bar model, addition equation, multiplication equation, and addition and multiplication equation.* Ask students if they can add other models or strategies to the list. Provide an example of each strategy. Have students choose a model or strategy, solve the word problem, and share their answers with partners.

[ELL: Connect Language Development to Mathematics](#)

**Additional ELL support:**

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities
- Small Group review, as needed
- Game Centers
- Lessons taught through group work,

investigation, labs, hands-on manipulatives, technology

- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Board Math: student presentations at boards

In addition to the strategies above, a variety of strategies are used to reach all types of learners. For an additional list of differentiation strategies [Click Here](#)

#### **Gifted and Talented:**

- Grade 4, Lesson 6 - Creating Creatures
- Grade 4, Lesson 7: Mystery Marbles
- Grade 4, Lesson 8: Mystery Number
- Grade 4, Lesson 9: The Bead Machine
- Grade 4, Lesson 10: Silver Coins
- Math in Action: Plant Sale Challenge Activity (pg 214b)
- The Problem of the Month, "[Squirreling It Away](#)" provides contextual practice in using factors.
- The task, "[The Locker Game](#)" provides a problem that helps deepen student understanding of factors and multiples.
- The task, "[Exploring Multiples](#)" provides an opportunity for students to explore multiples visually using a hundred grid.
- Consider the game "Becca's Battle" in [Games for Building Conceptual Understanding and Fluency](#)

#### **Special Education Students:**

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons

- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Workstations for struggling students
- Board Math: student presentations at boards

**Students with 504 plans:**

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Extend/Enrichment Activities
- Personalize/i-Ready Lessons
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology

- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Project/extended assignment options
- Multiple approaches to problem solving
- Workstations for struggling students
- Board Math: student presentations at boards

**Students at Risk of school failure:**

- Additional practice pages as prescribed in Lesson Pacing Guide for each lesson

Lesson 6

- Grade 3, Lesson 4 - Multiplication Concepts and Equations
- Grade 3, Lesson 17 - Multiply and Divide to Solve One-Step Word Problems
- Grade 4, Lesson 6 - Multiplication as Comparison

Lesson 7

- Grade 3, Lesson 12: Write multiplication and division facts
- Grade 3, Lesson 17: Multiply and divide to solve one-step word problems
- Grade 3, Lesson 18, Solve two-step word problems
- Grade 4, Lesson 7: Solve comparison problems

Lesson 8

- Grade 3, Lesson 5 - Multiplication facts with 0, 1, 2, 5, and 10
- Grade 3, Lesson 6: Multiplication facts with 3, 4, and 6
- Grade 3, Lesson 12: Write multiplication and division facts
- Grade 4, Lesson 8: Factors

Lesson 9

- Grade 3, Lesson 13 - Patterns in addition and multiplication
- Grade 4, Lesson 9: Numeric Patterns

Lesson 10

- Grade 3, Lesson 11: Relate multiplication and division
- Grade 3, Lesson 17: Multiply and divide to solve one-step word problems
- Grade 3, Lesson 18: Solve two-step word problems
- Grade 4, Lesson 10: Solve multi-step word problems

#### MATH IN ACTION

- Extra Support Activity - use a table with the PLANT SALE problem
- The task, "[Rounding to the Nearest 100 and 1000](#)" uses a number line to help students round and provides a natural connection to rounding done in Grade 3. The task, "[Rounding to the Nearest 1000](#)" continues building understanding of rounding by using the number line, but students estimate the number's location on the line. The task, "[Rounding on the Number Line](#)" helps students understand the concept of rounding by using the number line.
- The task, "[Prime or Composite?](#)" provides students with a hands-on opportunity to work concretely with factors to identify prime and composite numbers.

Links to [Math Differentiation Chart](#) and [Accommodations Chart](#)

### Core and Supplementary Instructional Materials

#### Teacher Pedagogical Resources:

ISBN-13: 978-1-7280-1465-4 - Ready Classroom Mathematics Grade 4 Teacher Guide Volume 1

Ready Classroom Mathematics [Teacher Toolbox](#) and Online Resources

Hands-on math manipulatives and digital manipulatives

Mathplayground.com has interactive games to practice finding "[Factor Pairs](#)" and "[Pumpkin Multiples](#)".

**Student Materials:**

Ready Classroom Mathematics Grade 4 Student Workbook 1, 710L

Chromebook

Hands-on math manipulatives

**Notes:****Inclusion of Climate Change Opportunities**

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.

To include climate change opportunities, you can create a word problem that includes where a remainder needs to be interpreted. For example, students knowing that water is a natural resource, you could create a word problem with this.

For example, "Sally drinks 13 cups of water in her reusable water bottle. 3 cups of water is the same amount that is in a plastic water bottle. How many plastic water bottles is she saving by drinking in a reusable water bottle?"

<b>Course: 4th Grade Math</b>	
<b>Unit #3: Multi-Digit Operations and Measurement</b>	
<b>Grade Level(s): 4</b>	<b>Length of Unit:26 days</b>
<b>Unit Rationale:</b> This unit extends students' understanding of multi-digit operations and measurement.	
<b>Stage 1 - Desired Results</b>	
<b>Understandings:</b>  <i>Students will understand that...</i> <ul style="list-style-type: none"> <li>● You can use what you know about place value to multiply multi-digit numbers.</li> <li>● You can use what you know about place value to help you divide.</li> <li>● Units of measurement can be divided into smaller units. Knowing how these units relate to one another will help you convert measurements from the larger unit to the smaller unit.</li> <li>● You can use formulas to find the area and perimeter of rectangles.</li> </ul>	<b>Essential Questions:</b> <ul style="list-style-type: none"> <li>● How can we use place value to multiply multi-digit numbers?</li> <li>● How can we use place value to divide?</li> <li>● How can knowing the relationship between units of measurement help us convert measurements?</li> <li>● How can we use formulas to find the area and perimeter of rectangles?</li> </ul>
<b>Content:</b>  <i>Students will know...</i>  <b>LESSON 11</b> <ul style="list-style-type: none"> <li>● Multiply whole numbers of up to four digits by one-digit whole numbers.</li> <li>● Use arrays, area models, and partial products to multiply</li> <li>● Use estimation to determine whether answers are reasonable.</li> </ul> <b>LESSON 12</b> <ul style="list-style-type: none"> <li>● Multiply a two-digit number by a two-digit number.</li> <li>● Use area models and partial products to multiply.</li> <li>● Use estimation to determine whether an answer is reasonable.</li> </ul>	<b>Skills:</b>  <i>Students will be able to...</i>  <b>I can....</b> <ul style="list-style-type: none"> <li>● Multiply a four-digit number by a one-digit number</li> <li>● Multiply a two-digit number by a two-digit number</li> <li>● Use multiplication to convert measurements.</li> <li>● Divide a three-digit number by a one-digit number</li> <li>● Divide a four-digit number by a one-digit number</li> <li>● Use the perimeter formulas for rectangles</li> <li>● Use the area formula for rectangles</li> </ul>

## LESSON 13

- 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.

## LESSON 14

- Divide up to the 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.

## LESSON 15

- 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.

## LESSON 16

- Use the formula for perimeter of a rectangle to solve problems.
- Use the formula for area of a rectangle to solve problems.

## MATH IN ACTION

- Apply multiple skills from the unit to solve real-world problems related to recycling
- Use a formula to find perimeter
- Multiply by a multiple of 10
- Multiply a three-digit and one-digit number
- Multiply 2 two-digit numbers
- Divide a four-digit by a one-digit number
- Subtract multi-digit numbers

**VOCABULARY**

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

**NJ Student Learning Standards - Mathematics**

## 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.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  $700 \div 70 = 10$  by applying concepts of place value and division.

## 4.NBT.A.3

Use place value understanding to round multi-digit whole numbers to any place.

**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.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.*

**The Standards for Mathematical Practice:**

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

**Career Education (Career Readiness, Life Literacies, and Key Skills Practices and 9.2 Standards)**

9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.

**CLKS Practices:**

1. Demonstrate creativity and innovation
2. Utilize critical thinking to make sense of problems and persevere in solving them

**Connected Careers:**

Architect

**Explanation of how 9.2 standards connect to the unit:**

This standard is connected to this unit because during your area and perimeter lessons, you can create a project based demonstration of their understanding. For example, you can have them create their own room, garden, house using area and perimeter for each feature in their creation. By doing this, you can allow the discussion of what they are liking or disliking about the activity, making connections to possible careers.

**Explanation of how CLKs connect to the unit:**

1. This connects to the unit through solving word problems and route problems. Through this unit students will be introduced to different ways of solving multiplication and division problems. This allows them to be creative in their thinking of solving problems.
2. Through the area and perimeter word problems, students need to make sense of the problem. While thinking through the problem, they will need to decide the steps and persevere in solving them.

**Explanation of how Connected Careers connect to the unit:**

In this lesson, students learn about area and perimeter. These skills are necessary to be an architect. An architect needs to calculate square footage and amount of materials needed for projects.

**Interdisciplinary Standards**

**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.

**1.5.5.Cr1a:** Brainstorm and curate ideas to innovatively problem solve during artmaking and design projects.

**8.2.5.ED.2:** Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

**8.2.5.ITH.4:** Describe a technology/ tool that has made the way people live easier or has led to a new business or career.

**Explanation of how interdisciplinary standards connect to the unit:****Literacy Connection (Social Studies)**

Students read “The Bicycle’s First Century” and complete the activity sheet. Students will learn about the design of the first bicycle and how it has evolved, and then employ problem-solving skills and think critically about the facts presented. They will use their understanding of finding the perimeter to complete the activity sheet.

Through the reading of “The Bicycle’s First Century” and the activity sheet, students can hold a discussion. In this discussion, they can describe the events that lead to the bicycles evolution.

**Art:** Have students plan a makeover of their bedroom. Students find the length of each of their bedroom walls and create a drawing of their room on grid paper including windows and doors. Have students find the perimeter and surface area of their bedroom. Place scale furniture patterns on the drawing to try various layouts. Alternatively, students may work together to plan a makeover of your classroom.

This is connected through the project that you can have students complete. Students will brainstorm their ideas for their room, garden, or house and use artmaking and design to make their brainstorm.

**8.2 Standards**

1. This connects to this unit by students working together to solve problems. They all have their own solutions and ways about getting their answers. They will collaborate and discuss by sharing their models they used to show their thinking.
2. When learning multi-digit multiplication and long division, you can have the discussion of how calculators have helped people live an easier life in their jobs. This can also lead to the discussion of the careers a calculator has made easier.

**Technology Integration (9.4 Standards):**

**9.4.5.CI.2:** Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.

**9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process.

**Explanation of how 9.4 standards connect to the unit:**

1. When students are solving their explore problems in the lessons, students can work together to try to solve the problem. Through this, they are expanding their thinking on the topic by seeing others' perspectives on it.
2. When solving word problems, students will read the problem and identify and gather the data or information they need to solve. Also, while doing this, they may identify the data they do not need to solve it.

**Stage 2- Assessment Evidence:****Assessment:**

<b>Formative</b>	Lesson Quizzes (teacher toolbox) Small Group assessment Additional practice pages Conferring sessions
<b>Summative</b>	Unit test Mid-Unit Assessment Independent practice Comprehension Checks
<b>Alternative</b>	Conferring sessions
<b>Benchmark</b>	Mid-Unit Assessment Unit Assessment Diagnostic Assessment: September, January, June

<b>Other</b> (optional)	
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### Stage 3 - Learning Plan

#### Learning Activities:

##### Lesson 11: Multiply by One-Digit Numbers

- Session 1: Explore: Multiplying by One-Digit Numbers
- Session 2: Develop: Multiplying a Three-Digit Number by a One-Digit Number
- Session 3: Develop: Multiplying a Four-Digit Number by a One-Digit Number
- Session 4: Refine: Multiplying by One-Digit Numbers

##### Lesson 12: Multiply by Two-Digit Numbers

- Session 1: Explore: Multiplying by Two-Digit Numbers
- Session 2: Develop: Multiplying by Two-digit Numbers
- Session 3: Refine: Multiplying by Two-Digit Numbers

##### Lesson 13: Use Multiplication to Convert Measurements

- Session 1: Explore: Using Multiplication to convert Measurements
- Session 2: Develop: Converting Units of Weight and Mass
- Session 3: Develop: Converting Units of Liquid Volume
- Session 4: Refine: Using Multiplication to Convert Measurements

##### Lesson 14: Divide Three-Digit Numbers

- Session 1: Explore: Dividing Three-Digit Numbers
- Session 2: Develop: Dividing with Arrays and Area Models
- Session 3: Develop: Dividing with Estimation and Area Models
- Session 4: Refine: Dividing Three-Digit Numbers

##### Lesson 15: Divide Four-Digit Numbers

- Session 1: Explore: Dividing Four-Digit Numbers

#### Differentiation:

##### English Language Learners:

*The ELL Math Resources Folder is located [here](#)*

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Board Math: student presentations at boards

##### Gifted and Talented:

- Lesson 11: Favorite Photos
- Lesson 12: Display of Cans
- Lesson 13: Race Training
- Lesson 14: Packing Boxes
- Lesson 15: Number Strips
- Lesson 16: Designing a Yard
- Math in Action: Challenge Activity (pg. 350b)

- Session 2: Develop: Dividing Four-Digit Numbers
- Session 3: Refine: Dividing Four-Digit Numbers

### Lesson 16: Find Perimeter and Area

- Session 1: Explore: Finding Perimeter
- Session 2: Develop: Finding Perimeter
- Session 3: Develop: Finding Area
- Session 4: Refine: Finding Perimeter and Area

### Math in Action: Multiply and Divide Multi-Digit Numbers

- Session 1: Study an example problem and solution
- Session 2: Persevere on Your own

- The Problem of the Month, "[Measuring Up](#)" (Level B) on [insidemathematics.org](#) could be used to challenge students' ability to solve problems using division and multiplication
- See, "[Thousands and Millions of Fourth Graders](#)" on [illustrativemathematics.org](#) for a challenging problem
- The task, "[Mental Division Strategy](#)" on [illustrativemathematics.org](#) would be ideal to help students develop mental strategies to think about division during instruction.
- The 3 Act Problems, "[Array' bow of Colors](#)" and "[Krispy Kreme Me](#)" could be used as extensions or anchor tasks for lesson 2. Also, consider, "[Olympic Display](#)".
- The 3 Act Problem, "[Modeling Outfits](#)" could be used prior to beginning the unit in order to briefly review multiplication of basic facts.
- The 3 Act Problem, "[The Orange](#)" can be used with lesson 4.
- Consider the games "Carolina Clip-It", "Charlotte Speedway Race", "Multiplication Cover-Up", "Four Quotients", "Race to the Resort", "Mount Mitchell Rock", "Rockingham Remainders" and "The Great Raleigh Road Race" in [Games for Building Conceptual Understanding and Fluency](#)

### Special Education Students:

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction

- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Workstations for struggling students
- Board Math: student presentations at boards

**Students with 504 plans:**

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Extend/Enrichment Activities
- Personalize/i-Ready Lessons
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research

- Diversified difficulty in level of problems
- Project/extended assignment options
- Multiple approaches to problem solving
- Workstations for struggling students
- Board Math: student presentations at boards

**Students at Risk of school failure:**

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Workstations for struggling students
- Board Math: student presentations at boards

**Additional Differentiation: Students at risk, Special education, 504s**

- Additional practice pages as prescribed in Lesson Pacing Guide for each lesson

## Lesson 11

- Grade 3, Lesson 8: Use order and grouping to multiply
- Grade 3, Lesson 9: Use place value to multiply
- Grade 3, Lesson 12: Write multiplication and division facts
- Grade 4, Lesson 11; Multiplying by one-digit numbers

## Lesson 12

- Grade 3, Lesson 8: Use order and grouping to multiply
- Grade 3, Lesson 9: Use place value to multiply
- Grade 3, Lesson 12: Write multiplication and division facts
- Grade 4, Lesson 12: Multiply by two-digit Numbers

## Lesson 13

- Grade 3, Lesson 17: Multiply and divide to solve one-step word problems
- Grade 4, Lesson 13: Find Equivalent Measurements

## Lesson 14

- Grade 3, Lesson 10: Model Multiplication with Arrays
- Grade 3, Lesson 11: Modeling Division
- Lesson 4: Lesson 14: Know Division Facts

## Lesson 15

- Grade 3, Lesson 11: Modeling Division
- Grade 4, Lesson 15: Divide Using Repeated Subtraction

## Lesson 16

- Grade 3, Lesson 14: Finding Area
- Grade 3, Lesson 15: Multiply to Find Area
- Grade 3, Lesson 32: Relating Area and Perimeter
- Grade 4, Lesson 16: Perimeter and Area

## Math in Action

- Extra Support Activity - use area models
- The task, "[Multiplication as Comparison](#)" on [k-5mathteachingresources.com](http://k-5mathteachingresources.com) could be used to help students understand the phrase "times as many" and practice solving using bar models

Links to [Math Differentiation Chart](#) and [Accommodations Chart](#)

### Core and Supplementary Instructional Materials

#### Teacher Pedagogical Resources:

ISBN-13: 978-1-7280-1465-4 - Ready Classroom Mathematics Grade 4 Teacher Guide Volume 1

iReady Classroom Mathematics [Teacher Toolbox](#) and Online Resources

Hands-on math manipulatives and digital manipulatives

#### Additional Resources:

The following videos on YouTube provide explanations of the use of bar models in multiplication and division problems: [Multiplication Model Drawing](#), [Multiplication Comparison](#) (demonstration lesson by Andy Clark), [Division](#), and [Long Divison](#).

The site, [www.mathplayground.com](http://www.mathplayground.com) has tutorials for using bar models to solve problems. There are also games for practicing multiplication and division.

The video, "[A Real-World Geometry Project](#)" on teachingchannel.org shows a Grade 6 teacher providing instruction on a Grade 3 understanding of area and perimeter in order to help students better understand area and perimeter.

The video, "[Perimeter and Area of a Rectangular Object](#)" provides a basic explanation of finding perimeter and area of rectangles.

#### Student Materials:

Student iRCMS Workbook 1, Lexile 710

Chromebook

Manipulatives and Math Games

MyPath online lessons

#### Notes:

#### Inclusion of Climate Change Opportunities



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.

This unit may be leveraged to support climate change through having the students complete a project designing their own room, home, or garden. Through this, you can have a discussion on natural resources used to build each thing and the effect it may have on the climate.

<b>Course: Math Grade 4</b>	
<b>Unit #4: Fractions, Decimals, and Measurement</b>	
<b>Grade Level(s): 4</b>	<b>Length of Unit: 55 days</b>
<b>Unit Rationale:</b> 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.	
<b>Stage 1 - Desired Results</b>	
<b>Enduring Understandings:</b>  <i>Students will understand that...</i> <ul style="list-style-type: none"> <li>● Fractions are numbers that work like whole numbers. Knowing about whole numbers will help you add, subtract, multiply, and compare fractions.</li> <li>● You can use what you know about whole numbers to show, build, and take apart fractions to solve problems.</li> <li>● You can also use what you know about fractions to write and compare decimals</li> </ul>	<b>Essential Questions:</b> <ul style="list-style-type: none"> <li>● How can we use what we know about whole numbers to add, subtract, multiply, and compare fractions?</li> <li>● How can we use what we know about whole numbers to show, build, and take apart fractions?</li> <li>● How can we use what we know about fractions to write and compare decimals?</li> </ul>
<b>Content:</b>  <i>Students will know...</i>  <b>LESSON 17</b> <ul style="list-style-type: none"> <li>● Understand the value of a fraction.</li> <li>● Understand how a fraction model represents a fraction.</li> <li>● Use models to demonstrate that two fractions are equivalent.</li> <li>● Represent equivalent fractions using models.</li> <li>● Multiply and divide to find equivalent fractions.</li> </ul> <b>LESSON 18</b> <ul style="list-style-type: none"> <li>● Use symbols (&lt;, &gt;, =) to compare fractions with different numerators and different denominators.</li> <li>● Recognize that fractions with different</li> </ul>	<b>Skills:</b>  <i>Students will be able to...</i>  <b>Compare fractions with unlike denominators</b> <ul style="list-style-type: none"> <li>● Add and subtract fractions and mixed numbers</li> <li>● Add and subtract fractions in line plots</li> <li>● Multiply a fraction by a whole number</li> <li>● Write decimals as fractions and write fractions as decimals</li> <li>● Compare decimals</li> <li>● Solve problems about time and money</li> <li>● Solve problems about length, liquid volume, mass, and weight</li> </ul>

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denominators and the same numerators represent different values.

- Use common denominators and benchmark fractions to compare fractions with different denominators.
- Recognize that to compare fractions both must refer to the same whole.

## LESSON 19

- 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.

## LESSON 20

- Add fractions with like denominators.
- Subtract fractions with like denominators.
- Decompose fractions as a sum of fractions with the same denominators in more than one day.
- Use fraction models, number lines, and equations to represent word problems.

## LESSON 21

- 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.

## LESSON 22

- Make a line plot that displays data in fractional units.
- Solve addition word problems by using a line

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plot.

- Solve subtraction word problems by using a line plot.

## LESSON 23

- Multiply a unit fraction (numerator of 1) by a whole number.
- Multiply a fraction with a numerator greater than 1 by a whole number.

## LESSON 24

- Solve word problems that involve multiplying a fraction by a whole number.

## LESSON 25

- 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.

## LESSON 26

- Write fractions with denominators of 10 or 100 as decimals.
- Write decimals as fractions with a denominator of 10 or 100.

## LESSON 27

- Compare two decimals to hundredths, using the  $>$ ,  $<$ , and  $=$  symbols.
- Solve word problems involving comparisons of decimals in tenths and in hundredths.

## LESSON 28

- 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.

## LESSON 29

- Solve word problems involving length, liquid

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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 .

**MATH IN ACTION**

- Apply multiple skills from the unit to solve real-world problems related to craft projects
- Write fractions as decimals
- Compare decimals
- Represent decimals with an area model
- Add and subtract like fractions
- Find the perimeter of a rectangle
- Interpret data in a table
- Add and subtract mixed numbers with like denominators
- Subtract fractions from whole numbers
- Divide whole numbers
- Multiply a fraction by a whole number
- Write a mixed number as a fraction

**VOCABULARY**

denominator

equivalent fractions

fraction

numerator

unit fraction

benchmark fraction

common denominator

compare

greater than symbol

less than symbol

numerator

mixed number

data

line plot

multiply

multiplication

product

convert  
equation  
expression  
weight  
convert  
length  
liquid volume  
mass

### **NJ Student Learning Standards - Mathematics**

#### **4.NF.A.1**

Explain why a fraction  $a/b$  is equivalent to a fraction  $(n \times a)/(n \times b)$  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 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.

#### **4.NF.B.3**

Understand a fraction  $a/b$  with  $a > 1$  as a sum of fractions  $1/b$

#### **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. *Examples:*  $3/8 = 1/8 + 1/8 + 1/8$ ;  $3/8 = 1/8 + 2/8$ ;  $2 \frac{1}{8} = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$ .

#### **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.4**

Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

**4.NF.B.4A**

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  $5 \times (1/4)$ , recording the conclusion by the equation  $5/4 = 5 \times (1/4)$ .

**4.NF.B.4B**

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  $3 \times (2/5)$  as  $6 \times (1/5)$ , recognizing this product as  $6/5$ . (In general,  $n \times (a/b) = (n \times a)/b$ .)

**4.NF.B.4C**

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?

**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  $3/10 + 4/100 = 34/100$ . (Clarification: Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade)

**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.

**4.MD.A.1**

Know relative sizes of measurement units within one system of units including km, m, cm; 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.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.

**4.DL.B.5**

Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ). 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.*

**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 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.NBT.B.4**

With accuracy and efficiency, add and subtract multi-digit whole numbers using the standard algorithm.

**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.

**The Standards for Mathematical Practice:**

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
8. Look for and express regularity in repeated reasoning.

**9.2.5.CAP.2:** Identify how you might like to earn an income.

**CLKS Practices:**

1. Act as a responsible and contributing community members and employee
2. Demonstrate creativity and innovation

**Connected Careers:**

Data scientist

**Explanation of how 9.2 standards connect to the unit:**

This standard is connected to this unit because in word problems involving making pizza, or a baked good, it can open a discussion. Here you can discuss what it may be like to own your business and if it is something of interest.

**Explanation of how CLKs connect to the unit:**

1. Throughout the lessons, students will be holding discussions based on their thinking. During these discussions, they will be a contributing member of the classroom.
2. When solving problems, students will demonstrate their creativity. They will demonstrate their creativity by discussion or showing through a model how they solved the problem.

**Explanation of how Connected Careers connect to the unit:**

Being a data scientist you must be able to receive data, create a visual of it and then answer questions about it. In this unit, students will be given data using fractions, create a line plot and then answer questions based off their data. These are skills that a data scientist would use.

**Interdisciplinary Standards**

**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.

**1.5.5.Cr3a:** Reflect, refine, and revise work individually and collaboratively, and discuss and describe personal choices in artmaking.

**8.2.5.ED.3:** Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

**8.1.5.IC.1:** Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes.

**Explanation of how interdisciplinary standards connect to the unit:****Literacy Connection : Science (Teacher Toolbox, Teachers' Guide p. 637)**

Materials: "Gold," Literacy Connection problems

Students will learn about the properties of gold, learn about alloys, and learn how gold is used today.

Students will analyze and think critically about the facts presented. They will use their understanding of fractions to complete the literacy connection problems.

This connects to the unit because through the above activity, students will read and then discuss this article. They will be able to describe gold and its uses for today.

**Art:** Have students draw designs that show examples of mixed numbers and their equivalent improper fractions, then write the mixed number and improper fraction on the back of each design. Students can exchange designs with a partner and guess the mixed number and improper fraction each design represents.

This connects to the unit through the above described activity. The students can reflect on their drawings of a given fraction to ensure they have a correct answer. Then after their exchange of designs, students can discuss why they chose to represent their fractions in the way that they did.

**8.1-8.2 Standards**

During this unit, students will be solving multiple problems that involve multiple steps. Students will follow those step by step directions to given problems. Students will be utilizing various digital tools.

**Technology Integration (9.4 Standards):**

9.4.5.CT.3: Describe how digital tools and technology may be used 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.

**Explanation of how 9.4 standards connect to the unit:**

1. After drawing out fraction models, show students how digital tools also allow you to make fractions. Then, discuss how you can use this to solve problems.

2. During this unit, students will be solving word problems involving fractions where they will need to apply critical thinking. They will be then using problem-solving strategies to help with their academics.

**Stage 2- Assessment Evidence:****Assessment:**

<b>Formative</b>	Lesson Quizzes (teacher toolbox) Comprehension checks Small Group assessment
------------------	------------------------------------------------------------------------------------

	Conferring sessions Independent practice Additional practice pages
<b>Summative</b>	Mid-Unit test Unit assessment
<b>Alternative</b>	Conferring sessions
<b>Benchmark</b>	Diagnostic (see Unit 5) Unit assessment
<b>Other</b> (optional)	

### Stage 3 - Learning Plan

#### Learning Activities:

##### Lesson 17: Understand Equivalent Fractions

- Session 1: Explore: Equivalent Fractions
- Session 2: Develop: Understanding of Equivalent Fractions
- Session 3: Refine: Ideas About Equivalent Fractions

##### Lesson 18: Compare Fractions

- Session 1: Explore: Comparing Fractions
- Session 2: Develop: Using Common Numerators and Denominators
- Session 3: Develop: Using a Benchmark to Compare Fractions
- Session 4: Refine: Comparing Fractions

##### Lesson 19: Understand Fraction Addition and Subtraction

- Session 1: Explore: Fraction Addition and Subtraction
- Session 2: Develop: Understanding of Fraction Addition and Subtraction
- Session 3: Refine: Ideas About Fraction Addition and Subtraction

##### Lesson 20: Add and Subtract Fractions

- Session 1: Explore: Adding and Subtracting Fractions
- Session 2: Develop: Adding Fractions
- Session 3: Develop: Subtracting Fractions

#### Differentiation:

##### English Language Learners:

Language development activities as described on following pages in Teachers' Guide:

- Lesson 17: 366a, 370, 374,
- Lesson 18: 378a, 382, 388, 394
- Lesson 19: 400a, 404, 408,
- Lesson 20: 412a, 416, 422, 428, 434
- Lesson 21: 440a, 444, 450, 456
- Lesson 22: 462a, 466, 472, 478, 484
- Lesson 23: 490a, 494, 498,
- Lesson 24: 502a, 506, 512
- Lesson 25: 518a, 522, 528
- Lesson 26: 534a, 538, 544, 550
- Lesson 27: 556a, 560, 566, 572
- Lesson 28: 578a, 582, 588, 594,
- Lesson 29: 600a, 604, 610, 616, 622,

##### Sample Activities

##### Lesson 20, Session 3

##### Speaking/Writing, Levels 2-4

Use with CONNECT IT Problem 2. Ask students to look at the quotations for the second MODEL IT

- Session 4: Develop: Decomposing Fractions
- Session 5: Refine: Adding and Subtracting Fractions

### Lesson 21: Add and Subtract Mixed Numbers

- Session 1: Explore: Adding and Subtracting Mixed Numbers
- Session 2: Develop: Adding Mixed Numbers
- Session 3: Develop: Subtracting Mixed Numbers
- Session 4: Refine: Adding and Subtracting Mixed Numbers

### Lesson 22: Add and Subtract Fractions in Line Plots

- Session 1: Explore: Adding and Subtracting Fractions in Line Plots
- Session 2: Develop: Representing Data on a Line Plot
- Session 3: Develop: Adding Fractions in Line Plots
- Session 4: Develop: Subtracting Fractions in Line Plots
- Session 5: Refine: Adding and Subtracting Fractions in Line Plots

### Lesson 23: Understand Fraction Multiplication

- Session 1: Explore: Fraction Multiplication
- Session 2: Develop: Understanding of Fraction Multiplication
- Session 3: Refine: Ideas about Fraction Multiplication

### Lesson 24: Multiply Fractions by Whole Numbers

- Session 1: Explore: Multiplying Fractions by Whole Numbers
- Session 2: Develop: Multiplying Fractions by Whole Numbers
- Session 3: Refine: Multiplying Fractions by Whole Numbers

### Lesson 25: Fractions as Tenths and Hundredths

- Session 1: Explore: Fractions as Tenths and Hundredths
- Session 2: Develop: Adding Tenths and Hundredths Fractions
- Session 3: Refine: Fractions as Tenths and Hundredths

### Lesson 26: Relate Decimals and Fractions

- Session 1: Explore: Relating Decimals and

and then answer the following discussion questions:

- What do you notice about the denominators?
- What do you notice about the numerators when you add them?

If students respond with incomplete sentences, restate their responses in complete sentences. For examples, *All the denominators are the same, 6.* Have students reread CONNECT IT problem 2. Have them verbally respond to the question before writing their responses.

Lesson 28, Session 1

Reading/Writing, Levels 1-3

Use with CONNECT IT problem 6. Review with students the different strategies that were used to solve the problem in TRY IT and MODEL ITs. Lead a discussion on the pros and cons of using each strategy. Use the following sentence frames:

To solve this problem I can use \_\_\_\_, \_\_\_\_, or \_\_\_\_

The pros of using \_\_\_\_ are \_\_\_\_\_

The cons of using \_\_\_\_ are \_\_\_\_\_

Ask: *Which strategy do you like best for solving problems about time?* Provide a sentence starter for students to use in written responses: *I like using \_\_\_\_\_.*

[ELL: Connect Language Development to Mathematics](#)

### Additional ELL support:

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities
- Small Group review, as needed
- Game Centers

## Fractions

- Session 2: Develop: Decimals and Fractions
- Session 3; Develop: Writing Decimals as Equivalent Fractions
- Session 4: Refine: Relating Decimals and Fractions

**Lesson 27: Compare Decimals**

- Session 1: Explore: Comparing Decimals
- Session 2: Develop: Comparing Decimals in Hundredths
- Session 3: Develop: Comparing Decimals in Tenths and in Hundredths
- Session 4: Refine: Comparing Decimals

**Lesson 28: Problems About Time and Money**

- Session 1: Explore: Problems About Time and Money
- Session 2: Develop: Solving Problems About Time
- Session 3: Develop: Solving Problems About Money
- Session 4: Refine: Problems About Time and Money

**Lesson 29: Problems About Length, Liquid Volume, Mass, and Weight**

- Session 1: Explore: Problems About Length, Liquid Volume, Mass, and Weight
- Session 2: Develop: Solving Problems About Length
- Session 3: Develop: Solving Problems about Liquid Volume
- Session 4: Develop: Solving Problems About Mass and Weight
- Session 5: Refine: Problems About Length, Liquid Volume, Mass, and Weight

**Math in Action: Use Fractions and Decimals**

- Session 1: Study an example problem and solution
- Session 2: Persevere on your own

- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Board Math: student presentations at boards

In addition to the strategies above, a variety of strategies are used to reach all types of learners. For an additional list of differentiation strategies

[Click Here](#)

**Gifted and Talented:**

- Lesson 17: Water Stations
- Lesson 18: Colorful Quilts
- Lesson 19: Relay Race
- Lesson 20: Addition Grids
- Lesson 21: Filling a Tank
- Lesson 22: How Much Fabric
- Lesson 23: Mystery Equation
- Lesson 24: Fill in the Blanks
- Lesson 25: How Much Farther
- Lesson 26: What's the Cost
- Lesson 27: Mystery Comparisons
- Lesson 28: Carnival
- Lesson 29: Mass Matters
- Math in Action: Challenge Activity, p 628b
- "[Running Laps](#)" on [illustrativemathematics.org](http://illustrativemathematics.org) asks students to demonstrate understanding of fraction equivalence.
- Problem of the Month, "[Party Time](#)" (Level B) on [insidemathematics.org](http://insidemathematics.org) challenges student ability to multiply whole numbers by a fraction and use logical reasoning.
- The 3 Act Problem, "[Do the Dew](#)" would be appropriate for use as an extension or an anchor task.

- The “[Equivalent Fractions Problem](#)” provides a suitable challenge for students in visualizing equivalent fractions.
- Consider the games “Tangram Challenges”, “Terrific Tar Heels”, “Hatteras Hop”, “Finding the Fraction Model” and “Fraction ‘Close To’ Game” in [Games for Building Conceptual Understanding and Fluency](#)
- The task, “[Adding Tenths and Hundredths](#)” challenges students to add together a fraction written in tenths with a fraction written in hundredths.
- The task, “[Using Place Value](#)” could be used prior to the Chapter Review/Test for a challenging review.
- Consider the games “Fraction Go Fish”, “Deci-Mill Dunk”, “Deci-Moves”, in [Games for Building Conceptual Understanding and Fluency](#)
- See the Problem of the Month, “[Diminishing Returns](#)” (Level B) at [insidemathematics.org](http://insidemathematics.org) for a problem utilizing addition and subtraction of decimals
- The tasks, “[Total Ten](#)”, “[Decimal Subtraction Spin](#)”, “[Decimals Magic Squares](#)” and “[Decimal Cross Number Puzzles](#)” provide a variety of ways to practice adding and subtracting decimals
- The problem, “[How Can You Use Old Stamps?](#)” provides a challenging problem involving addition of decimals

### Special Education Students:

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher’s lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities

- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Workstations for struggling students
- Board Math: student presentations at boards

**Students with 504 plans:**

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Extend/Enrichment Activities
- Personalize/i-Ready Lessons
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Project/extended assignment options
- Multiple approaches to problem solving

- Workstations for struggling students
- Board Math: student presentations at boards

**Students at Risk of school failure:**

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Workstations for struggling students
- Board Math: student presentations at boards

**Additional Differentiation: Students at risk, Special education, 504s**

- Additional practice pages as prescribed in Lesson Pacing Guide for each lesson

**Lesson 17**

- Grade 3, Lesson 22: Equivalent fractions
- Grade 3, Lesson 23: Find equivalent fractions
- Grade 3, Lesson 24: Understand Comparing

	<p>Fractions</p> <ul style="list-style-type: none"> <li>● Grade 4, Lesson 17: Equivalent Fractions</li> </ul> <p>Lesson 18</p> <ul style="list-style-type: none"> <li>● Grade 3, Lesson 23: Find Equivalent Fractions</li> <li>● Grade 3, Lesson 25: Use Symbols to Compare Fractions</li> <li>● Grade 4, Lesson 18: Compare Fractions</li> </ul> <p>Lesson 19</p> <ul style="list-style-type: none"> <li>● Grade 3, Lesson 19: Modeling Fractions</li> <li>● Grade 3, Lesson 21: Fractions on a Number Line</li> <li>● Grade 4, Lesson 19: Understand Fraction Addition and Subtraction</li> </ul> <p>Lesson 20</p> <ul style="list-style-type: none"> <li>● Grade 3, Lesson 20: Modeling Fractions</li> <li>● Grade 3, Lesson 21: Fractions on a Number Line</li> <li>● Grade 4, Lesson 20: Add and Subtract Fractions</li> </ul> <p>Lesson 21</p> <ul style="list-style-type: none"> <li>● Grade 3, Lesson 21: Fractions on a Number Line</li> <li>● Grade 4, Lesson 21: Add and subtract mixed numbers</li> </ul> <p>Lesson 22</p> <ul style="list-style-type: none"> <li>● Grade 3, Lesson 26: Fractional Lengths Data on Line Plots</li> <li>● Grade 4, Lesson 22: Using Line Plots</li> </ul> <p>Lesson 23</p> <ul style="list-style-type: none"> <li>● Grade 3, Lesson 20: Modeling Fractions</li> <li>● Grade 3, Lesson 21: Fractions on a Number Line</li> <li>● Grade 4, Lesson 23: Understand Fraction Multiplication</li> </ul> <p>Lesson 24</p> <ul style="list-style-type: none"> <li>● Grade 3, Lesson 17: Multiply and Divide to Solve One-Step Word Problems</li> <li>● Grade 4, Lesson 24: Multiply a Whole Number and a Fraction</li> </ul> <p>Lesson 25</p> <ul style="list-style-type: none"> <li>● Grade 3, Lesson 21: Fractions on a number line</li> <li>● Grade 4, Lesson 25: Add tenths and hundredths</li> </ul> <p>Lesson 26</p> <ul style="list-style-type: none"> <li>● Grade 3, Lesson 21: Fractions on a number</li> </ul>
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	<p>line</p> <ul style="list-style-type: none"> <li>● Grade 4, Lesson 26: Write fractions as decimals</li> </ul> <p>Lesson 27</p> <ul style="list-style-type: none"> <li>● Grade 3, Lesson 22: Equivalent fractions</li> <li>● Grade 3, Lesson 25: Use symbols to compare fractions</li> <li>● Grade 4, Lesson 27: Compare decimals to hundredths</li> </ul> <p>Lesson 28</p> <ul style="list-style-type: none"> <li>● Grade 3, Lesson 18: Solve Two-Step Word Problems</li> <li>● Grade 4, Lesson 27: Solve Measurement Word Problems</li> </ul> <p>Lesson 29</p> <ul style="list-style-type: none"> <li>● Grade 3, Lesson 28: Liquid Volume</li> <li>● Grade 3, Lesson 29: Estimating Mass</li> <li>● Grade 4, Lesson 29: Problems about length, liquid volume, mass, and weight</li> </ul> <p>Math in Action</p> <ul style="list-style-type: none"> <li>● Extra Support Activity - use rectangle model</li> <li>● See the task, "<a href="#">Representing Decimals</a>"</li> <li>● Consider the game, "Fill Two" as shown on the video, "<a href="#">Games for Decimals</a>"</li> </ul> <p>In addition to the strategies above, a variety of strategies are used to reach all types of learners. For an additional list of differentiation strategies:</p> <p>Links to <a href="#">Math Differentiation Chart</a> and <a href="#">Accommodations Chart</a></p>
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### Core and Supplementary Instructional Materials

#### Teacher Pedagogical Resources:

ISBN: 978-1-7280-1466-1- Ready Classroom Mathematics Grade 4 Teacher Guide Volume 2

Ready Classroom Mathematics [Teacher Toolbox](#) and Online Resources

Hands-on math manipulatives and digital manipulatives

The video, "[Singapore Math—Fractions with Different Denominators](#)" on Youtube demonstrates how to use bar models to find common denominators in order to add/subtract unlike fractions.

The video, "[Singapore Math—Fraction of a Number Part 1](#)" on Youtube demonstrates how to use bar models to calculate the fraction of a number.

The site, [www.mathplayground.com](http://www.mathplayground.com) has tutorials for using bar models to solve problems. There are also games for practicing multiplication and division.

**Student Materials:**

I-Ready Classroom mathematics Grade 4 Student Workbook Volume 2 Lexile 710

Chromebook

Manipulatives

MyPath online lessons

**Notes:**



**Inclusion of Climate Change Opportunities**

**4.DL.B.5** Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ). Solve problems involving addition and subtraction of fractions by using information presented in line plots.

In this unit, students will be introduced to line plots through a word problem with earthworms. After solving this problem about earthworms you can discuss the positive impact worms have on our environment.

<b>Course: Math 4</b>	
<b>Unit #5: Geometry &amp; Measurement</b>	
<b>Grade Level(s): 4</b>	<b>Length of Unit: 24 days</b>
<b>Unit Rationale:</b> This unit extends students' understanding of geometry and measurement. Students gain a better understanding of points, lines, line segments, rays, and angles and their relationship within geometric figures and angles.	
<b>Stage 1 - Desired Results</b>	
<p><b>Enduring Understandings:</b></p> <p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> <li>Points, lines, line segments, rays and angles are geometric figures. Knowing about these figures will help you classify shapes based on their attributes.</li> <li>You can use what you know about benchmark angles to estimate the size of an angle, or you can measure it accurately with a protractor.</li> <li>You can use what you know about angles and parallel and perpendicular lines to classify figures.</li> </ul>	<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>How can we use what we know about points, lines, line segments, rays, and angles to help us classify shapes?</li> <li>How can we use benchmark angles to estimate the size of an angle or measure with protractors?</li> <li>How can we use what we know about angles and parallel and perpendicular lines to classify figures?</li> </ul>
<p><b>Content:</b></p> <p><i>Students will know...</i></p> <p>LESSON 30</p> <ul style="list-style-type: none"> <li>Identify and draw points, lines, line segments, rays, and angles and identify them in two-dimensional figures.</li> <li>Recognize an angle as a geometric shape.</li> <li>Identify acute, right, and obtuse angles in two-dimensional figures.</li> <li>Identify and draw parallel and perpendicular lines, distinguish between the two, and identify them in two-dimensional figures.</li> </ul> <p>LESSON 31</p> <ul style="list-style-type: none"> <li>Recognize the relationship between the measure</li> </ul>	<p><b>Skills:</b></p> <p><i>Students will be able to...</i></p> <p>I can...</p> <ul style="list-style-type: none"> <li>Identify points, lines, line segments, rays, and perpendicular and parallel lines</li> <li>Measure angles using a protractor</li> <li>Add and subtract angle measures to solve problems</li> <li>Classify two-dimensional figures based on sides and angles</li> <li>Draw and identify lines of symmetry in shapes</li> </ul>

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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.

## LESSON 32

- 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.

## LESSON 33

- 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)

## LESSON 34

- Recognize lines of symmetry in two-dimensional figures.
- Draw lines of symmetry in two-dimensional figures.

## MATH IN ACTION

- Apply multiple skills from the unit to solve real-world problems related to craft projects
- Classify shapes
- Identify lines of symmetry
- Draw lines of symmetry
- Draw a shape with given properties
- Adding angles

**VOCABULARY**

acute angle

angle  
line  
line segment  
obtuse angle  
parallel lines  
perpendicular lines  
point  
ray  
right angle  
vertex  
degree  
protractor  
obtuse angle  
acute triangle  
equilateral triangle  
hexagon  
isosceles triangle  
obtuse triangle  
polygon  
right triangle  
scalene triangle  
trapezoid (exclusive)  
trapezoid (inclusive)  
triangle  
rhombus  
parallelogram  
line of symmetry

**NJ Student Learning Standards**

## 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.4**

Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

**4.M.B.4.A**

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  $\frac{1}{360}$  of a circle is called a "one-degree angle," and can be used to measure angles.

**4.M.B.4.B**

An angle that turns through  $n$  one-degree angles is said to have an angle measure of  $n$  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.

**The Standards for Mathematical Practice:**

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

**Career Education (Career Readiness, Life Literacies, and Key Skills Practices and 9.2 Standards)**

9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills and certification (e.g, life guards, child care, medicine, education) and examples of these requirements.

**CLKS Practices:**

1. Act as a responsible and contributing community members and employee
2. Utilize critical thinking to make sense of problems and persevere in solving them

**Connected Careers:**

Interior designer

**Explanation of how 9.2 standards connect to the unit:**

This standard is connected to the unit because while learning about angles, lines, and symmetry a discussion can be brought about of why you may need to know this outside of math class. It can be connected to different jobs, and having discussions of these math skills they need in order to be successful.

**Explanation of how CLKs connect to the unit:**

1. This practice is connected to the unit because students will be participating in their classroom community through discussion. Students will be able to partake in discussions by contributing and being responsible by following discussion expectations.
2. This practice is connected to the unit because students will be thinking about problems presented to them. They will be processing the information given to them while solving the given problem.

**Explanation of how Connected Careers connect to the unit:**

The career of interior designer is connected to this unit because they use the skills that are covered in the unit regularly. While designing and decorating homes, they recall their skills of symmetry and lines.

**Interdisciplinary Standards**

**SL.PE.4.1.D** Review the key ideas expressed and explain their own ideas and understandings in light of the discussion.

**4-ESS2-2.** Analyze and interpret data from maps to describe patterns of Earth's features.

**Explanation of how interdisciplinary standards connect to the unit:**

Reading: This standard connects to the unit because through the read aloud students are seeing real life examples of symmetry in nature. They will be able to hold a discussion of these examples, explain their thinking, and think of other examples. Students will read aloud "Symmetry in Nature" by Allyson Valentine Schrier, which demonstrates the presence of symmetry in nature in objects such as ferns, butterflies, starfish, and faces.

Science: This standard connects to the unit because on maps, you can discuss observations of types of lines on the given map. Students will analyze the data from the map to describe the patterns of lines they see. Students find examples of types of lines on maps.

**Technology Integration (9.4 Standards):**

9.4.5.Cl.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's

thinking about a topic of curiosity.

9.4.5.TL.5: Collaborate digitally to produce an artifact.

**Explanation of how 9.4 standards connect to the unit:**

9.4.5.CI.3: Students will be given opportunities to solve problems through an explore lesson where they can work together to expand their thinking of the given problem. Working in groups will allow for diverse perspectives.

9.4.5.TL.5: As a project to end the unit, you can have students work collaboratively on creating a symmetric picture on google slides, using the shapes and lines tool. This connects to the standard because this project is being created digitally producing a symmetric picture.

**Stage 2- Assessment Evidence:**

**Assessment:**

<b>Formative</b>	<b>Assessment:</b> Lesson Quizzes (teacher toolbox) Comprehension checks (online) Small Group assessment Conferring sessions Independent practice Additional practice pages
<b>Summative</b>	Unit test (Summative)
<b>Alternative</b>	Conferring sessions (Alternative & Formative)
<b>Benchmark</b>	End of the year diagnostic (June)
<b>Other</b> (optional)	

**Stage 3 - Learning Plan**

**Learning Activities:**

**Lesson 30: Points, Lines, Rays, and Angles**

- Session 1: Explore: Points, Lines, Rays, and Angles
- Session 2: Develop: Points, Lines, Line Segments, and Rays
- Session 3: Develop: Identifying Angles

**Differentiation:**

**English Language Learners:**

**ELL Students**

Language development activities as described on following pages in Teachers' Guide:

- Session 4: Develop: Parallel and Perpendicular Lines
- Session 5: Refine: Points, Lines, Rays, and Angles

**Lesson 31: Angles**

- Session 1: Explore: Angles
- Session 2: Develop: Using a Protractor
- Session 3: Develop: Drawing Angles
- Session 4: Refine: Angles

**Lesson 32: Add and Subtract with Angles**

- Session 1: Explore: Adding and Subtracting with Angles
- Session 2: Develop: Combining Angles
- Session 3: Develop: Finding Unknown Angle Measures
- Session 4: Refine: Adding and Subtracting with Angles

**Lesson 33: Classify Two-Dimensional Figures**

- Session 1: Explore: Classifying Two-Dimensional Figures
- Session 2: Develop: Sorting Shapes Based on Sides
- Session 3: Develop: Sorting Shapes Based on Angles
- Session 4: Develop: Sorting Triangles
- Session 5: Refine: Classifying Two-Dimensional Figures

**Lesson 34: Symmetry**

- Session 1: Explore: Symmetry
- Session 2: Develop: Finding and Drawing a Line of Symmetry
- Session 3: Refine: Symmetry

**Math in Action: Classify Shapes and Angles**

- Session 1: Study an example problem and Solution
- Session 2: Persevere on your own

- Lesson 30: 644a, 648, 654, 660, 666,
- Lesson 31: 672a, 676, 682, 688,
- Lesson 32: 694a, 698, 704, 710,
- Lesson 33: 716a, 720, 726, 732, 738,
- Lesson 34: 744a, 748, 754,

**Example Activities**

Lesson 30, Session 4

Speaking/Writing Levels 1-3

Read APPLY IT problems to students. Assign each student a partner. Cut out large replicas of the two shapes and give each student pair a set. WRITE the following terms on sentence strips: line segments, angles, parallel sides, acute angles, obtuse angles. Display the term *line segment*. Have students point to the line segments in their shapes. Ask: How many line segments do you see in each shape? Provide a sentence frame to aid student responses. *I see \_\_\_ line segments..* Say: Each shape has 4 line segments. Continue the process for the remaining terms. Ask: *How are the shapes alike?* Have partners use a sentence starter for written responses: *Each shape has \_\_\_\_\_.*

Lesson 32, Session 2

Reading/Writing Levels 2-4

Rewrite CONNECT IT problem 5 in list form to support student comprehension. Draw an illustration of a large angle composed of three smaller angles. Point to your drawing as students choral read the following with you:  
*You know the measure of the large angle. You know the measure of two of the smaller angles. You do not know the measure of the third small angle. How can you find the measure of the third small angle?* Have students verbally explain before writing their explanations. Encourage students to use the sequencing terms first, next, then, and finally in their responses.

[ELL: Connect Language Development to Mathematics](#)

**Additional ELL support:**

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Board Math: student presentations at boards

**Gifted and Talented:**

- Lesson 30: New Roads
- Lesson 31: Angles in Shapes
- Lesson 32: Angles in Triangles
- Lesson 33: White One is Different
- Lesson 34: Mystery Shapes
- Math in Action: Challenge Activity, pg 760b
- The task, "[Measuring Angles](#)" at [illustrativemathematics.org](http://illustrativemathematics.org) provides additional experience drawing and measuring angles and developing an understanding of the additive structure of angles.
- The task, "[Finding an Unknown Angle](#)" provides a problem in which students must find the measurement of an angle in a figure.
- The task, "[Angles in Circles](#)" provides practice measuring angles and looking for relationships between angles and circle

size.

- Other tasks that provide practice drawing and measuring angles are, "[Angle Barrier Game](#)", and "[How Many Degrees?](#)".
- The task, "[The Geometry of Letters](#)" has students analyze the geometry of letters. They review angles and identify perpendicular and parallel line segments. The task, "[Alphabet Lines](#)" is similar but has students create letters on a geoboard.
- The task, "[What Shape Am I?](#)" challenges the students to draw quadrilaterals based on definitions (including parallel). The task, "[Quadrilateral Criteria](#)" gives students criteria for building quadrilaterals on a geoboard and then identifying the shape created.
- The task, "[Defining Attributes of Rectangles and Parallelograms](#)" has students analyze drawn figures and identify angles and types of line segments.
- For additional practice with line symmetry see the task, "[Finding Lines of Symmetry](#)".
- The task, "[Lines of Symmetry for Triangles](#)" provides practice with line symmetry and reviews previous learnings about triangle types.
- The task, "[Lines of Symmetry for Quadrilaterals](#)" practices line symmetry with quadrilaterals while the task, "[Lines of Symmetry for Circles](#)" practices with circles.

**Special Education Students:**

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons

- Build Your Vocabulary activities
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Workstations for struggling students
- Board Math: student presentations at boards

**Students with 504 plans:**

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Extend/Enrichment Activities
- Personalize/i-Ready Lessons
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Project/extended assignment options

- Multiple approaches to problem solving
- Workstations for struggling students
- Board Math: student presentations at boards

**Students at Risk of school failure:**

The following is a list of instructional strategies used throughout the unit. Other modifications are used in the classroom and are noted in the teacher's lesson plans

- Prepare/Ready Prerequisite Lessons
- Reteach/Tools for Instruction
- Reinforce/Math Center Activities
- Personalize/i-Ready Lessons
- Build Your Vocabulary activities
- Student Handbook Mathematical Language Reference Tool
- Small Group review, as needed
- Game Centers
- Lessons taught through group work, investigation, labs, hands-on manipulatives, technology
- Real world applications through lessons, projects, and research
- Diversified difficulty in level of problems
- Multiple approaches to problem solving
- Workstations for struggling students
- Board Math: student presentations at boards

**Additional Differentiation: Students at risk, Special education, 504s**

Additional practice pages as prescribed in Lesson Pacing Guide for each lesson

Lesson 30

- Grade 3, Lesson 30: Categories of Shapes
- Grade 4, Lesson 30: Rays and Angles

## Lesson 31

- Grade 3, Lesson 30: Categories of Shapes
- Grade 4, Lesson 31: Measure Angles

## Lesson 32

- Grade 3, Lesson 30: Categories of Shapes
- Grade 4, Lesson 32: Solve for Angle Measures

## Lesson 33

- Grade 3, Lesson 30: Categories of Shapes
- Grade 3, Lesson 31: Categories of Plane Figures
- Grade 4, Lesson 33: Attributes of Shapes

## Lesson 34

- Grade 3, Lesson 30: Categories of Shapes
- Grade 3, Lesson 33: Partitioning Shapes
- Grade 4, Lesson 34: Lines of Symmetry

## Math in Action

- Extra Support Activity - drawing and labeling angles
- On YouTube, the video, "[Angle Basics](#)" provides a basic description of angles (names and types) and the video "[Math Antics—Angles & Degrees](#)" provides a background explanation of how and why angles are measured in degrees.

In addition to the strategies above, a variety of strategies are used to reach all types of learners. For an additional list of differentiation strategies [Click Here](#)

[Math Differentiation Accommodations Chart](#)

### Core and Supplementary Instructional Materials

#### Teacher Pedagogical Resources:

ISBN: 978-1-7280-1466-1- Ready Classroom Mathematics Grade 4 Teacher Guide Volume 2

I-Ready Classroom Mathematics [Teacher Toolbox](#) and Online Resources

Hands-on math manipulatives and digital manipulatives

[Mathplayground.com](#) has several interactive online games that practice estimating and measuring angles. The video, “[Exploring Symmetry Through Dance](#)” on teachingchannel.com demonstrates using dance/physical movement to learn about symmetry.

The video, “[Maths Learning: Learn Symmetry and Its Uses](#)” on YouTube provides explanations and examples of symmetry. The video, “[Rotational Symmetry](#)” explains rotational symmetry.

**Student Materials:**

I-Ready Classroom Student workbook Volume 2 Lexile 710

Chromebook

Manipulatives

**Notes:**

**Inclusion of Climate Change Opportunities**



This has been addressed within other units in the course