

Washington Township School District



The mission of the Washington Township Public Schools is to provide a safe, positive, and progressive educational environment that provides opportunity for all students to attain the knowledge and skills specified in the NJ Learning Standards at all grade levels, so as to ensure their full participation in an ever-changing world as responsible, self-directed and civic-minded citizens.

Course Title:	Math				
Grade Level(s):	4				
Duration:	Full Year:	х	Semester:	Marking Period:	
Course Description:	Eureka Math ² is designed to build enduring knowledge of mathematics through rigorous instruction that meets the unique needs of the learning community. The program focuses on accessibility, coherence, and conceptual understanding, with models, ideas, and strategies that connect across units and grade levels. In Grade 4, students extend previous understandings of multiplication and division to multiply and divide with larger numbers. They also compute with fractional units and develop an understanding of tenths and hundredths as place value units.				
Grading Procedures:	Major Assessments (Tests): 60% Minor Assessments (Quizzes): 40% Scale: A = 90%-100% B = 80%-89% C = 70%-79% D = 60%- 69% F = 0% - 59%				
Primary Resources:	Eureka Math Squ	uared by (Great Minds		

Washington Township Principles for Effective Teaching and Learning

- Implementing a standards-based curriculum
- Facilitating a learner-centered environment
- Using academic target language and providing comprehensible instruction
- Adapting and using age-appropriate authentic materials
- Providing performance-based assessment experiences
- Infusing 21st century skills for College and Career Readiness in a global society

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	Written:	August 2021 by Danielle Narcisi
	Revised:	July 2024 by Suzanne Brennan
BOE	Approval:	

Unit Title: Module 1: Place Value Concepts for Addition and Subtraction

Unit Description: In module 1, students use multiplicative comparisons to describe place value relationships and the relative sizes of metric units. They build fluency with the standard algorithm for addition and subtraction with numbers of up to 6 digits.

Unit Duration: 28 Days

Desired Results

Standard(s):

- 4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
- 4.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 wholenumber 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 ÷ 70 = 10 by applying concepts of place value and division.
- 4.NBT.A.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
- 4.NBT.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.
- 4.M.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.

Understandings:	Essential Questions:		
 Topic A: I can identify, represent, and interpret multiplicative comparisons in patterns, tape diagrams, multiplication equations, measurements, and units of money. I can describe the relationship between quantities as <i>times as much as</i> or use other language as applicable to a given context (e.g., <i>times as many as, times as long as, times as heavy as</i>). I can use multiplication or division to find an unknown quantity in a comparison. 	 <i>Topic A:</i> How can you describe a multiplication relationship between numbers? How can multiplication equations and tape diagrams represent <i>times as many</i> situations? How do you decide when to multiply or divide to solve times as many problems? How can thinking about multiplication with an unknown factor help you solve <i>times as many</i> problems? How can you describe the relationship between measurements by using multiplication? 		

Topic B:

- I can name the place value units of ten thousand, hundred thousand, and million.
- I can recognize the multiplicative relationship between place value units—the value of a digit in one place is ten times as much as the value of the same digit in the place to its right.
- I can write and compare numbers with up to 6 digits in standard, expanded, word, and unit forms.

Topic C:

- I can name multi-digit numbers in unit form in different ways by using smaller units (e.g., 245,000 as 24 ten thousands 5 thousands or 245 thousands), and they find 1 more or 1 less of a given unit in preparation for rounding on a vertical number line.
- I can round four-digit, five-digit, and six-digit numbers to the nearest thousand, ten thousand, and hundred thousand.
- I can determine an appropriate rounding strategy to make useful estimates for a given context.

Topic D:

- I can build fluency with addition and subtraction of numbers of up to 6 digits by using the standard algorithm.
- I can add and subtract to solve two-step and multi-step word problems.
- I can round to estimate the sum or difference and check the reasonableness of my answers.

Topic E:

- I can use multiplicative comparisons to describe the relative sizes of metric units of length (kilometers, meters, centimeters), mass (kilograms, grams), and liquid volume (liters, milliliters).
- I can express larger units in terms of smaller units and complete conversion tables.
- I can add and subtract mixed unit measurements.

- How is composing units of money similar to composing place value units?
- How can we use multiplication to describe the relationship between different units of money?

Topic B:

- What strategies can you use to help you count your collection?
- What place value patterns help you name larger units?
- How is a place value unit related to the unit to its right?
- How are multiplying units by ten and dividing units by ten similar and different?
- What makes representing numbers by using place value disks different from representing them in unit form?
- How are unit form and expanded form similar to and different from standard form?
- Why do we represent numbers in different ways?
- How do patterns in the place value chart help us represent numbers in different ways?
- How are units important when comparing numbers?
- How are digits important when comparing numbers?

Topic C:

- How can a place value chart help us rename numbers?
- What strategies can we use to rename numbers in unit form?
- What strategies can you use to find 1 thousand, 10 thousand, and 100 thousand more than or less than a number?
- How can you determine and apply rules in number patterns?
- What information is needed when rounding a number to the nearest thousand?
- How can thinking about a number in unit form help you when rounding numbers?
- How is rounding to the nearest ten thousand or hundred thousand similar to rounding to the nearest ten or hundred?
- How can we use place value reasoning to round numbers without using a number line?
- What is useful about rounding numbers to various place values?
- Why are rounding conventions sometimes changed?
- How can we justify our estimation strategy?

Topic D:

• What models can we use to represent the standard algorithm?

	 How does place value help us use the standard algorithm? What models can we use to represent the standard algorithm? How does place value help us use the standard algorithm? How is place value applied in the standard algorithm for subtraction? Why are estimation and addition useful when subtracting multi-digit numbers? Why can we use what we know about subtracting with smaller numbers to help us subtract with larger numbers? How can you use what you already know about renaming units to subtract numbers with many renamings? What are efficient strategies for subtracting from a total that has many zeros? How can you use an estimate to determine whether your answer is reasonable when solving two-step word problems? How can tape diagrams help us organize the information in multi-step word problems? What helps us solve word problems efficiently?
Assessme	 How can we use what we know about place value to help us work with metric units? Why is thinking about place value helpful when working with metric units?
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Assessments:

- Module 1 Equip Pre Assessment
- Exit Slips
- Topic Quizzes (A E)
- Module 1 Assessment

Benchmarks:

• The iReady Assessment is administered in the fall and winter.

Learning Plan

Module 1:

Topic A: Multiplication as Multiplicative Comparison Lesson #1: Interpret multiplication as multiplicative comparison

Standard: 4.OA.A.1, 4.OA.A.2

Mathematical Practice: 7

Target: Interpret multiplication as multiplicative comparison.

Learning Activities:

Fluency – Students find a product or quotient to prepare for multiplicative patterns and multiplicative comparisons; write and complete an equation to represent a tape diagram to prepare for similar work with multiplicative comparisons.

Launch – Students examine and describe additive and multiplicative shape patterns.

<u>Learn</u> – Students use sticky notes and multiplicative patterns to relate multiplication to times as many; draw and interpret tape diagrams that represent multiplicative comparisons; match various representations of multiplicative comparison situations; complete problem set.

Land – Debrief: Facilitate a discussion about using *times as many* to describe multiplication.

Daily Exit Ticket: Draw models and write equations to represent multiplicative comparisons.

Resources: Sticky notes, Multiplicative Comparison Match Cards, dry erase marker, personal whiteboard, personal whiteboard eraser

Lesson #2: Solve multiplicative comparison problems with unknowns in various positions

Standard: 4.OA.A.1, 4.OA.A.2

Mathematical Practice: 7

Target: Solve multiplicative comparison problems with unknowns in various positions.

Learning Activities:

<u>Fluency</u> – Students construct a number line with their fingers while counting aloud to develop familiarity with counting the math way; find a product or quotient to prepare for multiplicative comparisons with unknowns in various positions; write and complete an equation to represent a tape diagram to prepare for similar work with multiplicative comparisons.

<u>Launch</u> – Students describe multiplicative patterns by using equations and times as many statements. <u>Learn</u> – Students represent various multiplicative comparison situations with sticky notes, tape diagrams, and equations; decide how to solve multiplicative comparison problems with unknowns in various positions; model and solve a multiplicative comparison word problem with a smaller unknown; complete problem set. <u>Land</u> – *Debrief:* Facilitate a discussion about when to use multiplication or division to solve multiplicative comparison problems.

Daily Exit Ticket: Complete multiplicative comparisons and write multiplication equations.

Resources: Sticky notes, dry erase marker, personal whiteboard, personal whiteboard eraser Lesson #3: Describe relationships between measurements by using multiplicative comparison

Standard: 4.OA.A.1, 4.OA.A.2

Mathematical Practice: 2

Target: Describe relationships between measurements by using multiplicative comparison.

Learning Activities:

Fluency – Students construct a number line with their fingers while counting aloud and model compositions to prepare for place value concepts beginning in lesson 5; read a measurement scale to determine a weight or liquid volume to prepare for connecting multiplicative comparisons and measurement units; multiply a one-digit number by a multiple of 10 in unit and standard form to maintain fluency with the skill from grade 3. **Launch** – Students use multiplication to compare the weights of two objects and the liquid volumes in two containers.

<u>Learn</u> – Students determine and describe multiplicative relationships with weight, liquid volume, and capacity; determine and describe multiplicative relationships with height, length, and width; solve a multiplicative comparison word problem with an unknown multiplicative relationship; complete problem set. <u>Land</u> – *Debrief:* Facilitate a discussion about using context to determine how to describe the multiplicative comparison.

Daily Exit Ticket: Use Read-Write-Draw process to solve multiplicative comparison number stories.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser Lesson #4: Represent the composition of larger units of money by using multiplicative comparison

Standard: 4.OA.A.1, 4.M.A.1

Mathematical Practice: 7

Target: Represent the composition of larger units of money by using multiplicative comparison.

Learning Activities:

<u>Fluency</u> – Students construct a number line with their fingers while counting aloud and model compositions to prepare for place value concepts; read a measurement scale to determine a weight or liquid volume and complete a multiplicative statement to develop an understanding of multiplicative comparisons and measurement units; multiply a one-digit number by a multiple of 10 to maintain fluency with the skill from grade 3.

Launch – Students see the relationship between place value units and the values of pennies, dimes, and dollars.

<u>Learn</u> – Students use multiplicative comparison to represent the relationship between units of money; draw tape diagrams to represent the multiplicative relationships between units of money; complete problem set. <u>Land</u> – *Debrief:* Facilitate a discussion about using multiplicative comparison and composing new units of money.

Daily Exit Ticket: Identify similarities and differences between conversions in a conversion table.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser

Topic B: Place Value and Comparison within 1,000,000

Lesson #5: Organize, count, and represent a collection of objects

Standard: 4.NBT.A.2

Mathematical Practice: 5

Target: Organize, count, and represent a collection of objects.

Learning Activities:

<u>Fluency</u> – Students use unit form to identify a two- or three-digit number modeled with place value disks and rename ones or tens to build place value understanding.

Launch – Students examine charts and discuss composing place value units.

<u>Learn</u> – Students use self-selected strategies to organize and count a collection and to record their process; discuss strategies for organizing and compare their efficiency; use what they know about ones, tens, hundreds, and thousands to name larger place value units; complete problem set.

Land – Debrief: Facilitate a discussion about how the organization of a collection helps students find the total.

Daily Exit Ticket: Analyze and reflect on strategies used to organize and count a collection of money.

Resources: Money Counting Collection, Partial Place Value Chart to Millions, organizational tools, dry erase marker, personal whiteboard, personal whiteboard eraser

Lesson #6: Demonstrate that a digit represents 10 times the value of what it represents in the place to its right

Standard: 4.OA.A.1, 4.NBT.A.1

Mathematical Practice: 8

Target: Demonstrate that a digit represents 10 times the value of what it represents in the place to its right.

Learning Activities:

Fluency – Students construct a number line with their fingers while counting aloud and model compositions to develop fluency with counting within 100,000; use unit form to identify a three- or four-digit number modeled with place value disks and rename tens or hundreds to build place value understanding find a product and then describe a multiplication equation by using 10 *times as much* to prepare for using the place value chart to identify patterns.

Launch – Students apply 10 *times as much* thinking by drawing dots to recognize the magnitude of 1 million.

<u>Learn</u> – Students use 10 *times as much* to describe the relationship between place value units; use multiplication on the place value chart, unit form, and standard form to demonstrate place value relationships; use unknown factor equations to divide place value units by 10; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about how to use place value to determine the values of digits.

Daily Exit Ticket: Determine how many times greater the value of a digit is than another digit.

Resources: 10 Times as Much Chart, sticky notes, dry erase marker, personal whiteboard, personal whiteboard eraser

Lesson #7: Write numbers to 1,000,000 in unit form and expanded form by using place value structure

Standard: 4.NBT.A.2

Mathematical Practice: 8

Target: Write numbers to 1,000,000 in unit form and expanded form by using place value structure.

Learning Activities:

Fluency – Students find a product and then describe a multiplication equation by using 10 *times as much* to prepare for using the place value chart to identify patterns; construct a number line with their fingers while counting aloud and model compositions to develop fluency with counting within 1,000,000; write the standard form of a two- or three-digit number given in unit form to prepare for writing numbers within 1,000,000.

Launch – Students skip-count and use place value language to describe patterns in the count.

<u>Learn</u> – Students represent numbers by using place value disks and then write and say the numbers in unit form; compare two different ways to express a number in expanded form and relate them to place value; complete problem set.

Land – Debrief: Facilitate a discussion that emphasizes place value in large numbers and unit and expanded forms.

Daily Exit Ticket: Write numbers in expanded form.

Resources: Markers, place value disks set, dry erase marker, personal whiteboard, personal whiteboard eraser

Lesson #8: Write numbers to 1,000,000 in standard form and word form

Standard: 4.NBT.A.2

Mathematical Practice: 3

Target: Write numbers to 1,000,000 in standard form and word form.

Learning Activities:

<u>Fluency</u> – Students write the standard form of a two- or three-digit number given in word form to prepare for writing numbers; identify a place value and the value of a digit in a three- or four-digit number and then write the number in expanded form to build place value understanding.

<u>Launch</u> – Students relate numbers expressed in Egyptian hieroglyphics to numbers in expanded form. <u>Learn</u> – Students relate comma use to patterns in the place value chart and identify the role of commas in standard and word forms; group thousands to write numbers in word form and standard form; use place value to write numbers expressed in expanded form in standard form; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about representing numbers in various forms.

Daily Exit Ticket: Write numbers using commas in standard and word form.

Resources: Place value cards to millions, Place Value Chart to Millions, dry erase marker, personal whiteboard, personal whiteboard eraser

Lesson #9: Compare numbers within 1,000,000 by using >, =, <

Standard: 4.NBT.A.2

Mathematical Practice: 6

Target: Compare numbers within 1,000,000 by using >, =, <.

Learning Activities:

<u>Fluency</u> – Students use unit form to identify a multi-digit number represented with place value disks and rename units to build place value understanding within 1,000,000; identify a place value and the value of a digit in a multi-digit number and then write the number in expanded form to build place value understanding; write the standard form of a multi-digit number given in unit form to develop familiarity with writing numbers. **<u>Launch</u>** – Students identify real-world situations that require comparing numbers.

<u>Learn</u> – Students compare two numbers by using place value units; compare two numbers by using the value of the digits; compare two numbers expressed in different forms; compare and order four numbers; complete problem set.

Land – Debrief: Facilitate a discussion about place value and comparing numbers.

Daily Exit Ticket: Compare numbers using >, =, or <.

Resources: Place Value Chart to Millions, dry erase marker, personal whiteboard, personal whiteboard eraser

Topic C: Rounding Multi-Digit Whole Numbers Lesson #10: Name numbers by using place value understanding

Standard: 4.NBT.A.2

Mathematical Practice: 8

Target: Name numbers by using place value understanding.

Learning Activities:

Fluency – Students identify a number represented with place value disks and determine 1, 10, and 100 more to prepare for finding 1, 10, and 100 thousand more than a given number beginning in lesson 11; round a two-digit or three-digit number to the nearest ten to prepare for rounding multi-digit numbers beginning in lesson 12; complete a pattern to prepare for finding 1, 10, and 100 thousand more than and less than a given number beginning in lesson 11.

Launch – Students use money as a context to understand that different representations can equal the same total.

<u>Learn</u> – Students use a place value chart and unit form to rename a four-digit number; use place value understanding to rename five-digit and six-digit numbers in unit form; use unit form to rename a given number in as many ways as they can; complete problem set.

Land – *Debrief:* Facilitate a discussion about using unit form to rename a number.

Daily Exit Ticket: Represent numbers in unit form in multiple ways.

Resources: Paper money, envelopes, dry erase marker, personal whiteboard, personal whiteboard eraser Lesson #11: Find 1, 10, and 100 thousand more than and less than a given number

Standard: 4.NBT.A.2

Mathematical Practice: 1

Target: Find 1, 10, and 100 thousand more than and less than a given number.

Learning Activities:

Fluency – Students identify a number represented with place value disks and determine 1, 10, and 100 less to prepare for finding 1, 10, and 100 thousand less than a given number; round a three- or four-digit number to the nearest hundred to prepare for rounding multi-digit numbers beginning in lesson 12; complete a pattern to prepare for finding 1, 10, and 100 thousand more and less than a given number. **Launch** – Students examine place value charts to determine relationships between numbers. **Learn** – Students write statements and equations to represent 100 thousand, 10 thousand, and 1 thousand more than a given number; use the place value chart, statements, and equations to represent 100 thousand, 10 thousand, and 1 thousand less than a given number; determine rules for number patterns and use those rules to find the unknown numbers in a pattern; complete problem set. **Land** – Debrief: Facilitate a discussion about using place value to find more than or less than a number and to find rules for number patterns.

Daily Exit Ticket: Find numbers that are 1, 10, and 100 thousand more than a number.

Resources: Place value chart to millions, place value disks set, dry erase marker, personal whiteboard, personal whiteboard eraser

Lesson #12: Round to the nearest thousand

Standard: 4.NBT.A.3

Mathematical Practice: 6

Target: Round to the nearest thousand.

Learning Activities:

<u>Fluency</u> – Students add within 1,000 to prepare for adding multi-digit whole numbers using the standard algorithm in topic D; determine how many thousands are in a number and then find 1,000 more to build place value understanding within 1,000,000.

Launch – Students consider the purpose of rounding in a real-world context.

<u>Learn</u> – Students round related four-digit, five-digit, and six-digit numbers to the nearest thousand by using the halfway point on a number line; round a five-digit and a six-digit number to the nearest thousand using the proximity of the number to the beginning or ending tick mark on a number line; regroup thousands to ten thousands when rounding to the nearest thousand; complete problem set.

Land – Debrief: Facilitate a discussion about what information is needed when rounding numbers.

Daily Exit Ticket: Round to the nearest thousand by filling out a vertical number line.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser

Lesson #13: Round to the nearest ten thousand and hundred thousand

Standard: 4.NBT.A.3

Mathematical Practice: 6

Target: Round to the nearest ten thousand and hundred thousand.

Learning Activities:

<u>Fluency</u> – Students subtract within 1,000 to prepare for subtracting multi-digit whole numbers using the standard algorithm in topic D; determine how many ten thousands are in a number and then find 10,000 more to build place value understanding.

<u>Launch</u> – Students estimate the capacity of a stadium to relate rounding to the nearest thousand to rounding to the nearest ten thousand.

<u>Learn</u> – Students use what they know about rounding two-digit numbers to the nearest ten to round fivedigit numbers to the nearest ten thousand; use unit form and the halfway mark on a number line to round six-digit numbers to the nearest ten thousand; use a number line to round six-digit numbers to the nearest hundred thousand; complete problem set.

Land – Debrief: Facilitate a discussion about how rounding numbers to the nearest ten thousand and hundred thousand are similar to rounding to the nearest ten and hundred.

Daily Exit Ticket: Round to the nearest ten thousand by filling out a vertical number line.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser **Lesson #14: Round multi-digit numbers to any place**

Standard: 4.OA.A.3, 4.NBT.A.3

Mathematical Practice: 8

Target: Round multi-digit numbers to any place.

Learning Activities:

Fluency – Students determine 1, 10, 100, or 1,000 more or less to build place value understanding within 1,000,000.

<u>Launch</u> – Students round one number to multiple place values on a number line and identify real-world situations in which the rounded numbers may be useful.

<u>Learn</u> – Students think about a number line to round a six-digit number to multiple place values; identify and justify their choice for rounding a five-digit number to a place value in a given context; complete problem set.

Land – *Debrief:* Facilitate a discussion about rounding numbers to different place values without using a number line.

Daily Exit Ticket: Round a multi-digit number to multiple places.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser, prepared signs, 1, 10, 100, and 1,000 more or less sprint (in the student book)

Lesson #15: Apply estimation to real-world situations by using rounding

Standard: 4.OA.A.3, 4.NBT.A.3

Mathematical Practice: 3

Target: Apply estimation to real-world situations by using rounding.

Learning Activities:

<u>Fluency</u> – Students add or subtract within 1,000 to prepare for adding and subtracting multi-digit whole numbers by using the standard algorithm in topic D; determine how many hundred thousands are in a number and then find 100,000 more to build place value understanding.

Launch – Students analyze an underestimated solution.

<u>Learn</u> – Students evaluate the usefulness of rounding to the nearest ten and hundred and justify an estimate for a given context; round to place value units other than the nearest unit to make a useful estimate for a given real-world situation; revise their rounding to make useful estimates involving money; complete problem set.

Land – Debrief: Facilitate a discussion about how to round to make helpful estimates in real-world contexts.

Daily Exit Ticket: Use estimation to solve a word problem and explain how estimation was used and why.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser

Topic A, B, C: Quizzes

Topic D: Multi-Digit Whole Number Addition and Subtraction Lesson #16: Add by using the standard algorithm

Standard: 4.OA.A.3, 4.NBT.B.4

Mathematical Practice: 4

Target: Add by using the standard algorithm.

Learning Activities:

<u>Fluency</u> – Students write an equation to represent a tape diagram with an unknown total to prepare for solving addition word problems; estimate a sum within 1,000 to prepare for using estimation to assess the reasonableness of an answer; add ones, tens, or hundreds in unit form and say 1 unit more to prepare for adding multi-digit whole numbers using the standard algorithm.

Launch – Students examine estimated solutions to addition word problems.

<u>Learn</u> – Students use place value disks to add five-digit numbers with two renamings; draw to represent place value disks and use the standard algorithm to add five-digit and six-digit numbers with multiple regroupings; use the standard algorithm to solve a word problem involving six-digit addends; complete problem set.

Land – Debrief: Facilitate a discussion that emphasizes how place value supports addition of Emmulti-digit numbers by using the standard algorithm.

Daily Exit Ticket: Add by using the standard algorithm.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser, place value disks set, place value chart to millions

Lesson #17: Solve multi-step addition word problems by using the standard algorithm

Standard: 4.OA.A.3, 4.NBT.B.4

Mathematical Practice: 2

Target: Solve multi-step addition word problems by using the standard algorithm.

Learning Activities:

Fluency – Students complete a pattern to build fluency with finding 1 thousand more and less than a given number from topic C; write an equation to represent a tape diagram with an unknown part to prepare for solving subtraction word problems beginning in lesson 18; add thousands or ten thousands in unit form and standard form to develop fluency with adding multi-digit whole numbers by using the standard algorithm. **Launch** – Students interpret a tape diagram that does not have numbers.

<u>Learn</u> – Students use the Read–Draw–Write process to solve two-step addition word problems and assess the reasonableness of their answers; use the Read–Draw–Write process to solve a multi-step problem and assess the reasonableness of their answer; complete problem set.

Land – Debrief: Facilitate a discussion that emphasizes how tape diagrams can represent multi-step addition problems.

Daily Exit Ticket: Solve a multi-step addition word problem by using the standard algorithm.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser Lesson #18: Subtract by using the standard algorithm, decomposing larger units once

Standard: 4.NBT.B.4

Mathematical Practice: 6

Target: Subtract by using the standard algorithm, decomposing larger units once.

Learning Activities:

<u>Fluency</u> – Students complete a pattern to build fluency with finding 1 ten thousand more and less than a given number from topic C; estimate a difference within 1,000 to build fluency with using estimation to assess the reasonableness of an answer; subtract ones, tens, or hundreds in unit form and standard form to prepare for subtracting multi-digit whole numbers using the standard algorithm.

Launch – Students identify strategies to subtract and determine whether similar strategies can be applied when subtracting with larger numbers.

<u>Learn</u> – Students use place value disks and the standard algorithm to subtract; represent place value disks on the place value chart by drawing, record the subtraction with vertical form, and use addition to check answers; draw to represent and use the standard algorithm to solve a subtraction word problem; complete problem set.

Land – Debrief: Facilitate a discussion about using the standard algorithm to subtract.

Daily Exit Ticket: Subtract by using the standard algorithm.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser, place value disks set, place value chart to hundred thousands

Lesson #19: Subtract by using the standard algorithm, decomposing larger units up to three times

Standard: 4.NBT.B.4

Mathematical Practice: 1

Target: Subtract by using the standard algorithm, decomposing larger units up to three times.

Learning Activities:

Fluency – Students add numbers within 1,000,000 in standard form to develop fluency with adding multidigit whole numbers using the standard algorithm.

<u>Launch</u> – Students determine how the process used to subtract three-digit numbers can be applied to subtracting with larger numbers.

<u>Learn</u> – Students make a drawing to represent disks on the place value chart and record the subtraction with vertical form; use vertical form to represent renaming 3 times when subtracting with the standard algorithm; draw a tape diagram and use the standard algorithm to solve a subtraction word problem; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion about using place value and the standard algorithm to rename units more than once when subtracting.

Daily Exit Ticket: Subtract by using the standard algorithm; solve a subtraction word problem using the standard algorithm.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser, place value chart to hundred thousands, add in standard form sprint

Lesson #20: Subtract by using the standard algorithm, decomposing larger units multiple times

Standard: 4.NBT.B.4

Mathematical Practice: 7

Target: Subtract by using the standard algorithm, decomposing larger units multiple times.

Learning Activities:

<u>Fluency</u> – Students use symbols to compare two multi-digit numbers in standard form to build fluency with comparing numbers from topic B; complete a pattern to build fluency with finding 1 hundred thousand more and less than a given number from topic C; subtract thousands or ten thousands in unit form and standard form to develop fluency with subtracting multi-digit whole numbers using the standard algorithm.

<u>Launch</u> – Students examine subtraction problems to determine which problem requires renaming the most units.

<u>Learn</u> – Students draw to represent disks on the place value chart and record the subtraction with vertical form; use a place value chart and the standard algorithm to rename across zeros in multiple place value units; complete problem set.

Land – *Debrief:* Facilitate a discussion about renaming units when subtracting.

Daily Exit Ticket: Subtract by using the standard algorithm; solve a subtraction word problem using the standard algorithm.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser, place value chart to millions

Lesson #21: Solve two step word problems by using addition and subtraction

Standard: 4.OA.A.3, 4.NBT.B.4

Mathematical Practice: 4

Target: Solve two step word problems by using addition and subtraction.

Learning Activities:

<u>Fluency</u> – Students use symbols to compare two multi-digit numbers in different forms to build fluency with comparing numbers from topic B; estimate a sum or difference within 1,000,000 to develop fluency with using estimation to assess the reasonableness of an answer.

<u>Launch</u> – Students draw and use a tape diagram to determine what is unknown in a word problem. <u>Learn</u> – Students solve a two-step word problem and use an estimate to assess the reasonableness of their answers; solve a two-step word problem by using self-selected representations and strategies; compare solution strategies and reason about connections; complete problem set.

Land – Debrief: Facilitate a discussion focused on tape diagrams and using estimates to assess the reasonableness of answers.

Daily Exit Ticket: Use the Read-Write-Draw process to solve a word problem.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser **Lesson #22: Solve multi-step word problems by using addition and subtraction**

Standard: 4.OA.A.3, 4.NBT.B.4

Mathematical Practice: 2

Target: Solve multi-step word problems by using addition and subtraction.

Learning Activities:

<u>Fluency</u> – Students estimate a sum or difference within 1,000,000 to develop fluency with using estimation to assess the reasonableness of an answer; write an equation to represent a tape diagram with an unknown part or total to prepare for solving addition and subtraction word problems.

Launch – Students use a tape diagram from a two-step word problem to represent a three-step word problem.

<u>Learn</u> – Students solve a three-step word problem by drawing a tape diagram, estimating an answer, and then finding an exact answer; solve a multi-step word problem with an unknown addend; compare solution strategies for problem 2 and reason about connections; complete problem set.

Land – Debrief: Facilitate a discussion about solving multi-step addition and subtraction problems.

Daily Exit Ticket: Use the Read-Write-Draw process to solve a word problem.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser

Topic E: Metric Measurement Conversion Tables

Lesson #23: Express metric measurements of length in terms of smaller units

Standard: 4.M.A.1, 4.M.A.2

Mathematical Practice: 7

Target: Express metric measurements of length in terms of smaller units.

Learning Activities:

<u>Fluency</u> – Students tell time to the nearest minute, then determine the elapsed time to maintain fluency with solving problems involving time intervals from grade 3; count by a unit of 10 or 100 centimeters, then rename centimeters as meters to prepare for expressing metric measurements of length in terms of smaller units.

<u>Launch</u> – Students identify examples of objects that have lengths of 1 centimeter, 1 meter, and 1 kilometer. <u>Learn</u> – Students relate the relative sizes of metric length units to the place value system; express lengths given in meters and mixed units as a number of centimeters; express lengths given in kilometers and mixed units as a number of stategies to add and subtract mixed unit measurements; complete problem set.

Land – *Debrief:* Facilitate a discussion about relationships between metric length units.

Daily Exit Ticket: Complete a conversion table; use the Read-Write-Draw process to solve a word problem.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser, rulers, meter sticks Lesson #24: Express metric measurements of mass and liquid volume in terms of smaller units

Standard: 4.M.A.1, 4.M.A.2

Mathematical Practice: 5

Target: Express metric measurements of mass and liquid volume in terms of smaller units.

Learning Activities:

Fluency – Students tell time to the nearest minute, then determine the elapsed time to maintain fluency with solving problems involving time intervals from grade 3; count by a unit of 500 grams, then rename grams as kilograms to prepare for expressing metric measurements of mass in terms of smaller units; count by a unit of 500 milliliters, then rename milliliters as liters to prepare for expressing metric measurements of iquid volume in terms of smaller units.

Launch – Students compare the relative weights or liquid volumes of real-world objects.

<u>Learn</u> – Students compare the relative sizes of metric units of mass and liquid volume; shade a beaker to express liters and mixed units in milliliters; express mass given in kilograms and mixed units as a number of grams; choose a strategy to add and subtract mixed metric units; complete problem set. Land – Debrief: Facilitate a discussion about metric unit conversion.

Daily Exit Ticket: Complete a conversion table; use the Read-Write-Draw process to solve a word problem.

Resources: Dry erase marker, personal whiteboard, personal whiteboard eraser, colored pencils

Topic D, E: Quizzes

Module 1: Assessment

Unit I	Modifications for Special Population Students
Advanced Learners	 Lesson 3-Consider challenging students to think of other multiplicative comparison contexts that are better described by a statement that refers to the measurement. Lesson 6-Consider challenging students by inviting them to record an equation each times they draw 10 times as many dots. Lesson 15-Consider challenging students to think of their own situation in which choosing the unit to round to impacts the outcome of the problem. Lesson 18-Consider asking students to estimate the difference by rounding to different place values.
	Lesson 23 -Consider challenging students to express smaller units in terms
Struggling Learners	 Lesson 1-Consider annotating the figures to emphasize the patterns as students describe how each figure is different from the one before it. Lesson 2-Consider charting multiplicative comparison problem statements, including written format with the corresponding equations. Lesson 5-Consider using sticky notes to create a flexible place value chart. Lesson 6-When multiplying 2 units by ten consider drawing out the 2 groups of 10 on the place value chart. Lesson 18-Consider directing students to write the number of units left in each place after subtracting. Lesson 24-Consider presenting the information in another format by using real-world objects
English Language Learners	Lesson 1-The term figure has multiple meanings in mathematics and
Special Needs Learners	 everyday life. Consider using pictures to highlight some different meanings of figure. Lesson 3-To support students with the various measurement contexts, consider including an image of each context. Lesson 4-Consider creating a chart that displays a picture of a penny, dime, and dollar bill along with their names and value or worth. Lesson 5-Consider supporting the terms rename and bundle by writing labeled examples of each as the terms come up in the lesson. Lesson 6-Consider displaying sentence frames for students to refer to when describing place value relationships. Lesson 7-Consider providing sentence frames or starters to support students as they notice patterns in the count. Lesson 9-Consider using the prefix and root word to understand what it means to rename. Lesson 17-Consider supporting students in discussing the tape diagram by providing a word bank of words and phrases commonly found in comparison word problems. Lesson 22-Consider reducing the amount of language students see at one time.
Special needs Learners	 Lesson 1-Consider using unterent-colored nignighters in the equation and statements to help students make connections between the various representations. Lesson 2-Consider providing tiles or other manipulatives for students to use to build the multiplicative patterns. Lesson 4-Consider providing actual pennies, dimes, and dollar bills to support students in composing to make larger units. Lesson 5-Consider using highlighters to emphasize the patterns in the place value chart.

	<i>Lesson 10</i> -Consider highlighting the largest place value unit that is used to rename the number. <i>Lesson 11</i> -Consider highlighting the ten-thousands in each number. <i>Lesson 12</i> -Consider lessening the fine motor demands of the task by providing a vertical number line template.
	<i>Lesson 13</i> -Consider presenting the number line as a human number line for the class.
	<i>Lesson 21</i> -Consider using a number line to assist students as they draw and label their tape diagrams.
Learners with a 504	Refer to page four in the <u>Parent and Educator Resource Guide to</u> <u>Section 504</u> to assist in the development of appropriate plans.

Interdisciplinary Connections

Standards:

English Language Arts

- RI.CR.4.1. Refer to details and examples as textual evidence when explaining what an informational text says explicitly and make relevant connections when drawing inferences from the text (Lessons 1-3, 17, 19-24: Students engage in reading, interpreting, and solving word problems.)
- LVL.4.2. Determine or clarify the meaning of unknown and multi-meaning academic and domainspecific words and phrases in a text relevant to a *grade 4* reading and content, choosing flexibility from a range of strategies.
 - A. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.
 - B. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., telegraph, photograph, autograph).
 - C. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.

(Lessons 1-24: Students will be introduced to, interact with, and use grade 4 mathematical vocabulary accurately in context.)

- SL.PÉ.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.
 - A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
 - B. Follow agreed-upon rules for discussions and carry out assigned roles.
 - C. Pose and respond to specific questions to clarify or follow up on information and make comments that contribute to the discussion and link to the remarks of others.
 - D. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

(Lessons 1-24: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)

- SL.II.4.2. Paraphrase portions of a text read aloud, or information presented in diverse media and formats (e.g., visually, quantitatively, and orally). (Lessons 1-24: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- SL.ES.4.3. Identify the reasons and evidence a speaker provides to support particular points. (Lessons 1-24: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- SL.PI.4.4. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace. (Lessons 1-24: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)

Science

 3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. (Lessons 1-24: Students engage in mathematical exploration to test strategies and solutions in order to meet the desired outcome.)

Social Studies

• 6.1.5.EconGE.1: Explain how the development of communication systems has led to increased collaboration and the spread of ideas throughout the United States and the world. (Lesson 8: Students relate numbers expressed in Egyptian hieroglyphics to numbers in expanded form.)

<u>Art</u>

- 1.5.5.Re7a: Speculate about artistic processes. Interpret and compare works of art and other responses. (Level 4 Introduction: Students analyze a piece of artwork and discuss its connection to mathematics.)
- 1.5.5.Re7b: Analyze visual arts including cultural associations. (Level 4 Introduction: Students analyze a piece of artwork and discuss its connection to mathematics.)

Integration of 21st Century Skills

Standards:

- 8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data. (Lessons 1-24: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- 8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate. (Lessons 1-24: Students analyze mathematical data and record multiple algorithms; compare algorithms to determine the best way to solve each problem.)
- 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. (Lessons 1-24: Students engage in mathematical discourse to collaborate with classmates to analyze information, solve problems, and make sense of strategies.)
- 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. (Lessons 1-24: Students follow the given steps to solve word problems and create and solve equations.)
- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process. (Lessons 1-3, 17, 19-24: Students engage in reading, interpreting, and solving word 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. (Lessons 1-3, 17, 19-24: Students engage in reading, interpreting, and solving word problems.)

Unit Title: Module 2: Place Value Concepts for Multiplication and Division

Unit Description: In Module 2, students multiply two-digit numbers by one-digit numbers by using the distributive property. They divide two- and three-digit numbers by one-digit numbers by using the break apart and distribute strategy. Students apply their multiplication skills to convert customary units of length. They also identify factors and multiples of numbers within 100.

Unit Duration: 30 days (Note: Lesson 10 is included in the total but is optional)

Desired Results

Standard(s):

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

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

4.M.A.1 - Know relative sizes of measurement units within one system of units including km, m, cm; 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.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.

Understandings:

Topic A:

- I can multiply and divide multiples of 10 by onedigit numbers.
- I can develop conceptual understanding by representing the multiplication and division with place value disks or on a place value chart and by naming multiples of 10 in unit form.
- I can multiply and divide by using equations.
- I can apply the associative property of multiplication using familiar facts to multiply.
- I can rename two-digit and three-digit multiples of 10 as tens to make use of familiar division facts and relate division to an unknown factor problem.
- I can multiply and divide to find the area or unknown side length of a rectangle with the newly formalized area formula: A=I×w.

Topic B:

- I can multiply two-digit numbers by one-digit numbers by using the distributive property.
- I can decompose the two-digit numbers into tens and ones and then multiply each part by the one-digit number.
- I can use a place value chart, an area model, and equations to represent the multiplication, written in both unit form and standard form to record the multiplication represented in the models.
- I can multiply by using equations, write or think about numbers in unit form and recognize that, although the units change, the multiplication facts are familiar.
- I can apply learning to solve one-step word problems.
- I can use simplifying strategies, such as compensation and decomposition, to multiply.

Topic C:

- I can divide two-digit and three-digit numbers by one-digit numbers by using the break apart and distribute strategy.
- I can decompose the two-digit or three-digit total into tens and ones and then divide each part by the one-digit number.
- I can use a place value chart, an area model, and equations to represent the division, written in both unit form and standard form to record the division represented in the models.
- I can divide by using equations, write or think about the numbers in unit form and recognize that, although the units change, the division facts are familiar.

Essential Questions:

Topic A:

- How does knowing multiplication facts help you multiply with multiples of 10?
- Why is the associative property of multiplication helpful when multiplying with multiples of 10?
- What strategies are helpful when dividing multiples of 10?
- How can we use division facts that we already know to help us divide multiples of 10?
- Why is having a formula for the area of a rectangle helpful?

Topic B:

- How can we use what we know about multiplication to multiply two-digit numbers by one-digit numbers?
- Does breaking apart a factor help you multiply efficiently? Why?
- How can we use what we know about multiplying by place value units to multiply a two-digit number by a one-digit number?
- Why do we use the distributive property to find partial products when multiplying a two-digit number by a one-digit number?
- How is place value helpful when applying the distributive property to multiply?
- How can we use an area model to represent the distributive property?
- Why can the equations be the same when we draw on a place value chart or draw an area model to multiply?
- Why do we sometimes call the distributive property of multiplication the break apart and distribute strategy?
- How can we use equations to show the break apart and distribute strategy?
- How can models, such as a tape diagram, help you represent word problems?
- What strategies help you solve multiplication problems?
- How are simplifying strategies useful when multiplying? (Optional)
- What helps you decide which strategy to use to multiply? (Optional)

Topic C:

- How can we use what we know about division to divide with larger numbers?
- Does breaking apart a total help you divide efficiently? Why?
- How is place value helpful when decomposing the total to divide?
- How can you use an area model to find a quotient?

•	I can apply learning to solve one-step word
	problems.

Topic D:

- I can express larger customary units of length (i.e., yards and feet) in terms of smaller units (i.e., feet and inches) by using tape diagrams, number lines, and conversion tables.
- I can focus on the relationships between the units and use repeated addition, skip-counting, and multiplication to complete the conversions.
- I can convert mixed units to a smaller unit (e.g., yards and feet to feet) and add and subtract with mixed units by using number lines, number bonds, the arrow way, and equations.
- I can apply understanding of customary units of length and the formulas for area and perimeter to solve problems including those that have both additive and multiplicative comparisons.

Topic E:

- I can identify factors, multiples, prime numbers, and composite numbers within 100.
- I can list factor pairs by using arrays, division, and the associative property.
- I can skip-count to find multiples and recognize relationships between factors and multiples—a number is a multiple of each of its factors and factors can be used to find other factors.
- I can explore properties of prime and composite numbers within 100.
- I can apply understanding of factors and multiples to determine whether a number is divisible by another number and to find an unknown term in shape or number patterns.

- Why is it helpful to estimate a quotient before dividing?
- How is decomposing the total helpful when dividing?
- How can using the place value chart help you divide?
- How do you know when to decompose a ten to continue dividing?
- Why might we choose to rename a three-digit number as tens and ones to divide?
- How is dividing a three-digit number by a one-digit number similar to dividing a two-digit number by a one-digit number?
- How do you decide which strategy to use when dividing?
- When is the break apart and distribute strategy a useful division strategy?

Topic D:

- How are yards, feet, and inches related?
- How can we convert measurements with larger length units to measurements with smaller length units?
- What measurements are needed to find the perimeter of a rectangle?
- Why can you use different formulas to find the perimeter of a rectangle?
- How can you use the formulas for area and perimeter of a rectangle to find the unknown side lengths?
- How does a tape diagram that represents a comparison help you with writing an equation?
- How do you know the type of comparison a word problem represents?

Topic E:

- How do you know whether you have found all the factors of a number?
- How do you determine whether a number is prime or composite?
- How can you determine whether a number is a factor of another number?
- What does it mean for a number to be divisible by another number?
- How is a multiple different from a factor?
- How are multiples and factors related?
- Why is it useful to identify factors and multiples?
- How can you use multiples to identify prime and composite numbers?
- How can we use multiplication and multiples to find unknown terms in a pattern?
- Besides the rule, what might you notice in patterns?

Assessments:

- Modules 2 & 3 Equip Pre Assessment
- Exit Slips
- Topic Quizzes (A E)
- Module 2 Assessment

Benchmarks:

• The iReady Assessment is administered in the fall and winter.

Learning Plan

Module 2 & 3: Equip Preassessment

Topic A: Compose and Decompose Units of Ten

Lesson #1: Multiply multiples of 10 by one-digit numbers by using the associative property of multiplication

Standard: 4.NBT.B.5

Mathematical Practice: 7

Target: Multiply multiples of 10 by one-digit numbers by using the associative property of multiplication.

Learning Activities:

<u>Fluency</u> – Students round a number to the nearest thousand to build fluency with rounding multi-digit numbers to any place from module 1; count by a unit of 2 tens in unit and standard form from 0 to 100 to build place value understanding for operating with multi-digit numbers; multiply ones in unit form and say the equation in standard form to build place value understanding for multiplying multi-digit numbers. *Launch* – Students compare and contrast two pictures of money.

<u>Learn</u> – Students use place value charts and unit form to multiply with multiples of 10; analyze sample work that demonstrates the associative property of multiplication and use the property to find products; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion about using the associative property of multiplication to multiply a multiple of 10 by a one-digit number.

Daily Exit Ticket: Decompose and multiply numbers.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #2: Divide two- and three- digit multiples of 10 by one-digit numbers

Standard: 4.NBT.B.6

Mathematical Practice: 2

Target: Divide two- and three- digit multiples of 10 by one-digit numbers.

Learning Activities:

<u>Fluency</u> – Students round a number to the nearest ten thousand to build fluency with rounding multi-digit numbers to any place from module 1; count by a unit of 2 tens in unit and standard form from 100 to 200 to build place value understanding for operating with multi-digit numbers; divide ones in unit form and say the equation in standard form to build place value understanding for dividing multi-digit numbers. **Launch** – Students use precise language to compare four representations of division. <u>Learn</u> – Students represent division with multiples of 10 by using place value disks; reason about dividing quantities by using unit form; represent multiplicative comparison problems with division and multiplication equations; complete problem set.

Land – *Debrief:* Facilitate a discussion about dividing multiples of 10 by a one-digit number.

Daily Exit Ticket: Divide using unit form.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, place value disks set

Lesson #3: Investigate and use a formula for the area of a rectangle

Standard: 4.M.A.3

Mathematical Practice: 1

Target: Investigate and use a formula for the area of a rectangle.

Learning Activities:

<u>Fluency</u> – Students multiply or divide in standard form to prepare for multiplying and dividing with multi-digit numbers; multiply or divide in standard form to prepare for multiplying and dividing with multi-digit numbers. <u>**Launch**</u> – Students identify strategies to find the total number of squares in an array.

<u>Learn</u> – Students identify multiple ways to determine the area of a rectangle and generate a formula for the area of a rectangle; write an equation to find the unknown side length of a rectangle; solve a real-world problem involving area; complete problem set.

Land – Debrief: Facilitate a discussion about using a formula to find the area of a rectangle.

Daily Exit Ticket: Complete the equation to find the area of a rectangle; write an equation to find the unknown side length.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Multiply and Divide within 100 Sprint (in the student book)

Topic B: Multiplication of Tens and Ones by One-Digit Numbers Lesson #4: Multiply by using familiar strategies

Standard: 4.NBT.B.5

Mathematical Practice: 5

Target: Multiply by using familiar strategies.

Learning Activities:

<u>Fluency</u> – Students use the standard algorithm to add multi-digit whole numbers to build addition fluency from module 1; count by a unit of 3 tens in unit and standard form from 0 to 150 to build place value understanding for operating with multi-digit numbers; multiply ones or tens in unit form to build place value understanding for multiplying multi-digit numbers.

Launch – Students represent a three-digit number in a variety of ways.

<u>Learn</u> – Students choose a strategy and multiply a two-digit number by a one-digit number; share and compare solution strategies and reason about their connections; choose a different strategy to multiply and reason about the efficiency of their strategy; complete problem set.

Land – Debrief: Facilitate a discussion about multiplication strategies.

Daily Exit Ticket: Multiply and show or explain strategy.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #5: Multiply by using place value strategies and the distributive property

Standard: 4.NBT.B.5

Mathematical Practice: 7

Target: Multiply by using place value strategies and the distributive property.

Learning Activities:

Fluency – Students convert meters to centimeters or kilometers to meters to build fluency with expressing measurements in a larger unit in terms of a smaller unit from module 1; count by a unit of 3 tens in unit and standard form from 150 to 300 to build place value understanding for operating with multi-digit numbers; multiply tens and ones in unit form, write equations in standard form, and add two products to build fluency with place value strategies for multiplying.

Launch – Students engage in discussion about how to decompose a factor to multiply.

<u>Learn</u> – Students draw on a place value chart to help them multiply and identify partial products; draw on a place value chart and write equations to use the distributive property to multiply; use the distributive property to multiply, and they rename tens in partial products as hundreds and tens; complete problem set. <u>Land</u> – *Debrief:* Facilitate a discussion about decomposing a factor into place value units and using the distributive property to multiply.

Daily Exit Ticket: Use a place value chart to represent an expression; complete an equation.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #6: Multiply with regrouping by using place value strategies and the distributive property

Standard: 4.NBT.B.5

Mathematical Practice: 6

Target: Multiply with regrouping by using place value strategies and the distributive property.

Learning Activities:

<u>Fluency</u> – Students use the standard algorithm to subtract multi-digit whole numbers to build subtraction fluency from module 1; convert kilograms to grams to build fluency with expressing measurements in a larger unit in terms of a smaller unit from module 1; count by a unit of 4 tens in unit and standard form from 0 to 200 to build place value understanding for operating with multi-digit numbers.

Launch – Students analyze and rename numbers in unit form with 10 or more tens and ones.

<u>Learn</u> – Students use the distributive property to multiply and then rename ones in equations and regroup ones on a place value chart; use the distributive property to multiply and rename tens and ones as needed; analyze work that applies the distributive property by decomposing a factor in different orders; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion about using place value and the distributive property when multiplying.

Daily Exit Ticket: Use a place value chart to represent an expression; complete an equation.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #7: Multiply by using an area model and the distributive property

Standard: 4.NBT.B.5, 4.M.A.3

Mathematical Practice: 7

Target: Multiply by using an area model and the distributive property.

Learning Activities:

Fluency – Students convert liters to milliliters to build fluency with expressing measurements in a larger unit in terms of a smaller unit from module 1; count by a unit of 4 tens in unit and standard form from 200 to 400 to build place value understanding for operating with multi-digit numbers; multiply tens and ones in unit form, write equations in standard form, and add two products to build fluency place value strategies for multiplying.

Launch – Students discuss strategies to find the total number of tiles in an array.

<u>Learn</u> – Students draw and decompose an area model to find the product of two factors; use the area model as a tool to multiply and connect to a written method; write equations and use the distributive property to multiply; use the distributive property to solve an area problem; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about representing multiplication with an area model.

Daily Exit Ticket: Complete an area model; complete equations.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, centimeter grid

Lesson #8: Multiply by applying the distributive property and write equations

Standard: 4.NBT.B.5

Mathematical Practice: 3

Target: Multiply by applying the distributive property and write equations.

Learning Activities:

<u>Fluency</u> – Students convert metric units to build fluency with expressing measurements in a larger unit in terms of a smaller unit from module 1; multiply ones or tens in unit form to build place value understanding for multiplying multi-digit numbers.

Launch – Students write equations and find a product based on a given area model.

<u>Learn</u> – Students match area models to equations and discuss connections between both representations; apply the distributive property to multiply expressions in different forms; apply the distributive property to multiply and record this process by writing equations; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion about applying the distributive property to multiply in different representations.

Daily Exit Ticket: Use the distributive property to solve a multiplication equation.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Area Model and Equation Cards, Convert Metric Units Sprint

Lesson #9: Solve multiplication word problems

Standard: 4.OA.A.2, 4.NBT.B.5

Mathematical Practice: 5

Target: Solve multiplication word problems.

Learning Activities:

<u>Fluency</u> – Students use the standard algorithm to add or subtract multi-digit whole numbers to build fluency with the operations from module 1.

<u>Launch</u> – Students choose a method they would use to help them solve a problem and then defend their choice.

<u>Learn</u> – Students use multiplication strategies to solve a multiplicative comparison problem; share solutions for the multiplicative comparison problem and reason about their connections; use multiplication strategies to solve an equal groups problem; share solutions for the equal groups problem and reason about their connections; complete problem set.

Land – *Debrief:* Facilitate a discussion about representing and solving word problems.

Daily Exit Ticket: Use the Read-Write-Draw process to solve a multiplication word problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Multiplication Signs

Lesson #10: Multiply by applying simplifying strategies (OPTIONAL)

Standard: 4.NBT.B.5

Mathematical Practice: 5

Target: Multiply by applying simplifying strategies.

Learning Activities:

<u>Fluency</u> – Students use the standard algorithm to add or subtract multi-digit whole numbers to build fluency with the operations from module 1; multiply tens and ones in unit form, write equations and expressions in standard form, and add two products to build fluency place value strategies for multiplying.

Launch – Students find the value of 7 quarters and share their strategies.

<u>Learn</u> – Students make decisions about how to decompose factors to multiply; identify and use relationships between factors to multiply; multiply by using self-selected strategies and explain their reasoning; complete problem set.

Land – Debrief: Facilitate a discussion about using simplifying strategies to multiply.

Daily Exit Ticket: Multiply to solve a problem showing your strategy.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Multiplication Signs

Topic C: Division of Tens and Ones by One-Digit Numbers

Lesson #11: Divide by using familiar strategies

Standard: 4.NBT.B.6

Mathematical Practice: 2

Target: Divide by using familiar strategies.

Learning Activities:

Fluency – Students count by a unit of 5 tens in unit and standard form from 0 to 250 to build place value understanding for operating with multi-digit numbers; use a number bond and a fives fact to decompose a two-digit total in a division expression to prepare for using place value strategies to divide; divide ones or tens in unit form to build place value understanding for dividing multi-digit numbers.

Launch – Students describe how to share an amount of money equally.

<u>Learn</u> – Students choose a strategy and divide a two-digit number by a one-digit number; share and compare solution strategies and reason about their connections; choose a new strategy to represent the problem and reason about its efficiency; complete problem set.

Land – Debrief: Facilitate a discussion about strategies to divide.

Daily Exit Ticket: Solve a division word problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #12: Divide two-digit numbers by one-digit numbers by using an area model

Standard: 4.NBT.B.6

Mathematical Practice: 7

Target: Divide two-digit numbers by one-digit numbers by using an area model.

Learning Activities:

Fluency – Students count by a unit of 5 tens in unit and standard form from 250 to 500 to build place value understanding for operating with multi-digit numbers; determine whether a group of ones may be divided into 2, 3, or 4 equal groups to prepare for modeling division with a place value chart beginning in lesson 14; use a number bond and a tens fact to decompose a two-digit total in a division expression to develop fluency with using place value strategies to divide.

Launch – Students explore ways to divide.

<u>Learn</u> – Students use number bonds and multiplication facts to decompose the total before dividing; represent decomposing a total into tens and ones to divide by using a number bond and an area model; draw an area model and represent division by using an equation to solve a problem; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about why place value is helpful in decomposing the total to divide.

Daily Exit Ticket: Complete an area model and equations to solve a division problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #13: Divide three-digit numbers by one-digit numbers by using an area model

Standard: 4.NBT.B.6

Mathematical Practice: 3

Target: Divide three-digit numbers by one-digit numbers by using an area model.

Learning Activities:

Fluency – Students determine the product, then say the equation in standard form to build fluency with the 10 times as much relationship from module 1; determine whether a group of tens may be divided into 2, 3, or 4 equal groups to prepare for modeling division with a place value chart beginning in lesson 14; use a number bond and a tens fact to decompose a two-digit total in a division expression to develop fluency with using place value strategies to divide.

Launch – Students compare ways to decompose the total to find a quotient.

<u>Learn</u> – Students use estimation to reason about decomposing the total when dividing; estimate the quotient to determine how to apply the break apart and distribute strategy to divide and to verify whether the quotient is reasonable; analyze student work that is based on using the break apart and distribute strategy to divide, then find and correct the error; complete problem set.

Land – Debrief: Facilitate a discussion about why estimates are helpful when dividing.

Daily Exit Ticket: Complete an area model and equations to solve a division problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #14: Divide two-digit numbers by one-digit numbers by using place value strategies

Standard: 4.NBT.B.6

Mathematical Practice: 6

Target: Divide two-digit numbers by one-digit numbers by using place value strategies.

Learning Activities:

Fluency – Students say the product and then read the equation to build fluency with the 10 times as much relationship from module 1; divide tens and ones in unit form, write equations and expressions in standard form, and add two quotients to build fluency place value strategies for dividing; determine whether a group of tens and ones may be divided into 2, 3, or 4 equal groups to prepare for modeling division with a place value chart.

Launch – Students reason about how to share a number of objects equally.

<u>Learn</u> – Students use place value disks to represent dividing tens and ones; draw on a place value chart to represent a division expression and find the quotient; use the break apart and distribute strategy to divide and record with equations; complete problem set.

Land – Debrief: Facilitate a discussion about how a place value chart can help students divide.

Daily Exit Ticket: Draw on a place value chart and complete equations to solve a division problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, place value disks set

Lesson #15: Divide three-digit numbers by one-digit numbers by using place value strategies

Standard: 4.NBT.B.6

Mathematical Practice: 7

Target: Divide three-digit numbers by one-digit numbers by using place value strategies.

Learning Activities:

<u>Fluency</u> – Students write the product to build fluency with the 10 times as much relationship from module 1; divide ones or tens in unit form to build place value understanding for dividing multi-digit numbers. <u>Launch</u> – Students analyze different ways to represent the same number.

<u>Learn</u> – Students analyze numbers in unit form to determine when to rename and decompose hundreds, tens, and ones as tens and ones to equally divide the units; draw place value disks to rename and decompose hundreds, tens, and ones as tens and ones and represent division by using an equation; break apart and distribute the total by using equations to represent division; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about using the place value chart to divide.

Daily Exit Ticket: Draw on a place value chart and complete the division equations to solve a division problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, 10 Times as Much Sprint

Lesson #16: Divide by using the break apart and distribute strategy

Standard: 4.NBT.B.6

Mathematical Practice: 1

Target: Divide by using the break apart and distribute strategy.

Learning Activities:

<u>Fluency</u> – Students interpret a tape diagram modeling measurement or partitive division and write an equation to prepare for representing and solving division word problems; divide tens and ones in unit form, write equations in standard form, and add two quotients to build fluency with place value strategies for dividing; relate division scenarios to tape diagrams.

Launch – Students reason about, represent, and solve a word problem where the number in each group is unknown.

<u>Learn</u> – Students share solutions and reason about their connections; reason about, represent, and solve a word problem where the number of groups is unknown; share solutions and reason about their connections; complete problem set.

Land – Debrief: Facilitate a discussion about using the break apart and distribute strategy to divide.

Daily Exit Ticket: Solve a division problem and explain strategy used.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Topic A, B, C: Quizzes

Topic D: Problem Solving with Measurement

Lesson #17: Express measurements of length in smaller units

Standard: 4.M.A.1, 4.M.A.2

Mathematical Practice: 8

Target: Express measurements of length in smaller units.

Learning Activities:

Fluency – Students determine the unknown factor, then say the equation in standard form to build fluency with the 10 *times as much* relationship from module 1; count by a unit of 6 tens in unit and standard form from 0 to 300 to build place value understanding for operating with multi-digit numbers; use a number bond and a multiple of 10 to decompose a two-digit total in a division expression to develop fluency with place value strategies for division.

<u>Launch</u> – Students discuss whether larger customary length measurements can be converted to smaller customary length measurements.

<u>Learn</u> – Students determine relationships between customary units of length; use tape diagrams, number lines, and conversion tables to represent length conversions; convert, add, and subtract customary length measurements with mixed units; complete problem set.

Land – Debrief: Facilitate a discussion about expressing customary measurements of length in terms of smaller units.

Daily Exit Ticket: Convert larger units to smaller units.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, meter stick, paper strips, ruler

Lesson #18: Investigate and use formulas for the perimeter of a rectangle

Standard: 4.M.A.3

Mathematical Practice: 4

Target: Investigate and use formulas for the perimeter of a rectangle.

Learning Activities:

<u>Fluency</u> – Students determine the unknown factor, then say the equation to build fluency with the 10 *times as much* relationship from module 1; count by a unit of 6 tens in unit and standard form from 300 to 600 to build place value understanding for operating with multi-digit numbers; find the perimeter and area of a rectangle to prepare for generating and investigating formulas for perimeter of a rectangle. **Launch** – Students determine the distance around a soccer field. **Learn** – Students generate three different formulas for the perimeter of a rectangle; find an unknown side length of a rectangle when given the perimeter and a side length; solve a perimeter word problem; complete problem set.

Land – Debrief: Facilitate a discussion about what measurements are needed to find the perimeter of a rectangle.

Daily Exit Ticket: Write an equation to find the perimeter of a rectangle.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #19: Apply area and perimeter formulas to solve problems

Standard: 4.M.A.3

Mathematical Practice: 2

Target: Apply area and perimeter formulas to solve problems.

Learning Activities:

<u>Fluency</u> – Students determine the unknown factor to build an understanding of 10 times as much from module 1; find the perimeter and area of a rectangle to prepare for applying the area and perimeter formulas to solve problems.

<u>Launch</u> – Students identify the areas and perimeters of rectangles in pictures of real-world objects. <u>Learn</u> – Students use the length and width of a rectangle to find the area and perimeter; convert units and use the area formula to find the unknown length of a rectangle when the area and width are known; analyze a work sample to identify how, when given the area and perimeter of a rectangle, you can find the unknown length and width of the rectangle; complete problem set.

Land – Debrief: Facilitate a discussion about the formulas for the area and perimeter of a rectangle.

Daily Exit Ticket: Solve area and perimeter word problems.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Unknown Factor Sprint, colored pencils Lesson #20: Solve word problems involving additive and multiplicative comparisons

Standard: 4.OA.A.2, 4.M.A.2, 4.M.A.3

Mathematical Practice: 1

Target: Solve word problems involving additive and multiplicative comparisons.

Learning Activities:

<u>Fluency</u> – Students use a number bond and a multiple of 10 to decompose a three-digit total in a division expression to develop fluency with place value strategies to divide; write equations to represent a tape diagram to prepare for distinguishing between additive comparison and multiplicative comparison problems. <u>Launch</u> – Students use a tape diagram to describe the lengths of three objects.

<u>Learn</u> – Students create a context to represent a tape diagram that shows additive and multiplicative relationships and find the unknown values; draw a tape diagram to represent a situation with an unknown amount that is less than the known amount and find the unknown; represent and solve a variety of comparisons in a word problem; complete problem set.

Land – *Debrief:* Facilitate a discussion about different types of comparison in word problems.

Daily Exit Ticket: Use the Read-Write-Draw process to solve additive and multiplicative comparison problems.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Topic E: Factors and Multiples

Lesson #21: Find factor pairs for numbers up to 100 and use factors to identify numbers as prime or composite

Standard: 4.OA.B.4

Mathematical Practice: 6

Target: Find factor pairs for numbers up to 100 and use factors to identify numbers as prime or composite.

Learning Activities:

<u>Fluency</u> – Students multiply a two-digit number by a one-digit number to build fluency with multiplying whole numbers from topic B; identify a number as even or odd to prepare for identifying factor pairs and prime and composite numbers; find an unknown factor to prepare for identifying factor pairs and prime and composite numbers.

<u>Launch</u> – Students make arrays to help them reason about the number of factors for a given number. <u>Learn</u> – Students identify the factors and product represented in an array and check that they have found all possible combinations of factors; find all the factors of a number and identify prime and composite numbers; find factors of numbers to determine whether the numbers are prime or composite; complete problem set.

Land – Debrief: Facilitate a discussion about prime and composite numbers and their factors.

Daily Exit Ticket: List the factors for each number; select whether a number is prime or composite.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #22: Use division and the associative property of multiplication to find factors

Standard: 4.OA.B.4

Mathematical Practice: 3

Target: Use division and the associative property of multiplication to find factors.

Learning Activities:

<u>Fluency</u> – Students multiply a two-digit number by a one-digit number to build fluency with multiplying whole numbers from topic B; identify a number as even or odd to prepare for identifying factor pairs and prime and composite numbers; find an unknown factor and identify the factors to develop fluency with factors and prime and composite numbers.

Launch – Students reason about how to find some of the factors of a larger number.

<u>Learn</u> – Students use a pictorial model to identify factors of a number and numbers that are not factors of the number; use decomposition, division, and patterns to find factors; study the use of the associative property of multiplication to find factors of a number; complete problem set.

Land – Debrief: Facilitate a discussion about different strategies that can be used to find factors.

Daily Exit Ticket: Explain whether a number is a factor of another number.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #23: Determine whether a whole number is a multiple of another number

Standard: 4.OA.B.4

Mathematical Practice: 7

Target: Determine whether a whole number is a multiple of another number.

Learning Activities:

Fluency – Students compare two multi-digit whole numbers to build fluency with comparing numbers from module 1; find a pattern and complete a table to prepare for seeing relationships between factors and multiples.

Launch – Students reason about the relationship between numbers in a word problem.

<u>Learn</u> – Students find patterns in a sequence of multiples; analyze a hundreds chart to observe patterns in the multiples of a number; use an input–output table to reason about multiples; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about finding multiples.

Daily Exit Ticket: Find multiples of numbers.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Horizontal Input-Output Table, colored pencils **Lesson #24: Recognize that a number is a multiple of each of its factors**

Standard: 4.OA.B.4

Mathematical Practice: 8

Target: Recognize that a number is a multiple of each of its factors.

Learning Activities:

<u>Fluency</u> – Students compare two multi-digit whole numbers to build fluency with comparing numbers from module 1; count by a unit of 7 tens in unit and standard form from 0 to 350 to build place value understanding for operating with multi-digit numbers; find an unknown factor, identify the factors, and determine whether the product is prime or composite to develop fluency with factors and prime and composite numbers.

Launch – Students use multiples and factors to decompose a number.

<u>Learn</u> – Students reason about the relationship between factors and multiples; use the hundreds chart to identify relationships between factors and multiples; break apart a factor in a multiplication fact and use the associative property of multiplication to find other factors; complete problem set. Land – Debrief: Facilitate a discussion about multiples and factors.

Daily Exit Ticket: Determine if factor statements are true or false.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #25: Explore properties of prime and composite numbers up to 100 by using multiples

Standard: 4.OA.B.4

Mathematical Practice: 3

Target: Explore properties of prime and composite numbers up to 100 by using multiples.

Learning Activities:

<u>Fluency</u> – Students compare two multi-digit whole numbers to build fluency with comparing numbers from module 1; say the first five multiples of 3 and 6, then answer questions using the lists of multiples to develop fluency with multiples.

Launch – Students predict how a sieve might relate to mathematics.

<u>Learn</u> – Students use the Sieve of Eratosthenes algorithm to eliminate multiples on the hundreds chart; use factors to recognize that a multiple of one factor is also a multiple of the other factor; identify the numbers on the chart as either prime or composite and analyze their properties; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about using multiples to identify prime and composite numbers.

Daily Exit Ticket: Name prime and composite numbers and explain.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Hundreds Chart, colored pencils, Compare Numbers Sprint Lesson #26: Use relationships within a pattern to find an unknown term in the sequence

Standard: 4.OA.C.5

Mathematical Practice: 6

Target: Use relationships within a pattern to find an unknown term in the sequence.

Learning Activities:

Fluency – Students count by a unit of 7 tens in unit and standard form from 350 to 700 to build place value understanding for operating with multi-digit numbers; find a pattern and complete a table to prepare for using relationships within a pattern sequence to find an unknown term; say the first five multiples of 4 and 8 and then answer questions by using the lists of multiples to develop fluency with multiples. **Launch** – Students self-select a strategy to determine an unknown number in a skip-count by fives

<u>Launch</u> – Students self-select a strategy to determine an unknown number in a skip-count by fives sequence.

<u>Learn</u> – Students find the unknown number of circles for figures in a growing pattern; use what they know about multiples to find an unknown term in a repeating shape pattern; find an unknown term in a number pattern and identify other features of the numbers in the pattern; determine whether a statement about a number pattern is true or false; complete problem set.

Land – Debrief: Facilitate a discussion about how to find unknown terms in patterns and how to identify other features of a pattern.

Daily Exit Ticket: Complete a number pattern.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, True and False Cards, Vertical Input-Output Table

Topic D, E: Quizzes

Module 2: Assessment

Unit I	Iodifications for Special Population Students
Advanced Learners	Lesson 1-Consider challenging students to multiply multiples of 100 and
	1,000 once students demonstrate understanding of multiplying multiples of
	Lesson 5-Consdier inviting students to write their own multiplication
	expressions.
	Lesson 15-Consider inviting students to write their own division
	expressions.
	Lesson 21-Invite students to begin thinking about how they could find all
	Lesson 24-Consider presenting students with factor riddles to solve
Struggling Learners	Lesson 1-Consider using parenthesis to show how factors are grouped.
	$7 \times 60 = 7 \times (6 \times 10), (7 \times 6) \times 10$
	<i>Lesson 8</i> -Consider providing equations with blanks to scaffold the problems
	for students.
	Lesson 13-Consider highlighting the relationship between the area model
	Lesson 17 -Consider creating an anchor chart to represent the relationships
	between customary units of length.
	Lesson 23-Consider having students use a number bond to help them in
	decomposing a number.
English Language Learners	Lesson 1 -Consider previewing the meaning of the word associative by
	using variations of the root word.
	unknown factor and total as they describe the categories they identified
	Lesson 3 -Consider discussing the meaning of the word <i>formula</i> after
	introducing it.
	<i>Lesson 4</i> -Consider previewing the phrase <i>break apart and distribute</i> before
	students discuss their work.
	Lesson 13-Consider writing equations and comparison statements to
	Lesson 14-Consider making an anchor chart to support students in
	recalling what the term divisor represents.
	Lesson 16-Consider providing images or other real-world examples to
	support students' understanding of the problem contexts.
	Lesson 21-Consider creating an anchor chart with visual models of prime
Special Needs Learners	And composite numbers.
opecial needs Learners	manipulate square tiles so they can confirm the areas of rectangles.
	<i>Lesson 5</i> -Consider providing a labeled place value chart for students to use
	throughout the lesson.
	<i>Lesson 11</i> -Consider providing tools such as place value disks, play money,
	and grid paper for student use.
	the total by inviting them to skin-count by the divisor
	Lesson 22-Consider providing an alternate method of response, such as
	counters or the digital interactive.
	<i>Lesson</i> 23-Consider having students complete the directions by using
	numbers 1-60, instead of the whole chart.
Learners with a 504	Refer to page four in the <u>Parent and Educator Resource Guide to</u>
	<u>Section 304</u> to assist in the development of appropriate plans.

Standards:

English Language Arts

- RI.CR.4.1. Refer to details and examples as textual evidence when explaining what an informational text says explicitly and make relevant connections when drawing inferences from the text. (Lessons 3, 7, 9, 17-20: Students engage in reading, interpreting, and solving word problems.)
- LVL.4.2. Determine or clarify the meaning of unknown and multi-meaning academic and domainspecific words and phrases in a text relevant to a *grade 4* reading and content, choosing flexibility from a range of strategies.
 - A. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.
 - B. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., telegraph, photograph, autograph).
 - C. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.
- SL.PE.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
 - A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
 - B. Follow agreed-upon rules for discussions and carry out assigned roles.
 - C. Pose and respond to specific questions to clarify or follow up on information and make comments that contribute to the discussion and link to the remarks of others.
 - D. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

(Lessons 1-26: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)

- SL.II.4.2. Paraphrase portions of a text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally). (Lessons 1-26: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- SL.ES.4.3. Identify the reasons and evidence a speaker provides to support particular points. (Lessons 1-26 Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- SL.PI.4.4. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace. (Lessons 1-26: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)

Science

• 3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. (Lessons 1-26: Students engage in mathematical exploration to test strategies and solutions in order to meet the desired outcome.)

<u>Art</u>

- 1.5.5.Re7a: Speculate about artistic processes. Interpret and compare works of art and other responses. (Lesson 19: Students analyze a piece of artwork and discuss its connection to mathematics.)
- 1.5.5.Re7b: Analyze visual arts including cultural associations. (Lesson 19: Students analyze a piece of artwork and discuss its connection to mathematics.)
Integration of 21st Century Skills

Standards:

- 8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data. (Lessons 1-26: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- 8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate. (Lessons 1-26: Students analyze mathematical data and record multiple algorithms; compare algorithms to determine the best way to solve each problem.)
- 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. (Lessons 1-26: Students engage in mathematical discourse to collaborate with classmates to analyze information, solve problems, and make sense of strategies.)
- 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. (Lessons 1-26: Students follow the given steps to solve word problems and create and solve equations.)
- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process. (Lessons 3, 7, 9, 17-20: Students engage in reading, interpreting, and solving word 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. (Lessons 3, 7, 9, 17-20: Students engage in reading, interpreting, and solving word problems.)

Unit Title: Module 3: Multiplication and Division of Multi-Digit Numbers

Unit Description: In Module 3, students multiply numbers of up to four digits by one-digit numbers and twodigit numbers by two-digit numbers. Students also divide numbers of up to four digits by one-digit numbers, resulting in whole number quotients and remainders.

Unit Duration: 27 days

Desired Results

Standard(s):

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

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

4.M.A.1 - Know relative sizes of measurement units within one system of units including km, m, cm; 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.

Understandings: *Topic A:*I can multiply and divide multiples of 10, 100, and 1000 by focusing on place value units.

- I can use place value disks and write equations in unit form to help them recognize that they can use familiar multiplication and division facts to find products and quotients.
- I can apply the associative property to help rewrite two-factor multiplication expressions as three-factor expressions.
- I can use an area model to show that multiplying a multiple of 10 by a multiple of 10 results in a number with the unit of hundreds.

Topic B:

 I can divide numbers up to four digits by one-digit numbers.

Essential Questions:

Topic A:

- How can thinking about place value units help us to divide multiples of 100 and 1000?
- How can thinking about place value units help us to multiply by multiples of 100 and 1000?
- How can we use what we know about place value to help multiply a two-digit multiple of 10 by a two-digit multiple of 10?

Topic B:

- How can a place value chart help you divide hundreds, tens, and ones?
- How can an area model help you divide hundreds, tens, and ones?
- How is division of larger numbers similar to a series of smaller division expressions?

- I can draw an area model, represent the divisor as one side length, and compose the unknown side length by building up to the total.
- I can represent the division on a place value chart.
- I can decompose the totals into place value units, divide each unit, and record long division in vertical form alongside the place value chart to reinforce conceptual understanding.
- I can recognize that, although the value of the unit is different, the process of dividing each unit remains the same.

Topic C:

- I can apply the distributive property to multiply numbers of up to four digits by one-digit numbers.
- I can break apart the larger factor by place value and multiply the number of each unit by the one-digit factor.
- I can represent the multiplication by using place value charts, area models, and vertical form.
- I can record partial products in vertical form by recording each partial product separately and by recording them together on one line.

Topic D:

- I can apply the associative and distributive properties to multiply a two-digit number by a multiple of 10 and then progress to multiplying two-digit numbers by two-digit numbers.
- I can use area models to represent multiplication and recognize how each factor is broken apart and multiplied.
- I can see that each part of one factor is multiplied by each part of the other factor.
- I can record four partial products in the area model and in vertical form alongside the area model and then transition to recording two partial products in the same way.
- I can add the partial products to find the product.

Topic E:

- I can use multiplicative relationships to convert units of time and customary units of weight and liquid volume to smaller units.
- I can use conversion tables and number lines to express larger measurement units in terms of smaller units and recognize that the smaller units are all multiples of the same number.
- I can notice relationships in the conversion tables and use the tables to convert other amounts.
- I can add and subtract mixed units by using different methods including the method of expressing larger units in terms of smaller units before adding or subtracting and the method of

- How do we determine when to draw on a place value chart and when to draw an area model to divide?
- How is drawing to divide on the place value chart connected to division in vertical form?
- What is long division?
- When is long division an efficient division method?
- What do you think about when selecting a method to divide?
- How does place value understanding help you divide when the total or quotient includes the digit 0?

Topic C:

- How can we use familiar facts and what we know about place value to help us multiply three-digit numbers by one-digit numbers?
- How are the methods we use to multiply two-digit, three-digit, and four-digit numbers by one-digit numbers similar?
- In what ways can thinking about multiplication on a place value chart or area model help us record partial products in vertical form?
- Is it helpful to have different ways to record multiplication? Why?

Topic D:

- How can we use what we know about multiplying a number by a one-digit number to help us multiply a number by a multiple of 10?
- How can we use the distributive property to multiply a two-digit number by a two-digit number?
- How can an area model help us find and record partial products?
- What is useful for us to picture or think about when we find and record partial products in vertical form?
- How is finding two partial products similar to and different from finding four partial products?
- How can we represent renaming in vertical form?
- What are some different ways to show how we use the distributive property to multiply?

Topic E:

- How are hours, minutes, and seconds related?
- What strategies can we use to convert minutes to seconds and hours to minutes?
- How are pounds and ounces related?
- What strategies can we use to convert pounds to ounces?
- How are gallons, quarts, pints, and cups related?
- What strategies can we use to convert gallons, quarts, and pints to smaller units?

Topic F:

Assessment Evidence

Assessments:

- Exit Slips
- Topic Quizzes (A F)
- Module 3 Assessment

Benchmarks:

• The iReady Assessment is administered in the fall and winter.

Topic A: Compose and Decompose Units of TenLesson #1: Divide multiples of 100 and 1000

Standard: 4.NBT.B.6

Mathematical Practice: 8

Target: Divide multiples of 100 and 1000.

Learning Activities:

<u>Fluency</u> – Students visualize a number line while counting aloud to develop familiarity with Happy Counting; divide ones or tens in unit form and write the equation in standard form to prepare for dividing multiples of 10, 100, and 1,000; say a number in standard form and then rename the number by using tens or hundreds to prepare for dividing by multiples of 10, 100, and 1,000.

Launch – Students relate dividing one-dollar bills, ten-dollar bills, and hundred-dollar bills.

<u>Learn</u> – Students represent a division expression in unit form with place value disks; write multiples of 100 and 1000 in unit form to divide; divide multiples of 100 by using a place value strategy; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion that emphasizes how thinking about place value units can support dividing multiples of 100 and 1000.

Daily Exit Ticket: Divide using unit form.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Place Value Disks Set

Lesson #2: Multiply by multiples of 100 and 1000

Standard: 4.NBT.B.5

Mathematical Practice: 7

Target: Multiply by multiples of 100 and 1000.

Learning Activities:

<u>Fluency</u> – Students find a product by decomposing a multiple of 10 and rewriting a two-factor expression as a three-factor expression to prepare for multiplying by multiples of 10, 100, and 1,000; multiply ones or tens in unit form and write the equation in standard form to prepare for multiplying by multiples of 10, 100, and 1,000.

Launch – Students find the value of bills that have different denominations.

<u>Learn</u> – Students represent a multiplication expression in unit form with place value disks; write multiples of 100 and 1000 in unit form to multiply; study an example that shows how the associative property can be applied to multiply a number by a multiple of 1000; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion about using place value to support multiplying multiples of 100 and 1000.

Daily Exit Ticket: Decompose larger factors and multiply.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Place Value Disks Set

Lesson #3: Multiply a two-digit multiple of 10 by a two-digit multiple of 10

Standard: 4.NBT.B.5

Mathematical Practice: 3

Target: Multiply a two-digit multiple of 10 by a two-digit multiple of 10.

Learning Activities:

Fluency – Students visualize a number line while counting aloud to develop familiarity with Happy Counting; find a product by decomposing a multiple of 100 and rewriting a two-factor expression as a three-factor expression to develop fluency with multiplying by multiples of 10, 100, and 1,000; say a number in standard form and then rename the number by using tens or hundreds to build fluency with strategies for multiplying and dividing.

Launch – Students analyze a list of related unit form multiplication equations.

<u>Learn</u> – Students use a grid to draw arrays composed of 10 by 10 squares; use an area model and unit form equations to multiply multiples of 10; consider units as they multiply multiples of 10 in unit form; complete problem set.

Land – Debrief: Facilitate a discussion about multiplying with two-digit multiples of 10.

Daily Exit Ticket: Multiply using unit form.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Multiples of 10 Grids

Topic B: Division of Thousands, Hundreds, Tens, and Ones Lesson #4: Apply place value strategies to divide hundreds, tens, and ones

Standard: 4.NBT.B.6

Mathematical Practice: 1

Target: Apply place value strategies to divide hundreds, tens, and ones.

Learning Activities:

<u>Fluency</u> – Students visualize a number line while counting aloud to build fluency with counting by thousands; write an expression in expanded and standard form to prepare for applying place value strategies to divide hundreds, tens, and ones; use place value strategies to divide a two-digit number to prepare for dividing hundreds, tens, and ones.

Launch – Students examine division expressions and determine the usefulness of thinking about the total as tens and ones.

<u>Learn</u> – Students draw on a place value chart and write an equation to divide hundreds, tens, and ones; draw an area model and write an equation to divide; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion about using a place value chart and an area model to divide hundreds, tens, and ones.

Daily Exit Ticket: Divide by drawing a model.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Place Value Chart to Hundreds

Lesson #5: Apply place value strategies to divide thousands, hundreds, tens, and ones

Standard: 4.NBT.B.6

Mathematical Practice: 5

Target: Apply place value strategies to divide thousands, hundreds, tens, and ones.

Learning Activities:

<u>*Fluency*</u> – Students visualize a number line while counting aloud to build fluency with counting by thousands; write an expression in expanded and standard form to prepare for applying place value strategies to divide thousands, hundreds, tens, and ones; use place value strategies to divide a three-digit number to prepare for dividing thousands, hundreds, tens, and ones.

<u>Launch</u> – Students examine division work with two-digit and three-digit totals and engage in discussion about applying similar strategies to dividing four-digit numbers.

<u>Learn</u> – Students draw on a place value chart to divide thousands, hundreds, tens, and ones; draw an area model to divide thousands, hundreds, tens, and ones; examine a division equation and self-select a way to represent division; complete problem set.

Land – Debrief: Facilitate a discussion about applying place value strategies to divide thousands, hundreds, tens, and ones.

Daily Exit Ticket: Divide by drawing a model.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Place Value Chart to Thousands

Standard: 4.NBT.B.6

Mathematical Practice: 6

Target: Connect pictorial representations of division to long division.

Learning Activities:

<u>Fluency</u> – Students round a number to the nearest thousand and ten thousand to build fluency with rounding multi-digit numbers to any place from module 1; visualize a number line while counting aloud to build fluency with counting by ten thousands; use a number bond to decompose a three-digit total in a division expression to develop fluency with using place value strategies to divide.

Launch – Students discuss drawing on the place value chart to divide and representing that division with an equation.

<u>Learn</u> – Students relate drawing to divide on the place value chart to vertical form; make connections between drawing on the place value chart to divide and using vertical form to represent division; use long division to divide; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion about drawing to divide on the place value chart and representing long division with vertical form.

Daily Exit Ticket: Divide using a place value chart; write in vertical form.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Place Value Chart to Hundreds and Vertical Form **Lesson #7: Represent division by using partial quotients**

Standard: 4.NBT.B.6

Mathematical Practice: 8

Target: Represent division by using partial quotients.

Learning Activities:

<u>Fluency</u> – Students round a number to the nearest thousand and hundred thousand to build fluency with rounding multi-digit numbers to any place from module 1; visualize a number line while counting aloud to build fluency with counting by ten thousands; use a number bond to decompose a three-digit total in a division expression to develop fluency with using place value strategies to divide.

Launch – Students make connections between the standard algorithm for subtraction and the standard algorithm for division.

<u>Learn</u> – Students use vertical form to represent their division work on the place value chart; use long division to divide four-digit numbers; determine whether statements about division methods are always, sometimes, or never true; complete problem set.

Land – Debrief: Facilitate a discussion about using long division to divide three-digit and four-digit numbers by one-digit numbers.

Daily Exit Ticket: Divide using partial quotients.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Place Value Chart to Thousands and Vertical Form, Division Equation Cards

Lesson #8: Choose and apply a method to divide multi-digit numbers

Standard: 4.NBT.B.6

Mathematical Practice: 6

Target: Choose and apply a method to divide multi-digit numbers.

Learning Activities:

<u>*Fluency*</u> – Students round a number to the nearest thousand to build fluency with rounding multi-digit numbers to any place from module 1.

Launch – Students think about various methods to divide.

<u>Learn</u> – Students use various methods to find three different quotients; compare and contrast the methods used to divide in different problems; reason to select a method to find a quotient; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about selecting a method to divide.

Daily Exit Ticket: Divide by showing and explaining the method used.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, prepared signs, Round to the Nearest Thousand Sprint, Methods Recording Page

Topic C: Multiplication of up to Four-Digit Numbers by One-Digit Numbers Lesson #9: Apply place value strategies to multiply three-digit numbers by one-digit numbers Standard: 4.NBT.B.5

Mathematical Practice: 5

Target: Apply place value strategies to multiply three-digit numbers by one-digit numbers.

Learning Activities:

<u>Fluency</u> – Students visualize a number line while counting aloud to build fluency with counting by hundred thousands; write a multiplication expression that represents a place value drawing to prepare for multiplication with three-digit numbers; multiply ones or tens in unit form and write the equation in standard form to build place value understanding for multiplying multi-digit numbers.

<u>Launch</u> – Students compare multiplying two-digit numbers and three-digit numbers by one-digit numbers on the place value chart.

<u>Learn</u> – Students multiply a three-digit number by a one-digit number on the place value chart; analyze area models that represent multiplication of a three-digit number by a one-digit number; select a method to multiply a three-digit number by a one-digit number; complete problem set.

Land – Debrief: Facilitate a discussion using think-pair-share to discuss how to solve a problem.

Daily Exit Ticket: Multiply by showing and explaining the method used.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Four-Column Place Value Chart

Lesson #10: Apply place value strategies to multiply four-digit numbers by one-digit numbers

Standard: 4.NBT.B.5

Mathematical Practice: 7

Target: Apply place value strategies to multiply four-digit numbers by one-digit numbers.

Learning Activities:

<u>Fluency</u> – Students visualize a number line while counting aloud to build fluency with counting by hundred thousands; write a multiplication expression that represents an area model to prepare for multiplication with four-digit numbers; multiply tens or hundreds in unit form and write the equation in standard form to build place value understanding for multiplying multi-digit numbers.

<u>Launch</u> – Students reason about using place value strategies for multiplying two-digit and three-digit numbers by one-digit numbers to multiply four-digit numbers by one-digit numbers.

<u>Learn</u> – Students multiply a four-digit number by a one-digit number on the place value chart; use an area model to multiply a four-digit number by a one-digit number; use various methods to multiply four-digit numbers by one-digit numbers; compare and contrast the methods used to multiply four-digit numbers by one-digit numbers; complete problem set.

Land – Debrief: Facilitate a discussion about multiplying up to four-digit numbers by one-digit numbers.

Daily Exit Ticket: Multiply by showing and explaining the method used.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Five-Column Place Value Chart, Methods Recording Page Lesson #11: Represent multiplication by using partial products

Standard: 4.NBT.B.5

Mathematical Practice: 8

Target: Represent multiplication by using partial products.

Learning Activities:

<u>Fluency</u> – Students use the standard algorithm for addition or subtraction with multi-digit whole numbers to build fluency with the operations from module 1; identify a number in the range 1–50 as prime or composite to build fluency with prime and composite numbers from module 2; find a product to build familiarity with alternative ways to think about equations.

<u>Launch</u> – Students compare the efficiency of adding partial products in horizontal and vertical forms. <u>Learn</u> – Students relate using vertical form to record partial products to using the place value chart and area model to represent multiplication; use vertical form to record partial products; analyze vertical form and partial products for a four-digit factor with 0 in the hundreds place; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about using vertical form to record partial products.

Daily Exit Ticket: Multiply using partial products.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Place Value Chart, Area Model, and Vertical Form **Lesson #12: Multiply by using various recording methods in vertical form**

Standard: 4.NBT.B.5

Mathematical Practice: 6

Target: Multiply by using various recording methods in vertical form.

Learning Activities:

<u>Fluency</u> – Students use the standard algorithm to add or subtract multi-digit whole numbers to build fluency with the operations from module 1; identify a number within 50 as prime or composite to build fluency with prime and composite numbers from module 2; find a product to build familiarity with alternative ways to think about equations.

Launch – Students examine methods for recording partial products.

<u>Learn</u> – Students use vertical form to record partial products; use vertical form to record partial products on one line, renaming larger units as needed; examine multiplication methods and select a method to use to multiply; complete problem set.

Land – Debrief: Facilitate a discussion about the different ways to record multiplication.

Daily Exit Ticket: Multiply two different ways.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Topic A, B, C: Quizzes

Topic D: Multiplication of Two-Digit Numbers by Two-Digit NumbersLesson #13: Multiply two-digit numbers by two-digit multiples of 10

Standard: 4.NBT.B.5

Mathematical Practice: 5

Target: Multiply two-digit numbers by two-digit multiples of 10.

Learning Activities:

<u>Fluency</u> – Students multiply multiples of 10 in unit form and write the equation in standard form to prepare for multiplying a two-digit number by a two-digit multiple of 10; find a product by decomposing the larger factor and rewriting a two-factor expression as a three-factor expression to prepare for multiplying a two-digit number by a two-digit number of 10.

Launch – Students find a need for multiplying two-digit numbers in a context.

<u>Learn</u> – Students use the associative property to multiply by a multiple of 10 by expressing it as 10 times as much as multiplying by a single digit; apply the distributive property to draw an area model and record equations to multiply by a multiple of 10; use the distributive property to find partial products and record them in vertical form; complete problem set.

Land – *Debrief:* Facilitate a discussion about multiplying a two-digit number by a two-digit multiple of 10.

Daily Exit Ticket: Use a place value chart and area model to solve multiplication problems.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Four-Column Place Value Chart, Partial Products Grid Lesson #14: Apply place value strategies to multiply two-digit numbers by two-digit numbers

Standard: 4.NBT.B.5

Mathematical Practice: 2

Target: Apply place value strategies to multiply two-digit numbers by two-digit numbers.

Learning Activities:

<u>Fluency</u> – Students multiply multiples of 10 in unit form and write the equation in standard form to prepare for multiplying two-digit numbers by two-digit numbers; find a product by decomposing the larger factor and rewriting a two-factor expression as a three-factor expression to build fluency with multiplying by multiples of 10, 100, and 1,000.

<u>Launch</u> – Students evaluate their readiness to solve a two-digit by two-digit multiplication problem. Learn – Students relate their previous understanding of the distributive property to multiplying a two-digit

number by a two-digit number with an array and an area model; analyze a work sample to relate recording four partial products in vertical form to an area model; apply two-digit by two-digit multiplication methods to find the number of pens in the container; complete problem set.

Land – *Debrief:* Facilitate a discussion about multiplying 2 two-digit numbers.

Daily Exit Ticket: Use area model and partial products to solve multiplication problems.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #15: Multiply with four partial products

Standard: 4.NBT.B.5

Target: Multiply with four partial products.

Learning Activities:

<u>*Fluency*</u> – Students find a product to build fluency with multiplying by multiples of 10, 100, and 1,000. *Launch* – Students identify and correct errors in the partial products in a work sample.

<u>Learn</u> – Students multiply and record the partial products in vertical form and reference an area model to confirm their work; use unit form to identify place value units as they record partial products in vertical form; multiply 2 two-digit numbers and explain their work; complete problem set.

Land – Debrief: Facilitate a discussion about multiplying with four partial products.

Daily Exit Ticket: Multiply by recording partial products in vertical form.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Multiply by Multiples of 10, 100, and 1,000 Sprint **Lesson #16: Multiply with two partial products**

Standard: 4.NBT.B.5

Mathematical Practice: 7

Target: Multiply with two partial products.

Learning Activities:

<u>Fluency</u> – Students write the factor pairs of a given number as multiplication expressions, then list the factors in order from least to greatest to build fluency with finding factor pairs from module 2; visualize a number line while counting aloud to build fluency with multiples of 2 and 4; say and answer questions about the first ten multiples of 2 or 4 to build fluency with multiples from module 2.

Launch – Students examine and compare recording sums and products in vertical form.

<u>Learn</u> – Students multiply a two-digit number by a two-digit number by breaking apart one number into tens and ones and multiplying the other number by the tens and ones; break apart one factor and apply the distributive property to record a two-digit by two-digit multiplication problem as two multiplication problems in vertical form; break apart one factor and apply the distributive property to record partial products on two lines in vertical form; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion that emphasizes connections between finding four partial products and finding two partial products to multiply 2 two-digit numbers.

Daily Exit Ticket: Multiply by recording partial products in vertical form.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #17: Apply the distributive property to multiply

Standard: 4.NBT.B.5

Mathematical Practice: 2

Target: Apply the distributive property to multiply.

Learning Activities:

<u>Fluency</u> – Students write the factor pairs of a given number as multiplication expressions, then list the factors in order from least to greatest to build fluency with finding factor pairs from module 2; visualize a number line while counting aloud to build fluency with multiples of 3 and 6; say and answer questions about the first ten multiples of 3 or 6 to build fluency with multiples from module 2.

Launch – Students select a strategy to find the total number of objects within an array.

<u>Learn</u> – Students relate the distributive property to recording two partial products and four partial products; select a method to find a product and compare their work; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion about using the distributive property and various strategies to multiply two-digit numbers by two-digit numbers.

Daily Exit Ticket: Multiply using the distributive property.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Topic E: Problem Solving with Measurement Lesson #18: Express units of time in terms of smaller units

Standard: 4.M.A.1, 4.M.A.2

Mathematical Practice: 1

Target: Express units of time in terms of smaller units.

Learning Activities:

Fluency – Students write the factor pairs of a given number as multiplication expressions, then list the factors in order from least to greatest to build fluency with finding factor pairs from module 2; identify a number in the range 50–100 as prime or composite to build fluency with prime and composite numbers from module 2; multiply a three-digit number by a one-digit number to build multiplication fluency with multi-digit numbers.

Launch – Students read a word problem three times to make sense of the problem.

<u>Learn</u> – Students determine the relationship between seconds, minutes, and hours; use a number line and a conversion table to represent time conversions; select a strategy to solve a word problem with mixed units; complete problem set.

Land – Debrief: Facilitate a discussion about using *times as long* to relate units of time.

Daily Exit Ticket: Complete a conversion table; solve a measurement word problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #19: Express customary measurements of weight in terms of smaller units

Standard: 4.M.A.1, 4.M.A.2

Mathematical Practice: 4

Target: Express customary measurements of weight in terms of smaller units.

Learning Activities:

Fluency – Students write the factor pairs of a given number as multiplication expressions, then list the factors in order from least to greatest to build fluency with finding factor pairs from module 2; identify a number in the range 50–100 as prime or composite to build fluency with prime and composite numbers from module 2; multiply a four-digit number by a one-digit number to build multiplication fluency with multi-digit numbers.

<u>Launch</u> – Students examine two scales to identify similarities and differences between metric and customary units of weight.

<u>Learn</u> – Students determine the relationship between pounds and ounces; use a number line and a conversion table to represent weight conversions; identify and correct the mistake in sample work that shows subtraction of mixed units; complete problem set.

Land – *Debrief:* Facilitate a discussion about the relationship between pounds and ounces.

Daily Exit Ticket: Complete a conversion table; solve a measurement word problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #20: Express customary measurements of liquid volume in terms of smaller units

Standard: 4.M.A.1, 4.M.A.2

Mathematical Practice: 5

Target: Express customary measurements of liquid volume in terms of smaller units.

Learning Activities:

<u>*Fluency*</u> – Students multiply one-digit and multi-digit whole numbers by a one-digit number to build multiplication fluency with multi-digit numbers.

<u>Launch</u> – Students examine containers of milk and discuss possible relationships between the amounts of milk in the containers.

<u>Learn</u> – Students determine relationships between customary units of liquid volume; use number lines and conversion tables to represent liquid volume conversions; convert liquid volumes and compare strategies with a partner; complete problem set.

Land – *Debrief:* Facilitate a discussion about the relationships between customary units of liquid volume.

Daily Exit Ticket: Complete a conversion table; solve a measurement word problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, chart paper, Liquid Volume Trade Cards, Multiply Whole Numbers Sprint

Topic F: Remainders, Estimating, and Problem Solving Lesson #21: Find whole number quotients and remainders

Standard: 4.OA.A.3, 4.NBT.B.6

Mathematical Practice: 2

Target: Find whole number quotients and remainders.

Learning Activities:

<u>Fluency</u> – Students use place value strategies to divide a three-digit number to prepare for finding wholenumber quotients and remainders; visualize a number line while counting aloud to build fluency with multiples of 8; say and answer questions about the first ten multiples of 4 or 8 to build fluency with multiples from module 2.

<u>Launch</u> – Students consider situations in which a total cannot be divided evenly into equal groups. <u>Learn</u> – Students identify a remainder with an array; represent a quotient and remainder in an equation; analyze the relationship between the divisor and remainder; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about representing remainders.

Daily Exit Ticket: Use the Read-Write-Draw process to solve a division problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #22: Represent, estimate, and solve division word problems

Standard: 4.OA.A.3, 4.NBT.B.6

Mathematical Practice: 1

Target: Represent, estimate, and solve division word problems.

Learning Activities:

<u>Fluency</u> – Students use place value strategies to divide a four-digit number to prepare for estimating and interpreting quotients and remainders; visualize a number line while counting aloud to build fluency with multiples of 9; say and answer questions about the first ten multiples of 6 or 9 to build fluency with multiples from module 2.

Launch – Students relate two types of division to word problems and tape diagrams.

<u>Learn</u> – Students estimate the quotient in a word problem by rounding the total to a multiple of the divisor; solve division word problems and determine the reasonableness of their exact answers; complete problem set.

Land – *Debrief:* Facilitate a discussion about estimation and division word problem types.

Daily Exit Ticket: Use the Read-Write-Draw process to solve a division problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #23: Solve multi-step word problems and interpret remainders

Standard: 4.OA.A.3

Mathematical Practice: 4

Target: Solve multi-step word problems and interpret remainders.

Learning Activities:

<u>Fluency</u> – Students count by halves, thirds, or fourths on a tape diagram and identify the fraction shaded to prepare for fraction decomposition and equivalence in module 4; identify the number of equal parts, the fractional unit, and the unit fraction to prepare for fraction decomposition and equivalence in module 4; write equations and determine the perimeter and area of a rectangle to build fluency with applying area and perimeter formulas for rectangles from module 2.

Launch – Students use the provided example to answer different questions about the same division context.

<u>Learn</u> – Students solve multi-part word problems and use the quotient and remainder in their solutions; solve multi-step word problems that require interpretation of remainders; identify and correct the mistake in sample work for a multi-step word problem; complete problem set.

Land – Debrief: Facilitate a discussion about interpreting division answers.

Daily Exit Ticket: Use the Read-Write-Draw process to solve a division problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #24: Solve multi-step word problems and assess the reasonableness of solutions

Standard: 4.OA.A.3

Mathematical Practice: 3

Target: Solve multi-step word problems and assess the reasonableness of solutions.

Learning Activities:

Fluency – Students count by sixths and eighths on a tape diagram and identify the fraction shaded to prepare for fraction decomposition and equivalence in module 4; identify the number of equal parts, the fractional unit, and the unit fraction to prepare for fraction decomposition and equivalence in module 4; write an equation and determine the perimeter and area of a rectangle to build fluency with applying area and perimeter formulas for rectangles from module 2.

Launch – Students observe how estimates inform real-world decisions.

<u>Learn</u> – Students draw a tape diagram to represent a multi-step word problem and use estimates to assess the reasonableness of their answers; solve multi-step word problems and examine other students' solution paths; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion about solving multi-step word problems and assessing the reasonableness of answers.

Daily Exit Ticket: Use the Read-Write-Draw process to solve a division problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Topic D, E, F: Quizzes

Module 3: Assessment

Unit Modifications for Special Population Students					
Advanced Learners	Lesson 5-Consider providing equations that require decomposing more				
	units in the total to divide.				
	Lesson 7 -Consider challenging students to provide a question or context				
	that could represent the equations on the division equation cards.				
	Lesson 16-Consider challenging students to apply the methods they use in				
	Lesson 19-Consider challenging students to research why we use the				
	letters <i>b</i> to abbreviate pounds and the letters of to abbreviate ounces				
	Lesson 21 -Consider providing students with division expressions that have				
	larger totals.				
Struggling Learners	Lesson 3-Consider providing choice by allowing partners to select their own				
	multiples.				
	Lesson 4 -Consider providing equations with blanks for students to use.				
	Lesson 5 -Consider assigning roles for partners.				
	Lesson 11-Consider providing equations with blanks to support students				
	with the distributive property.				
	Lesson 17-Consider displaying a work sample of each method used to				
	solve a problem.				
	Lesson 20-Consider using the relationship between 1 dollar and 4 quarters				
	to help students make the connection between 1 gallon and 4 quarts.				
	Lesson 24-Consider creating an anchor chart to support students with the				
	various terminology used during the problem-solving process.				
English Language Learners	Lesson 6-Consider clarifying the use of the word long in the term long				
	division.				
	students as they work with a partner to use long division and vertical form to				
	divide				
	Lesson 13-Consider using an anchor chart to support students in				
	differentiating between the distributive and associative properties.				
	Lesson 15-Consider providing scaffolded sentence frames to support				
	students as they explain their calculations.				
	Lesson 18 -Consider creating a chart that helps students differentiate				
	between the names of the measurement units, abbreviations, and relative				
	SIZES.				
	questions for students to use as they discuss each other's work				
Special Needs Learners	Lesson 1-Consider providing place value disks for students to use as they				
	divide.				
	<i>Lesson 4</i> -Consider using number bonds or a subtraction equations as you				
	build the area models.				
	<i>Lesson</i> 7-Consider providing a template with the long division symbol,				
	subtraction symbols, and lines already on the grid.				
	Lesson 9 -Consider providing place value disks for students to represent the				
	Indulplication instead of drawing on the place value chart.				
	demonstrate the relationships between customary units of liquid volume				
	Lesson 23-Consider color-coding and labeling the guotient and remainder				
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to				
	<u>Section 504</u> to assist in the development of appropriate plans.				

Standards:

English Language Arts

- RI.CR.4.1. Refer to details and examples as textual evidence when explaining what an informational text says explicitly and make relevant connections when drawing inferences from the text. (Lessons 18-24: Students engage in reading, interpreting, and solving word problems.)
- LVL.4.2. Determine or clarify the meaning of unknown and multi-meaning academic and domainspecific words and phrases in a text relevant to a *grade 4* reading and content, choosing flexibility from a range of strategies.
 - A. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.
 - B. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., telegraph, photograph, autograph).
 - C. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases. (Lessons 1-24: Students will be introduced to, interact with, and use grade 4 mathematical vocabulary accurately in context.)
- SL.PE.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.
 - A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
 - B. Follow agreed-upon rules for discussions and carry out assigned roles.
 - C. Pose and respond to specific questions to clarify or follow up on information and make comments that contribute to the discussion and link to the remarks of others.
 - D. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

(Lessons 1-24: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)

- SL.II.4.2. Paraphrase portions of a text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally).
 (Lessons 1-24: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- SL.ES.4.3. Identify the reasons and evidence a speaker provides to support particular points. (Lessons 1-24: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- SL.PI.4.4. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace. (Lessons 1-24: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)

Science

• 3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. (Lessons 1-24: Students engage in mathematical exploration to test strategies and solutions in order to meet the desired outcome.)

Social Studies

• 6.1.5.EconNM.4: Explain how creativity and innovation resulted in scientific achievement and inventions in many cultures during different historical periods. (Lesson 1: Students learn about the history of calculation devices that led to the invention of the modern calculator.)

Integration of 21st Century Skills

Standards:

- 8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data. (Lessons 1-24: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- 8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate. (Lessons 1-24: Students analyze mathematical data and record multiple algorithms; compare algorithms to determine the best way to solve each problem.)
- 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. (Lessons 1-24: Students engage in mathematical discourse to collaborate with classmates to analyze information, solve problems, and make sense of strategies.)
- 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. (Lessons 1-24: Students follow the given steps to solve word problems and create and solve equations.)
- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process. (Lessons 18-24: Students engage in reading, interpreting, and solving word 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. (Lessons 18-24: Students engage in reading, interpreting, and solving word problems.)

Unit Title: Module 4: Foundations for Fraction Operations

Unit Description: In Module 4, students rename fractions greater than 1 as mixed numbers, generate equivalent fractions, compare fractions with unlike units, and add and subtract fractions and mixed numbers with like units. Students also multiply fractions and mixed numbers by whole numbers.

Unit Duration: 38 days (Note: Lesson 22 is included in the total but is optional)

Desired Results

Standard(s):

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

4.NF.B.3.b - Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: 3/8 = 1/8 + 1/8 + 1/8; 3/8 = 1/8 + 2/8; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.

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

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

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

4.NF.B.4.a - Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation $5/4 = 5 \times (1/4)$.

4.NF.B.4.b - Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as 6/5. (In general, $n \times (a/b) = (n \times a)/b$.)

4.NF.B.4.c - Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?

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.A – Organize data and understand data visualizations. The following standards can also be implemented through Eureka "Data Talks":

4.DL.A.1 – Create data-based questions, generate ideas based on the questions, and then refine the questions.

4.DL.A.2 – Develop strategies to collect various types of data and organize data digitally.

4.DL.A.3 – Understand that subsets of data can be selected and analyzed for a particular purpose.

4.DL.A.4 – Analyze visualizations of a single data set, share explanations and draw conclusions that the data supports.

4.DL.B.5 - Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.

Understandings:	Essential Questions:		
 <i>Topic A:</i> I can decompose fractions into a sum of unit fractions and into a sum of non-unit fractions. I can use familiar models such as number bonds, tape diagrams, and number lines to represent fractions. I can recognize that the area model may be a useful model to represent fractions. I can decompose fractions greater than 1 into a sum of a whole number and a fraction less than 1. I can rename the whole number as an equivalent fraction that they then add to the fraction. I can rename mixed numbers as equivalent fractions greater than 1 	 Topic A: What models can we use to decompose a whole number? How are the models similar and different? Where do you see unit fractions in the representations of fractions? Why can you decompose fractions in different ways? How can we use an area model to represent fractions? What helps you determine which model to use to represent a fraction? What models can we use to rename fractions greater than 1 as mixed numbers? How can we use models to efficiently rename fractions greater than 1 as mixed numbers? What models can we use to rename mixed numbers as fractions greater than 1? How can we use models to efficiently rename mixed numbers as fractions greater than 1? 		
 equivalent mixed numbers. I can decompose fractional units to find an equivalent fraction with smaller units and record their work with multiplication. I can compose fractional units to find an equivalent fraction with larger units and record their work with division. I can use area models, as well as tape diagrams and number lines, to represent fractions and compose or decompose fractional units to generate equivalent fractions. 	 Topic B: How can we make equivalent fractions? What models can we use to decompose fractional units and identify equivalent fractions? How are the models similar and different? What happens to the total number of parts and number of selected parts when we decompose an area model to find equivalent fractions? How can we use multiplication to express equivalent fractions represented in the area model? 		

Topic C:

- I can use various methods to compare fractions less than 1, fractions greater than 1, and mixed numbers.
- I can consider the relationship between the numbers and use what they know about unit fractions to compare fractions to benchmark numbers such as 0, 1/2, and 1.
- I can use what they know about generating equivalent fractions to rename one fraction to create a common numerator or common denominator
- I can rename both fractions as equivalent fractions to compare any two fractions.
- I can use similar methods to compare fractions greater than 1 and mixed numbers.

Topic D:

- I can estimate to assess reasonableness when solving word problems to establish an underlying theme for the topic.
- I can add and subtract fractions with like units and subtract a fraction from a whole number.
- I can see similar part-total relationships and the importance of adding and subtracting like units.
- I can apply their part-total understanding to think of a subtraction problem as an unknown addend problem.
- I can add fractions with related units by generating equivalent fractions.

Topic E:

- I can add a fraction to a mixed number and add two mixed numbers.
- I can also subtract a fraction from a mixed number and subtract two mixed numbers.
- I can apply previously learned strategies for adding and subtracting whole numbers to add and subtract mixed numbers.
- I can use number bonds, the arrow way, and an open number line to represent and record the addition and subtraction.
- I can compose and decompose mixed numbers to add and subtract.
- I can create and interpret line plots, including solving addition and subtraction problems with fractional data.

Topic F:

- I can use what I know about multiplying whole numbers to multiply fractions and mixed numbers by whole numbers.
- I can use unit form and the associative property to multiply a fraction by a whole number (e.g., 3×56=(3×5) sixths).

- Is multiplication useful when finding equivalent fractions? How?
- What happens to the total number of parts and the number of shaded parts when we compose to make larger fractional units?
- How can we use factors when generating equivalent fractions with larger units?
- How can we tell whether units were composed or decomposed to represent an equivalent fraction?
- How can we use a tape diagram and number line to represent equivalent fractions?
- How can we use number lines and multiplication to represent equivalent fractions for fractions greater than 1?
- How can we use what we know about mixed numbers to find equivalent mixed numbers?

Topic C:

- When is it helpful to compare fractions to benchmarks?
- Why is creating a common denominator helpful when comparing fractions?
- Why is creating a common numerator helpful when comparing fractions?
- How do the denominator and numerator in the numbers we are given help us determine a strategy we can use to compare?
- When is renaming both fractions before comparing an efficient strategy?
- Can we use strategies used to compare fractions less than 1 to compare fractions greater than 1? How?

Topic D:

- How can we use benchmarks to estimate sums and differences of fractions?
- Why do we sometimes have different estimates of a sum or a difference?
- How is adding and subtracting fractions with like units similar to adding and subtracting whole numbers?
- How can we use a number line to represent adding and subtracting fractions with like units?
- How can we subtract a fraction from a whole number?
- When does renaming or decomposing whole numbers help you subtract fractions with like units?
- How can we use estimates to decide whether our answer is reasonable?
- Why do we need to make like units to add fractions? (Optional)
- How can we use what we know about equivalent fractions to add fractions with related units? (Optional)

Topic E:

•	can multiply a mixed number by a whole	•	How can we use what we know about adding like				
n	umber and express the mixed number as a sum	_	units to add a mixed number and a fraction?				
a	ind then apply the distributive property.	•	Are strategies such as making the next whole				
			fraction? Why?				
		•	How can we use what we know about adding like				
			units to add mixed numbers?				
		•	Why can we use similar methods to add a mixed				
			number and a fraction and to add mixed numbers?				
		•	How can we use benchmarks to help us subtract?				
		•	How do you decide what method to use when				
			Why is it helpful to decompose a part or the total				
		•	when subtracting a fraction from a mixed number?				
		•	How can you use what you know about subtracting				
			a fraction from a mixed number to subtract mixed				
			numbers?				
		•	How do you decide which method to use when				
			Subtracting mixed numbers?				
		•	problem?				
		•	How can familiar methods help us solve problems?				
		•	How can we use what we know about mixed				
			numbers to solve problems by using data on a line				
			plot?				
		•	line plot?				
		•	Why is a line plot a useful way to represent				
		÷	measurement data?				
		•	How do we determine when to use the data in a				
			table or on a line plot to efficiently answer				
			questions about measurement data?				
		To	ppic F [.]				
		•	How does decomposing a fraction into the product				
			of a whole number and a unit fraction help you				
			better understand the fraction?				
		•	What happens to the fractional units when we				
			How do you use the associative property when				
			multiplying a fraction by a whole number?				
		•	Can using tape diagrams help you find a solution				
			path? How?				
		•	How do you decide when to rename a product that				
			is a traction greater than 1 as a mixed number?				
		•	now do you use the distributive property when multiplying a mixed number by a whole number?				
	A	 					
	Assessment Evidence						
Ass	essments:						

- Modules 4 & 5 Equip Pre Assessment

- Exit Slips
 Topic Quizzes (A F)
 Module 4 Assessment

Benchmarks:

• The iReady Assessment is administered in the fall and winter.

Learning Plan

Module 4 & 5: Equip Preassessment

Topic A: Fraction Decomposition and Equivalence

Lesson #1: Decompose whole numbers into a sum of unit fractions

Standard: 4.NF.B.3.a, 4.NF.B.3.b

Mathematical Practice: 7

Target: Decompose whole numbers into a sum of unit fractions.

Learning Activities:

<u>Fluency</u> – Students partition a tape diagram into halves or fourths, then shade and identify parts of the tape diagram to prepare for fraction decomposition and equivalence; identify the fractional unit and the value shaded in a tape diagram to prepare for fraction decomposition and equivalence; count by halves and rename fractions as whole numbers to prepare for fraction decomposition and equivalence.

Launch – Students analyze a painting and reason about the different ways shapes can be decomposed into equal parts.

<u>Learn</u> – Students relate a fraction strip and number bond to equations that decompose 1 and 2 into a sum of unit fractions; select and use a tape diagram, number line, or number bond to represent an equation; complete problem set.

Land – Debrief: Facilitate a discussion about the different ways to represent 1 decomposed into unit fractions.

Daily Exit Ticket: Complete a table to represent different ways to decompose each number into the given unit fraction.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, paper strips, number line, blank tape diagram **Lesson #2: Decompose fractions into a sum of unit fractions**

Standard: 4.NF.B.3.a, 4.NF.B.3.b

Mathematical Practice: 2

Target: Decompose fractions into a sum of unit fractions.

Learning Activities:

Fluency – Students partition a tape diagram into fourths or eighths, then shade and identify parts of the tape diagram to develop fluency with fraction decomposition and equivalence; identify the fractional unit and the value shaded in a tape diagram to develop fluency with fraction decomposition and equivalence; count by thirds and rename fractions as whole numbers to develop fluency with fraction decomposition and equivalence.

Launch – Students use paper strips to describe a non-unit fraction.

<u>Learn</u> – Students shade a non-unit fraction and write it as a sum of unit fractions; analyze how a fraction greater than 1 is represented and decomposed into unit fractions; represent a fraction greater than 1 on a number line and write it as a sum of unit fractions; complete problem set.

Land – Debrief: Facilitate a discussion about different ways to represent a fraction decomposed into unit fractions.

Daily Exit Ticket: Draw a tape diagram and write an equation to express the fraction as a sum of unit fractions.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, fourth strip, colored pencil, blank number line, blank tape diagram, paper strip

Lesson #3: Decompose fractions into a sum of fractions

Standard: 4.NF.B.3.a, 4.NF.B.3.b

Mathematical Practice: 6

Target: Decompose fractions into a sum of fractions.

Learning Activities:

<u>Fluency</u> – Students write the standard form of a multi-digit number given in unit form to build fluency with writing numbers within 1,000,000 from module 1; partition a tape diagram into thirds or sixths, then shade and identify parts of the tape diagram to develop fluency with fraction decomposition and equivalence. <u>Launch</u> – Students categorize fractions by how they are decomposed.

<u>Learn</u> – Students decompose a fraction and relate each decomposition to a sum of fractions; decompose a fraction into a sum of fractions in different ways and represent the decomposition on a tape diagram; decompose a fraction into a sum of fractions in different ways and represent the decomposition on a number line; complete problem set.

Land – Debrief: Facilitate a discussion about representing a fraction as a sum of fractions.

Daily Exit Ticket: Complete models to show how fractions are decomposed.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, colored pencil, blank tape diagram, paper strip Lesson #4: Represent fractions by using various fraction models

Standard: 4.NF.B.3.a, 4.NF.B.3.b

Mathematical Practice: 4

Target: Represent fractions by using various fraction models.

Learning Activities:

<u>Fluency</u> – Students identify what fraction of a tape diagram is shaded to develop fluency with fraction decomposition and equivalence.

Launch – Students engage in a discussion about various models used to represent fractional amounts.

<u>Learn</u> – Students draw, partition, and shade an area model to represent ½; draw, partition, and shade area models to represent fractional amounts; draw and discuss various models that represent a given fraction; complete problem set.

Land – Debrief: Facilitate a discussion about drawing models to represent fractional amounts.

Daily Exit Ticket: Draw multiple models to represent a fraction.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Identify Fractional Parts of Tape Diagrams Sprint **Lesson #5: Rename fractions greater than 1 as mixed numbers**

Standard: 4.NF.B.3.a, 4.NF.B.3.b

Mathematical Practice: 7

Target: Rename fractions greater than 1 as mixed numbers.

Learning Activities:

Fluency – Students write the standard form of a multi-digit number given in word form to build fluency with writing numbers within 1,000,000 from module 1; count by fourths and rename fractions as whole numbers to develop fluency with fraction decomposition and equivalence; use tape diagrams to compare fractions less than or equal to 1 with like denominators to develop fluency with fraction decomposition and equivalence.

Launch – Students justify their placement of a given number on a number line.

<u>Learn</u> – Students represent two decompositions of 10/3 with equations and write the fraction as a mixed number; use number lines and equations to rename fractions greater than 1 as mixed numbers; think about decompositions and models used to rename fractions greater than 1 as mixed numbers; complete problem set.

Land – *Debrief:* Facilitate a discussion about renaming fractions greater than 1 as mixed numbers.

Daily Exit Ticket: Rename each fraction greater than 1 is a mixed number.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, string, index cards, colored pencils

Lesson #6: Rename mixed numbers as fractions greater than 1

Standard: 4.NF.B.3.a, 4.NF.B.3.b

Mathematical Practice: 5

Target: Rename mixed numbers as fractions greater than 1.

Learning Activities:

Fluency – Students write the expanded form of a multi-digit number given in standard form to build fluency with writing numbers within 1,000,000 from module 1; count by fifths and rename fractions as whole numbers to develop fluency with fraction decomposition and equivalence; use tape diagrams to compare fractions less than or equal to 1 with like denominators to develop fluency with fraction decomposition and equivalence.

Launch – Students rename a whole number as a fraction and discuss using similar strategies to rename a mixed number.

<u>Learn</u> – Students use number lines and equations to rename mixed numbers as fractions greater than 1; choose a model to represent a decomposition of mixed numbers and rename them as fractions greater than 1; complete problem set.

Land – Debrief: Facilitate a discussion about models students can use to rename mixed numbers as fractions greater than 1.

Daily Exit Ticket: Rename each mixed number as a fraction greater than 1.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, colored pencils

Topic B: Equivalent Fractions

Lesson #7: Rename fractions as a sum of equivalent smaller unit fractions

Standard: 4.NF.B.3.a, 4.NF.B.3.b

Mathematical Practice: 2

Target: Rename fractions as a sum of equivalent smaller unit fractions.

Learning Activities:

Fluency – Students count by halves and rename fractions as whole or mixed numbers to develop fluency with fraction decomposition and equivalence; partition a number line into 2, 4, or 8 equal parts and identify the fractional unit, unit fraction, and non-unit fractions to develop fluency with fraction decomposition and equivalence; decide whether a number sentence is true or false to build fluency with fraction equivalence, comparison, and decomposition.

Launch – Students rename the length of a crayon by using different fractional units.

<u>Learn</u> – Students use a number line to decompose fractional units and identify equivalent fractions; use an area model to partition fractional units and identify equivalent fractions; examine a number line and area model to name the equivalent fractions represented by each model; complete problem set.

Land – Debrief: Facilitate a discussion about decomposing fractional units to help you identify equivalent fractions.

Daily Exit Ticket: Show equivalent fractions with fraction models.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, colored pencils, three number lines Lesson #8: Generate equivalent fractions with smaller units for unit fractions

Standard: 4.NF.A.1

Mathematical Practice: 8

Target: Generate equivalent fractions with smaller units for unit fractions.

Learning Activities:

<u>Fluency</u> – Students use symbols to compare fractions less than or equal to 1 with like denominators to prepare for comparing fractions with unlike denominators in topic C; partition a number line into 2, 3, or 6

equal parts and identify the fractional unit, unit fraction, and non-unit fractions to develop fluency with fraction decomposition and equivalence.

Launch – Students reason about equivalent fractions with an area model.

<u>Learn</u> – Students identify how the number of parts and the size of the parts change as equivalent fractions are created and use multiplication to express the relationship; draw to decompose $\frac{1}{2}$, find equivalent fractions, and use multiplication to express the equivalence; reason about how knowing the multiples of a fractional unit helps them generate equivalent fractions; complete problem set.

Land – Debrief: Facilitate a discussion that emphasizes multiplicative reasoning when generating equivalent fractions.

Daily Exit Ticket: Partition and label equivalent fractions using an area model; express equivalence with multiplication.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, colored pencils, three number lines

Lesson #9: Generate equivalent fractions with smaller units for non-unit fractions

Standard: 4.NF.A.1

Mathematical Practice: 7

Target: Generate equivalent fractions with smaller units for non-unit fractions.

Learning Activities:

Fluency – Students count by halves and rename fractions as whole or mixed numbers to develop fluency with fraction decomposition and equivalence; use symbols to compare fractions greater than or equal to 1 with like denominators to prepare for comparing fractions with unlike denominators in topic C; decide whether a number sentence is true or false to build fluency with fraction equivalence, comparison, and decomposition.

Launch – Students reason about equivalent fractions that are represented in a chocolate bar.

<u>Learn</u> – Students generate a fraction equivalent to a non-unit fraction by using an area model; use multiplication to express equivalent fractions, then check the equivalence with an area model; decide whether an equivalence statement is true or false; complete problem set.

Land – Debrief: Facilitate a discussion about how to use multiplication to find equivalent fractions.

Daily Exit Ticket: Partition and label equivalent fractions using an area model; express equivalence with multiplication.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, colored pencils

Lesson #10: Generate equivalent fractions with larger units

Standard: 4.NF.A.1

Mathematical Practice: 6

Target: Generate equivalent fractions with larger units.

Learning Activities:

<u>Fluency</u> – Students use symbols to compare a fraction to either another fraction with the same denominator or to a whole number, to build fluency with the skill from topic D.

<u>Launch</u> – Students identify equivalent fractions and describe the size and number of their fractional units. <u>Learn</u> – Students compose larger units to help them generate an equivalent fraction on an area model and by using division; analyze how to shade an area model to readily see an equivalent fraction and compose larger units; use factors to decide how to compose larger units and use division to demonstrate that two fractions are equivalent; complete problem set.

Land – Debrief: Facilitate a discussion about using division to help you generate equivalent fractions.

Daily Exit Ticket: Use an area model to show how a larger unit is composed, label the equivalent fractions, and express the equivalence using division.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, colored pencils, Compare Fractions Sprint
Lesson #11: Represent equivalent fractions by using tape diagrams, number lines, and
multiplication or division

Standard: 4.NF.A.1

Mathematical Practice: 8

Target: Represent equivalent fractions by using tape diagrams, number lines, and multiplication or division.

Learning Activities:

Fluency – Students count by thirds and rename fractions as whole or mixed numbers to develop fluency with fraction decomposition and equivalence; determine whether a fraction is closer to 0 or 1 to prepare for comparing fractions by using benchmarks in topic C; partition a number line into 2, 10, or 5 equal parts and identify the fractional unit, unit fraction, and non-unit fractions to develop fluency with fraction decomposition and equivalence.

Launch – Students determine whether multiplication is used to represent composing or decomposing units in an area model.

<u>Learn</u> – Students decompose and compose fractional units by using tape diagrams and number lines to represent equivalent fractions; analyze a number line that represents partitioning 1 third into 4 equal lengths; partition some or all units on a number line and tape diagram to represent equivalent fractions; complete problem set.

Land – Debrief: Facilitate a discussion about using tape diagrams and number lines to decompose and compose fractional units to represent equivalent fractions.

Daily Exit Ticket: Partition, shade, and label tape diagrams to show fractions.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, straightedge, three number lines

Lesson #12: Generate equivalent fractions for fractions greater than 1 and generate equivalent mixed numbers

Standard: 4.NF.A.1

Target: Generate equivalent fractions for fractions greater than 1 and generate equivalent mixed numbers.

Learning Activities:

Fluency – Students count by thirds and rename fractions as whole or mixed numbers to develop fluency with fraction decomposition and equivalence; determine whether a fraction is closer to 0, 1/2, or 1 to prepare for comparing fractions by using benchmarks in topic C; partition a number line into 2, 6, or 12 equal parts and identify the fractional unit, unit fraction, and non-unit fractions to develop fluency with fraction decomposition and equivalence.

<u>Launch</u> – Students draw to decompose 2 into halves and fourths to create equivalent fractions. <u>Learn</u> – Students partition fractional units on a number line to find fractions equivalent to fractions greater than 1; partition fractional units on a number line to find equivalent mixed numbers; determine whether a given statement about equivalent fractions is true or false; complete problem set.

Land – Debrief: Facilitate a discussion about how to use number lines and multiplication to represent equivalent fractions greater than 1.

Daily Exit Ticket: Complete equations to show equivalent fractions.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, straightedge, three number lines

Topic C: Compare Fractions

Lesson #13: Compare fractions by using the benchmarks 0, 1/2, and 1

Standard: 4.NF.A.2

Mathematical Practice: 3

Target: Compare fractions by using the benchmarks 0, 1/2, and 1.

Learning Activities:

Fluency – Students round a number to the nearest ten thousand and hundred thousand to build fluency with rounding multi-digit numbers to any place from module 1; determine which value or measure is greater, longer, more, or heavier to prepare for considering units to compare two quantities beginning in lesson 14; determine the unknown addend and write an equation to build fluency with decomposing fractions less than one.

Launch – Students consider how to compare different fractions in a given context.

<u>Learn</u> – Students reason about the distances a fraction is from benchmark numbers to make comparisons; use the distance a fraction is from 1/2 on the number line to compare fractions; write and revise a justification about a fraction comparison; complete problem set.

Land – Debrief: Facilitate a discussion about using benchmarks to compare fractions.

Daily Exit Ticket: Plot fractions on a number line and use > , <, or = to compare.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, string, index cards, number line 0 to 1

Lesson #14: Compare fractions with related denominators

Standard: 4.NF.A.2

Target: Compare fractions with related denominators.

Learning Activities:

Fluency – Students round a number to the nearest ten thousand and hundred thousand to build fluency with rounding multi-digit numbers to any place from module 1; determine the unknown addend and write an equation to build fluency with decomposing 1 or a fraction equivalent to 1; determine which value or measure is greater, longer, more, or heavier to prepare for considering units to compare two quantities. **Launch** – Students categorize pictures to activate prior knowledge of models they used to compare fractions.

<u>Learn</u> – Students use tape diagrams and multiplication to compare fractions with related units by renaming one fraction; rename one fraction to create the same-size units and compare two fractions on the number line; select a method to compare two fractions with related units; complete problem set. Land – Debrief: Facilitate a discussion about using the number of units to compare fractions.

Daily Exit Ticket: Compare pairs of fractions using > , <, or = and show work using pictures, numbers, or words.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Models to Compare

Lesson #15: Compare fractions with related numerators

Standard: 4.NF.A.2

Mathematical Practice: 5

Target: Compare fractions with related numerators.

Learning Activities:

<u>Fluency</u> – Students round to the nearest ten thousand to build fluency with rounding multi-digit numbers to any place from module 1; determine the unknown addend and write an equation to build fluency with decomposing fractions greater than 1.

Launch – Students compare amounts with different units by reasoning about the size of each unit. **Learn** – Students reason about how to compare related numerators; share representations and methods and reason about their connections; rename a fraction to make common numerators to compare; complete problem set.

Land – Debrief: Facilitate a discussion that emphasizes comparing fractions with the same number of units by the size of the units.

Daily Exit Ticket: Compare pairs of fractions using > , <, or = and show work using pictures, numbers, or words.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Round to the Nearest Ten Thousand Sprint **Lesson #16: Generate a common numerator or denominator to compare fractions**

Standard: 4.NF.A.2

Target: Generate a common numerator or denominator to compare fractions.

Learning Activities:

<u>Fluency</u> – Students estimate a sum or difference and use the standard algorithm to determine the exact answer to build fluency with operations and assessing reasonableness of answers from module 1; count by fourths and rename fractions as whole or mixed numbers to build fluency with fraction decomposition and equivalence.

<u>Launch</u> – Students decide whether to find a common numerator or denominator to compare two fractions and reason about the efficiency of each strategy.

<u>Learn</u> – Students draw area models and use multiplication to rename two fractions with a common denominator and compare the number of units; use multiplication to rename two fractions with a common numerator and compare the sizes of the fractional units; select and discuss a comparison strategy to compare two fractions; complete problem set.

Land – Debrief: Facilitate a discussion about creating a common numerator or denominator to compare fractions.

Daily Exit Ticket: Compare pairs of fractions using > , <, or = and show work using pictures, numbers, or words.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, prepared signs

Lesson #17: Apply fraction comparison strategies to compare fractions greater than 1

Standard: 4.NF.A.2

Mathematical Practice: 7

Target: Apply fraction comparison strategies to compare fractions greater than 1.

Learning Activities:

<u>Fluency</u> – Students estimate a sum or difference and use the standard algorithm to determine the exact answer to build fluency with assessing reasonableness and the operations from module 1; count by fourths and rename fractions as whole or mixed numbers to build fluency with fraction decomposition and equivalence; determine the unknown addend and write an equation to build fluency with decomposing mixed numbers.

Launch – Students choose a strategy to compare mixed numbers and fractions greater than 1. **Learn** – Students use the whole number and fraction parts of a mixed number to compare the mixed numbers; relate strategies used to compare fractions greater than 1 and fractions less than 1; complete problem set.

Land – Debrief: Facilitate a discussion about comparing fractions greater than 1.

Daily Exit Ticket: Compare pairs of fractions using > , <, or = and show work usi	ng pictures, numbers, or
words.	

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Comparison Strategy Sort, scissors

Topic A, B, C: Quizzes

Topic D: Add and Subtract Fractions

Lesson #18: Estimate sums and differences of fractions by using benchmarks

Standard: 4.NF.B.3.a, 4.NF.B.3.b, 4.NF.B.3.d

Mathematical Practice: 3

Target: Estimate sums and differences of fractions by using benchmarks.

Learning Activities:

<u>Fluency</u> – Students count by fifths and rename fractions as whole or mixed numbers to build fluency with fraction decomposition and equivalence; decide whether a fraction is closer to 1/2 or 1 to prepare for estimating sums and differences by using benchmarks.

Launch – Students use benchmark numbers to estimate a sum and a difference.

<u>Learn</u> – Students solve a word problem by using benchmark numbers to estimate a sum; solve a word problem by using benchmark numbers to estimate a difference; sort expression cards by estimated sums and differences; complete problem set.

Land – Debrief: Facilitate a discussion about their estimates.

Daily Exit Ticket: Use the Read-Write-Draw process to estimate the answers to fraction word problems.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Expression Cards, sticky notes

Lesson #19: Add and subtract fractions with like units

Standard: 4.NF.B.3.a, 4.NF.B.3.b

Mathematical Practice: 4

Target: Add and subtract fractions with like units.

Learning Activities:

Fluency – Students count by fifths and rename fractions as whole or mixed numbers to build fluency with fraction decomposition and equivalence; determine if a fraction is closer to 0, 1/2 or 1 to prepare for estimating the reasonableness of answers in lesson 21; write four equations with whole numbers to represent a number bond to prepare for adding and subtracting fractions with like units.

Launch – Students reason about addition strategies for fractions with like units.

<u>Learn</u> – Students make connections between adding and subtracting whole numbers with the numbers in unit form to adding and subtracting fractions with the numbers in unit form; write equations with the numbers in fraction form to add and subtract fractions with like units; draw a number line to represent adding or subtracting fractions with like units; complete problem set.

Land – Debrief: Facilitate a discussion about adding and subtracting fractions with like units.

Daily Exit Ticket: Add or subtract writing the sum or difference in fraction form.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #20: Subtract a fraction from a whole number

Standard: 4.M.A.2, 4.NF.B.3.a, 4.NF.B.3.b, 4.NF.B.3.d

Mathematical Practice: 1

Target: Subtract a fraction from a whole number.

Learning Activities:

<u>Fluency</u> – Students write and complete a statement to build fluency with generating an equivalent fraction for a unit fraction from topic B; write four equations with fractions to represent a number bond to develop fluency with adding and subtracting fractions with like units.

<u>Launch</u> – Students rename a fraction as a whole number in a subtraction equation and discuss subtracting a fraction from a whole number.

<u>Learn</u> – Students use a number line to represent subtracting a fraction from a whole number; rename 1 to subtract fractions with like units; decompose 2 or more into 1 and a fraction equal to 1, then subtract from the fraction; subtract a fraction from a whole number to solve a word problem; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about subtracting a fraction from a whole number.

Daily Exit Ticket: Subtract; explain by using pictures numbers or words.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #21: Solve addition and subtraction word problems and estimate the reasonableness of the answers

Standard: 4.M.A.2, 4.NF.B.3.a, 4.NF.B.3.b, 4.NF.B.3.d

Mathematical Practice: 1

Target: Solve addition and subtraction word problems and estimate the reasonableness of the answers.

Learning Activities:

<u>Fluency</u> – Students write and complete a statement to build fluency with generating an equivalent fraction for a non-unit fraction from topic B; write and complete four equations with fractions to represent a number bond to develop fluency with adding and subtracting fractions with like units.

Launch – Students estimate whether a sum will be greater than or less than 1.

<u>Learn</u> – Students use the benchmarks 1/2 and 1 to estimate a sum or a difference; solve addition word problems and check the reasonableness of their answers; solve word problems and check the reasonableness of their answers; complete problem set.

Land – Debrief: Facilitate a discussion about the reasonableness of their answers.

Daily Exit Ticket: Use the Read-Write-Draw process to solve a fraction word problem and explain the reasonableness of the answer.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #22: Add two fractions with related units (OPTIONAL)

Standard: 4.NF.B.3.a, 4.NF.B.3.b

Mathematical Practice: 5

Target: Add two fractions with related units.

Learning Activities:

<u>Fluency</u> – Students use multiplication to generate an equivalent fraction to prepare for adding two fractions with related units.

Launch – Students examine addition equations and discuss adding like units.

<u>Learn</u> – Students self-select a way to make like units and add fractions with sums less than 1; compare methods for finding the sum of 2/3 and 1/6 and reason about their connections; self-select a method to make like units and add fractions with sums greater than 1; compare methods for finding the sum of 8/10 and 2/5 and reason about their connections; complete problem set.

Land – Debrief: Facilitate a discussion about making like units to add fractions with related units.

Daily Exit Ticket: Find the sum.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Topic E: Add and Subtract Mixed Numbers

Lesson #23: Add a fraction to a mixed number

Standard: 4.NF.B.3.c

Mathematical Practice: 7

Target: Add a fraction to a mixed number.

Learning Activities:

<u>Fluency</u> – Students add fractions in unit form with sums less than 1 and write the equation with the numbers in fraction form to prepare for adding a fraction to a mixed number.

<u>Launch</u> – Students discuss how to apply what they know about adding mixed units of measurement to adding a mixed number and a fraction.

<u>Learn</u> – Students add like units to find the sum of a mixed number and a fraction; examine, discuss, and share different methods to add a mixed number and a fraction; self-select a method to add a mixed number and a fraction; complete problem set.

Land – Debrief: Facilitate a discussion about adding a mixed number and a fraction.

Daily Exit Ticket: Add mixed numbers and fractions.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Mixed Number Plus a Fraction cards

Lesson #24: Add a mixed number to a mixed number

Standard: 4.NF.B.3.c, 4.NF.B.3.d
Mathematical Practice: 7

Target: Add a mixed number to a mixed number.

Learning Activities:

<u>Fluency</u> – Students add fractions in unit form and write the equation with the numbers in fraction form to prepare for adding mixed numbers.

Launch – Students consider how to add mixed numbers in a given context.

<u>Learn</u> – Students add ones to ones and fractions to fractions to find the total of two mixed numbers; apply familiar addition methods to add two mixed numbers; draw a tape diagram and add mixed numbers to solve a word problem; complete problem set.

Land – *Debrief:* Facilitate a discussion about ways students can add mixed numbers.

Daily Exit Ticket: Add mixed numbers.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #25: Subtract a fraction from a mixed number, part 1

Standard: 4.NF.B.3.c

Mathematical Practice: 6

Target: Subtract a fraction from a mixed number, part 1.

Learning Activities:

Fluency – Students subtract fractions in unit form with differences less than 1 and write the equation with the numbers in fraction form to prepare for subtracting a fraction from a mixed number.

Launch – Students subtract mixed units, including mixed fractional units, in unit form.

<u>Learn</u> – Students use the relationship between subtraction and addition and then count on to find the difference; use benchmarks and compensation to simplify subtracting a fraction less than 1 from a mixed number; rename a mixed number as a fraction greater than 1 to subtract; select a method to find the difference and compare and contrast student work; complete problem set.

Land – Debrief: Facilitate a discussion about subtracting a fraction from a mixed number by using methods to decompose the parts.

Daily Exit Ticket: Subtract a fraction from a mixed number.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #26: Subtract a fraction from a mixed number, part 2

Standard: 4.NF.B.3.c

Mathematical Practice: 7

Target: Subtract a fraction from a mixed number, part 2.

<u>Fluency</u> – Students subtract fractions in unit form and write the equation with the numbers in fraction form to prepare for subtracting a fraction from a mixed number.

Launch – Students reason about a way to subtract a fraction greater than 1 from a mixed number.

<u>Learn</u> – Students recognize how decomposing the fraction being subtracted can simplify subtracting from a mixed number; decompose the total to subtract a fraction from 1; rename a mixed number total to subtract a fraction; complete problem set.

Land – Debrief: Facilitate a discussion about subtracting a fraction from a mixed number with strategies that decompose the total or the part.

Daily Exit Ticket: Subtract a fraction from a mixed number.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #27: Subtract a mixed number from a mixed number

Standard: 4.M.A.2, 4.NF.B.3.c, 4.NF.B.3.d

Mathematical Practice: 2

Target: Subtract a mixed number from a mixed number.

Learning Activities:

<u>Fluency</u> – Students count by sixths and rename fractions as whole or mixed numbers to build fluency with fraction decomposition and equivalence; add a fraction and a whole number, and then say an equation to build fluency with composing mixed numbers.

Launch – Students consider how to subtract mixed numbers in a given context.

<u>Learn</u> – Students count on to subtract two mixed numbers; subtract two mixed numbers by using compensation; compare two methods used to subtract mixed numbers; decide which method to use to subtract two mixed numbers; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion that emphasizes the relationship between subtracting a fraction or a mixed number from a mixed number.

Daily Exit Ticket: Subtract a mixed number from a mixed number.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #28: Represent and solve word problems with mixed numbers by using drawings and equations

Standard: 4.M.A.2, 4.NF.B.3.d

Mathematical Practice: 4

Target: Represent and solve word problems with mixed numbers by using drawings and equations.

<u>Fluency</u> – Students count by sixths and rename fractions as whole or mixed numbers to build fluency with fraction decomposition and equivalence; add a fraction and a whole number, then say the equation to build fluency with composing mixed numbers.

Launch – Students find the sum of a three-addend problem by using familiar methods.

<u>Learn</u> – Students reason about, represent, and solve a word problem by using familiar methods; compare methods and reason about the connections between the methods; reason about, represent, and solve a word problem with two parts by using familiar methods; share solutions for the bike problem by predicting the next step in the solution process; complete problem set.

Land – *Debrief:* Facilitate a discussion about how pictures can help make sense of a problem.

Daily Exit Ticket: Use the Read-Write-Draw process to solve mixed number word problems.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, sticky notes

Lesson #29: Solve problems by using data from a line plot

Standard: 4.DL.B.5, 4.DL.A.1, 4.DL.A.2, 4.DL.A.3, 4.DL.A.4

Mathematical Practice: 1

Target: Solve problems by using data from a line plot.

Learning Activities:

<u>Fluency</u> – Students use place value strategies to divide a three- or four-digit number to build fluency with finding whole number quotients; find the sum or difference to build fluency with adding and subtracting fractions with like units.

Launch – Students use data from a line plot to decide whether a claim is true.

<u>Learn</u> – Students answer questions and solve problems by using data on a line plot; decide whether given questions can be answered by using the data on a line plot; complete problem set.

Land – Debrief: Facilitate a discussion about solving problems based on data on line plots.

Daily Exit Ticket: Use data from a line plot to answer questions.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Line Plot Questions, scissors, glue sticks **Lesson #30: Represent data on a line plot**

Standard: 4.DL.B.5 4.DL.A.1, 4.DL.A.2, 4.DL.A.3, 4.DL.A.4

Mathematical Practice: 6

Target: Represent data on a line plot.

<u>Fluency</u> – Students write the sum or difference to build fluency with adding and subtracting fractions with like units; discuss how they use data in a table to answer questions.

Launch – Students make line plots with measurement data from a table.

<u>Learn</u> – Students record data in a table and use the data to create a line plot; discuss the similarities and differences between line plots; complete problem set.

Land – *Debrief:* Facilitate a discussion about using line plots to represent measurement data.

Daily Exit Ticket: Use data to make a line plot.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Data Cards, Add and Subtract Fractions with Like Units Sprint, ruler

Topic F: Repeated Addition of Fractions as Multiplication

Lesson #31: Decompose non-unit fractions into a product of a whole number and a unit fraction

Standard: 4.NF.B.4.a

Mathematical Practice: 7

Target: Decompose non-unit fractions into a product of a whole number and a unit fraction.

Learning Activities:

<u>Fluency</u> – Students convert gallons to quarts, quarts to pints, or pints to cups to build fluency with expressing measurements in a larger unit in terms of a smaller unit from module 3; write equations with whole numbers to represent a tape diagram to prepare for multiplying whole numbers and fractions. <u>Launch</u> – Students write an equation to represent a situation involving fractions.

Learn – Students draw a tape diagram and a number line to represent fraction decomposition expressed in a multiplication equation; express a fraction greater than or equal to 1 as a product of a whole number and a unit fraction; express a fraction as a multiple of a unit fraction; complete problem set.

Land – Debrief: Facilitate a discussion about decomposing a fraction into a product of a unit fraction.

Daily Exit Ticket: Complete the equations to express each fraction as a whole number times a unit fraction.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #32: Multiply a fraction by a whole number by using the associative property

Standard: 4.NF.B.4.b

Mathematical Practice: 8

Target: Multiply a fraction by a whole number by using the associative property.

Learning Activities:

<u>Fluency</u> – Students convert hours to minutes or minutes to seconds to build fluency with expressing measurements in a larger unit in terms of a smaller unit from module 3; write equations with unit fractions and a sum or product less than 1 to represent a tape diagram to develop fluency with multiplying whole numbers and fractions.

Launch – Students multiply fractional measurements by a whole number.

<u>Learn</u> – Students represent multiplying a fraction by a whole number on a number line and with an equation by using unit form; express a fraction as a whole number times a unit fraction and then use the associative property; relate the associative property to representing multiplication of a whole number and a fraction as a fraction; complete problem set.

Land – *Debrief:* Facilitate a discussion about multiplying a fraction by a whole number.

Daily Exit Ticket: Multiply a fraction times a whole number.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #33: Solve word problems involving multiplication of a fraction by a whole number

Standard: 4.M.A.2, 4.NF.B.4.b, 4.NF.B.4.c

Mathematical Practice: 2

Target: Solve word problems involving multiplication of a fraction by a whole number.

Learning Activities:

<u>Fluency</u> – Students convert yards to feet or feet to inches to build fluency with expressing measurements in a larger unit in terms of a smaller unit from module 2; write equations with unit fractions and a sum or product equal to or greater than 1 to represent a tape diagram to develop fluency with multiplying whole numbers and fractions.

Launch – Students decide whether a statement about renaming fractions greater than 1 as mixed numbers is always, sometimes, or never true.

<u>Learn</u> – Students solve a word problem by multiplying a fraction by a whole number and decide how to express the product; compare different methods used to solve problem 1 and make connections to the method they used; solve a word problem by multiplying a fraction by a whole number and decide how to represent the product; compare methods for problem 2 and reason about connections between the methods and their own work; conclude that when the product of a fraction and a whole number is a fraction greater than 1, sometimes the product should be renamed as a mixed number; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about using tape diagrams to represent word problems and determining how to express the answer to a word problem.

Daily Exit Ticket: Use the Read-Write-Draw process to solve word problems involving multiplication of whole numbers times fractions.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #34: Multiply a mixed number by a whole number by using the distributive property

Standard: 4.NF.B.4.b

Mathematical Practice: 3

Target: Multiply a mixed number by a whole number by using the distributive property.

Fluency – Students convert pounds to ounces to build fluency with expressing measurements in a larger unit in terms of a smaller unit from module 3; write equations with non-unit fractions and a sum or product greater than 1 to represent a tape diagram to develop fluency with multiplying whole numbers and fractions. <u>Launch</u> – Students use a data set to identify the need to multiply a mixed number by a whole number. <u>Learn</u> – Students use a previously learned method to multiply a mixed number by a whole number; analyze work where the distributive property is applied to multiply a mixed number by a whole number; rename a fraction greater than 1 in a partial product as they multiply a mixed number; complete problem set. <u>Leand</u> – Debrief: Facilitate a discussion about multiplying with the distributive property.

Daily Exit Ticket: Multiply by using the distributive property.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Topic D, E, F: Quizzes

Module 4: Assessment

Unit Modifications for Special Population Students		
Advanced Learners	<i>Lesson 3</i> -Challenge students to decompose fractions into multiple parts. <i>Lesson 4</i> -Consider displaying the pictures without displaying the fractional amounts.	
	<i>Lesson 10</i> -Ask students to find other numbers that area factors in order to find more equivalent fractions.	
	<i>Lesson 14</i> -Consider challenging students to reason about how they would	
	compare fractions with unrelated denominators.	
	numbers where the fraction is greater than 1.	
	<i>Lesson 18</i> -Challenge pairs of students to convert their teaspoon estimates to tablespoons.	
	Lesson 21 -Consider extending student thinking to adding three addends.	
	show the steps taken when decomposing the part to subtract.	
	Lesson 28-Consider extending student thinking by changing the problem to related	
	units instead of like units.	
Struggling Learners	Lesson 1 -Consider showing a tape diagram and number bond to represent the decomposition of a whole number	
	Lesson 2-Consider providing a concrete example of a fraction greater than 1	
	Lesson 4-Consider displaying an anchor chart with the name and picture of each	
	fractional model.	
	<i>Lesson</i> 6-Consider drawing number bonds to show the decomposition.	
	Lesson 7 -Consider using two number lines to represent the different fractional units.	
	<i>Lesson 10</i> -Consider providing a template with a blank tape diagram and number	
	line.	
	number line.	
	Lesson 19 -Consider color-coding the parts and total on the number line.	
	Lesson 23-Consider highlighting the fractions or writing a separate equation with	
	the fractions.	
	Lesson 24 -Consider providing a tape diagram to represent the equations.	
	Lesson 29-Consider highlighling measurements in the questions and on the line	
	Lesson 31-Consider showing a number bond to represent the multiplication	
	equations.	

English Language Learners	Lesson 4 -Consider labeling the pictures to help students name each model as they discuss which one does not belong
	<i>Lesson 8</i> -Consider asking students to label the numerator and denominator of a fraction.
	lesson 9-Consider displaying a word bank for students to refer to as they explain
	whether the equation is true or false.
	Lesson 12 -Consider color-coding and labeling to help students make connections
	between the spoken words and the different numbers represented.
	Lesson 16 -Consider creating and posting a chart with the names of unfamiliar
	fractional units to support students in naming the fractional units throughout the
	lesson.
	Lesson 20 -Consider labeling a subtraction equation with the terms total, parts, and
	difference.
	Lesson 25-Consider presenting concrete objects to demonstrate the need to
	subtract like units.
	Lesson 30 -Consider displaying sentence frames that students can use as they
	work with a partner to create a line plot.
Special Needs Learners	Lesson 3-Consider highlighting the relationship between the sum of unit fractions
	and the sum of non-unit fractions.
	Lesson 4-Consider providing an area model template to minimize the fine motor
	demands required to draw, partition, and shade an area model.
	<i>Lesson 5</i> -Consider using the same colors from the number bond in the equations.
	Lesson 9-Consider offering an alternate method of response by allowing students
	to use the digital interactive to test different equivalent fractions.
	Lesson 19-Consider supporting students with adding by providing fraction strips or
	inviting them to draw tape diagrams to represent their thinking.
	Lesson 24-Consider highlighting the like units in the equations to help students
	make connections between the representations.
	Lesson 27-Consider using color-coding to highlight the relationship between a
	subtraction equation and an unknown addend equation.
	<i>Lesson 30</i> -Consider providing grid paper for students to use to create line plots.
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504
	to assist in the development of appropriate plans.

Interdisciplinary Connections

Standards:

English Language Arts

- RI.CR.4.1. Refer to details and examples as textual evidence when explaining what an informational text says explicitly and make relevant connections when drawing inferences from the text. (Lessons 18, 20-21, 24, 27-28, 33: Students engage in reading, interpreting, and solving word problems.)
- LVL.4.2. Determine or clarify the meaning of unknown and multi-meaning academic and domainspecific words and phrases in a text relevant to a *grade 4* reading and content, choosing flexibility from a range of strategies.
 - A. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.
 - B. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., telegraph, photograph, autograph).
 - C. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases. (Lessons 1-34: Students will be introduced to, interact with, and use grade 4 mathematical vocabulary accurately in context.)
- SL.PE.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.
 - A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
 - B. Follow agreed-upon rules for discussions and carry out assigned roles.

- C. Pose and respond to specific questions to clarify or follow up on information and make comments that contribute to the discussion and link to the remarks of others.
- D. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

(Lessons 1-34: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)

- SL.II.4.2. Paraphrase portions of a text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally). (Lessons 1-34: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- SL.ES.4.3. Identify the reasons and evidence a speaker provides to support particular points. (Lessons 1-34: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- SL.PI.4.4. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace. (Lessons 1-34: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)

<u>Science</u>

• 3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. (Lessons 1-34: Students engage in mathematical exploration to test strategies and solutions in order to meet the desired outcome.)

<u>Art</u>

- 1.5.5.Re7a: Speculate about artistic processes. Interpret and compare works of art and other responses. (Lesson 1: Students analyze a piece of artwork and discuss its connection to mathematics.)
- 1.5.5.Re7b: Analyze visual arts including cultural associations. (Lesson 1: Students analyze a piece of artwork and discuss its connection to mathematics.)

Integration of 21st Century Skills

Standards:

- 8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data. (Lessons 1-34: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- 8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate. (Lessons 1-34: Students analyze mathematical data and record multiple algorithms; compare algorithms to determine the best way to solve each problem.)
- 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. (Lessons 1-34: Students engage in mathematical discourse to collaborate with classmates to analyze information, solve problems, and make sense of strategies.)
- 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. (Lessons 1-34: Students follow the given steps to solve word problems and create and solve equations.)
- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process. (Lessons 18, 20-21, 24, 27-28, 33: Students engage in reading, interpreting, and solving word 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. (Lessons 18, 20-21, 24, 27-28, 33: Students engage in reading, interpreting, and solving word problems.)

Unit Title: Module 5: Place Value Concepts for Decimal Fractions

Unit Description: Module 5 extends students' understanding of tenths and hundredths as fractional units to recognizing tenths and hundredths as place value units. They compare decimal numbers and add mixed numbers and fractions with the unlike, but related, units of tenths and hundredths.

Unit Duration: 16 days

Desired Results

Standard(s):

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.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.

Understandings:	Essential Questions:	
 <i>Topic A:</i> I can use decimal points to record amounts of money as decimal numbers for the first time. I can see that numbers can be represented in different ways. I can use tape diagrams, number lines, and area models to represent the fractional unit of tenths. I can write tenths in unit form and fraction form and then see that decimal form is another way to write the numbers. I can decompose 1 one into 10 tenths and compose 10 tenths into 1 one by using familiar representations, including place value disks, and recognize tenths as both a fractional unit and a place value unit. I can record mixed numbers of ones and tenths in unit form 	 Topic A: What strategies can you use to help you count your collection? How can we write an amount of dollars and cents as one number? How can a decimal fraction be represented in decimal form? What is the relationship between tenths and ones? Why is tenths both a fractional unit and a place value unit? How can we use what we know about mixed numbers to represent decimal numbers? Why is the word <i>and</i> important when writing a number in decimal form? 	
 <i>Topic B:</i> I can decompose tenths into hundredths by using tape diagrams, number lines, and area models. I can recognize hundredths as a fractional unit and write hundredths in fraction form and decimal form. 	 How are hundredths different from tenths? How is the unit of hundredths like other place value units? How can hundredths be renamed as tenths and hundredths? How can we use what we know about mixed numbers to represent ones, tenths, and hundredths in decimal form? 	

- I can see that the decomposition of 1 tenth as 10 hundredths and the composition of 10 hundredths as 1 tenth follows the same pattern as other place value units and recognize that hundredths is also a place value unit.
- I can use my knowledge of equivalent fractions and place value units to understand 10/100= 1/10 and, for example, 0.21 is the same amount as 21 hundredths or 2 tenths 1 hundredth.
- I can record mixed numbers of ones, tenths, and hundredths in fraction form, decimal form, and unit form and express mixed numbers with units of tenths and hundredths in expanded form.

Topic C:

- I can compare decimal numbers by applying my prior understanding of whole number and fraction comparison and by using strategies of their choice.
- I can justify my comparisons and see how different strategies can be used.
- I can then use an area model, number line, and place value disks to represent decimal numbers.
- I can express decimal numbers in decimal form, fraction form, and unit form.
- I can compare numbers by using different strategies such as making like units, comparing the value of each digit starting with the largest unit, and using mental math strategies.
- I can apply my knowledge to compare mixed numbers and to order decimal numbers.

Topic D:

- I can extend my understanding of fraction equivalence and fraction addition with like units to add fractions and mixed numbers with the unlike units of tenths and hundredths.
- I can rename tenths as hundredths to create like units and then use familiar strategies to add.
- I can also solve word problems that require the addition of metric measurements or amounts of money expressed as decimal numbers.
- I can express the decimal numbers in fraction form, add the numbers in fraction form, and then use decimal form within the solution statement.

- What are the similarities among the place value units of hundreds, tens, ones, tenths, and hundredths?
- In what different ways can we represent decimal numbers in expanded form?

Topic C:

- What strategies for comparing whole numbers and fractions can be used to compare decimal numbers?
- In what ways can we use place value units when comparing decimal numbers?
- How can we use what we know about fractions and decimal numbers to help us order decimal numbers?

Topic D:

- Why are equivalent fractions important when we add tenths and hundredths?
- How can we use prior learning to add mixed numbers with tenths and hundredths?
- How can we use what we know about adding fractions to solve word problems with decimal numbers?
- Why is it important to assess the reasonableness of our answers when solving word problems?

Assessment Evidence

Assessments:

- Exit Slips
- Topic Quizzes (A D)
- Module 5 Assessment

Benchmarks:

• The iReady Assessment is administered in the fall and winter.

Learning Plan

Topic A: Exploration of Tenths

Lesson #1: Organize, count, and represent a collection of money

Standard: 4.NF.C.6

Mathematical Practice: 5

Target: Organize, count, and represent a collection of money.

Learning Activities:

Fluency – Students construct a number line with their fingers while counting aloud and model a composition and a decomposition to prepare for representing tenths as a place value unit in lesson 3; subtract the whole number or the fraction from a mixed number and then say a number sentence to build fluency with decomposing mixed numbers from module 4; determine the unknown part to make 1 whole and say an addition number sentence to build fluency with partners to 1.

Launch – Students analyze different representations of 20 and 5.

<u>Learn</u> – Students use self-selected strategies to organize and count a collection and record their process; discuss strategies for organizing; write the total of their counting collection with a decimal point; complete problem set.

Land – Debrief: Facilitate a discussion about how the organization of a collection helps to find the total.

Daily Exit Ticket: Count a collection and explain the strategy used.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Bills and Coins Counting Collection, organizational tools **Lesson #2: Decompose 1 one and express tenths in fraction form and decimal form**

Standard: 4.NF.C.6

Mathematical Practice: 8

Target: Decompose 1 one and express tenths in fraction form and decimal form.

Learning Activities:

Fluency – Students construct a number line with their fingers while counting aloud and model a composition and a decomposition to prepare for representing tenths as a place value unit in lesson 3; subtract 1 or more from a mixed number and then say a number sentence to build fluency with decomposing mixed numbers from module 4; determine the unknown part to make 1 whole and say an addition number sentence to build fluency with partners to 1.

<u>Launch</u> – Students use a basketball shot clock to wonder about time shown in decimal form. <u>Learn</u> – Students represent a number in a variety of ways; decompose 1 meter and write tenths in decimal form and fraction form; read and write numbers in fraction form and decimal form; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about decimals and tenths.

Daily Exit Ticket: Write an amount in fraction form and decimal form.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, meter stick, Tenths in Decimal Form and Fraction Form, scissors

Lesson #3: Represent tenths as a place value unit

Standard: 4.NF.C.6

Mathematical Practice: 7

Target: Represent tenths as a place value unit.

Learning Activities:

<u>Fluency</u> – Students construct a number line with their fingers while counting aloud and model a composition and a decomposition to prepare for representing tenths as a place value unit; determine the unknown part to make 1 whole and say an addition number sentence to build fluency with partners to 1. <u>Launch</u> – Students discuss the decomposition of place value units.

<u>Learn</u> – Students use their understanding of place value to identify tenths as a place value unit; use area models to represent tenths, and they write equations to show the equivalence of numbers in fraction form and decimal form; use place value disks to demonstrate the relationship between tenths and ones; complete problem set.

Land – Debrief: Facilitate a discussion about tenths as a place value unit.

Daily Exit Ticket: Write a fraction as a decimal and a decimal as a fraction.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Area Models for Tenths, Deci-disks Set Lesson #4: Write mixed numbers in decimal form with tenths

Standard: 4.NF.C.6

Mathematical Practice: 6

Target: Write mixed numbers in decimal form with tenths.

Learning Activities:

<u>Fluency</u> – Students write the unknown part to make 1 whole to build fluency with partners to 1. **Launch** – Students use a familiar measurement context to discuss the similarities and differences between

numbers in decimal form and mixed numbers.

<u>Learn</u> – Students use place value disks to represent numbers written in decimal form, and they write equations to show the equivalence between numbers written in decimal form and mixed numbers; use a number line to represent and make connections between mixed numbers and numbers written in decimal form; match numbers presented in different forms and discuss connections between the representations; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion about the connections between mixed numbers and numbers in decimal form.

Daily Exit Ticket: Write numbers as mixed numbers.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Deci-disks et, Place value cards to millions, Decimal place value cards, Unit Form, Fraction Form, and Decimal Form cards, Make 1 Sprint

Topic B: Tenths and Hundredths

Lesson #5: Decompose 1 one and express hundredths in fraction form and decimal form

Standard: 4.NF.C.5, 4.NF.C.6

Mathematical Practice: 2

Target: Decompose 1 one and express hundredths in fraction form and decimal form.

Learning Activities:

Fluency – Students count by tenths in fraction and decimal form to build place value understanding; identify a number less than or equal to 1 represented with place value disks and then write the number by using unit, fraction, and decimal forms to build fluency with reading and writing tenths as decimal numbers; determine 1 tenth more and 1 tenth less than a number to build place value understanding. **Launch** – Students recognize hundredths as a fractional unit.

<u>Learn</u> – Students represent hundredths by using a tape diagram and a number bond; decompose 1 meter and represent hundredths in fraction form and decimal form; read and write numbers in decimal form and fraction form; complete problem set.

Land – Debrief: Facilitate a discussion about hundredths.

Daily Exit Ticket: Write a number in unit form, fraction form, and decimal form.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, meter stick, Hundredths in Fraction Form and Decimal Form, scissors

Standard: 4.NF.C.5, 4.NF.C.6

Mathematical Practice: 3

Target: Represent hundredths as a place value unit.

Learning Activities:

<u>Fluency</u> – Students count by tenths using fractions and decimals with a number line to build fluency with reading and writing tenths as decimal numbers; identify a number greater than 1 represented with place value disks and then write the number by using unit, fraction, and decimal forms to build fluency with reading and writing tenths as decimal numbers; determine 1 tenth more and 1 tenth less than a number to build place value understanding.

Launch – Students discuss the decomposition of place value units.

<u>Learn</u> – Students use area models to represent hundredths and they write equations to show the equivalence of tenths and hundredths; use what they know about the place value system to identify hundredths as a place value unit; use place value disks to represent the relationship between tenths and hundredths; complete problem set.

Land – *Debrief:* Facilitate a discussion about hundredths as a place value unit.

Daily Exit Ticket: Write decimal fractions in decimal form.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Area Models for Hundredths, Deci-disks set **Lesson #7: Write mixed numbers in decimal form with hundredths**

Standard: 4.NF.C.5, 4.NF.C.6

Mathematical Practice: 7

Target: Write mixed numbers in decimal form with hundredths.

Learning Activities:

<u>Fluency</u> – Students identify a number less than 1 represented with place value disks and then write the number by using unit, fraction, and decimal forms to develop fluency with reading and writing hundredths as decimal numbers.

Launch – Students use the familiar context of meters to discuss representing mixed numbers as decimal numbers.

<u>Learn</u> – Students use place value disks and a number line to represent ones, tenths, and hundredths; represent numbers with units of ones, tenths, and hundredths; use what they know about place value units to make sense of and describe the symmetry of a place value chart that includes tenths and hundredths; complete problem set.

Land – *Debrief:* Facilitate a discussion about representing ones and hundredths as decimal numbers.

Daily Exit Ticket: Write numbers in unit form, fraction form, and decimal form.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Open Number Line, Deci-disks set

Standard: 4.NF.C.5, 4.NF.C.6

Mathematical Practice: 2

Target: Represent decimal number in expanded form.

Learning Activities:

<u>Fluency</u> – Students count by hundredths using fractions and decimals with a number line to build fluency with reading and writing hundredths as decimal numbers; identify a number greater than 1 represented with place value disks, and then write the number using unit, fraction, and decimal forms to develop fluency with reading and writing hundredths as decimal numbers; determine 1 hundredth more and 1 hundredth less than a number to build place value understanding.

<u>Launch</u> – Students examine three representations for the same amount of money and discuss the relationship of the representations to place value units.

<u>Learn</u> – Students represent a decimal number by using place value disks and record the value of each digit in expanded form; express the value of each digit in a decimal number to write the number in expanded form by using fraction form and decimal form; complete problem set.

Land – Debrief: Facilitate a discussion about expanded form and the value of digits in decimal numbers.

Daily Exit Ticket: Use a place value chart to complete each statement.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Deci-disks set, Place value disks set, Decimal place value cards, Place value cards to millions

Topic C: Comparison of Decimal Numbers

Lesson #9: Compare measurements expressed as decimal numbers

Standard: 4.NF.C.7

Mathematical Practice: 2

Target: Compare measurements expressed as decimal numbers.

Learning Activities:

<u>*Fluency*</u> – Students add a mixed number and a fraction to build fluency with adding mixed numbers with like units from module 4; use multiplication to generate an equivalent fraction for a unit fraction to build fluency with fraction equivalence from module 4.

<u>Launch</u> – Students notice and wonder about potential comparison situations in a real-world setting. <u>Learn</u> – Students choose a strategy to compare hundredths and analyze other strategies; choose a strategy to compare tenths and hundredths and analyze other strategies; write comparison statements to compare three measurements and choose a strategy to justify the comparison; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about strategies to compare measurements expressed as decimal numbers.

Daily Exit Ticket: Compare weights by using the words *heavier than* or *lighter than*.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Blank Tape Diagrams, Area Models, and Number Line

Standard: 4.NF.C.7

Mathematical Practice: 5

Target: Use pictorial representations to compare decimal numbers.

Learning Activities:

<u>Fluency</u> – Students subtract a fraction from a mixed number to build fluency with subtracting mixed numbers with like units from module 4; use multiplication to generate an equivalent fraction for a non-unit fraction to build fluency with fraction equivalence from module 4.

Launch – Students select a model to represent a given decimal number.

<u>Learn</u> – Students shade area models to represent and compare decimal numbers; use place value disks to represent and to compare decimal numbers by comparing the number of each place value unit; locate numbers greater than 1 on a number line and compare; complete problem set.

Land – Debrief: Facilitate a discussion about comparing decimals.

Daily Exit Ticket: Use >, =, < to compare decimals.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, prepared signs, Deci-disks set, Area Models and Number Line

Lesson #11: Compare and order decimal numbers

Standard: 4.NF.C.7

Mathematical Practice: 3

Target: Compare and order decimal numbers.

Learning Activities:

<u>*Fluency*</u> – Students find a sum or difference to build fluency with adding and subtracting mixed numbers with like denominators from module 4; rename non-unit fractions as fractions with larger units to build fluency with fraction equivalence from module 4.

Launch – Students justify their placement of a given number on a number line.

<u>Learn</u> – Students use units to order mixed numbers and decimal numbers; compare decimal numbers in money contexts and measurement contexts; use mental math comparison strategies to complete a series of comparisons through a digital obstacle course; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion about strategies to compare and order decimal numbers and decimal fractions.

Daily Exit Ticket: Compare and order decimals.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, string, index cards, Comparison cards, scissors

Topic D: Addition of Tenths and Hundredths

Standard: 4.NF.C.5

Mathematical Practice: 1

Target: Apply fraction equivalence to add tenths and hundredths.

Learning Activities:

<u>*Fluency*</u> – Students multiply two-digit numbers to build multiplication fluency with multi-digit numbers from module 3; rename non-unit fractions as fractions with larger units to build fluency with fraction equivalence from module 4.

Launch – Students analyze different expressions.

<u>Learn</u> – Students reason about and find the sum of two decimal fractions by using self-selected strategies; share and compare solution strategies and reason about their connections; use familiar strategies to find the sum of two decimal fractions; complete problem set.

Land – *Debrief:* Facilitate a discussion about adding tenths and hundredths.

Daily Exit Ticket: Add tenths and hundredths fractions.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil

Lesson #13: Apply fraction equivalence to add mixed numbers with tenths and hundredths

Standard: 4.NF.C.5

Mathematical Practice: 7

Target: Apply fraction equivalence to add mixed numbers with tenths and hundredths.

Learning Activities:

<u>Fluency</u> – Students multiply two-digit numbers to build multiplication fluency with multi-digit numbers from module 3; generate an equivalent fraction to build fluency with fraction equivalence from module 4. <u>Launch</u> – Students find the total cost of two items by using self-selected strategies and recognize adding like units as a strategy.

<u>Learn</u> – Students add decimal fractions of tenths and hundredths that have a sum greater than 1; use various methods to add mixed numbers with units of tenths and hundredths; compare and contrast the methods used to add mixed numbers with unlike units; complete problem set.

Land – Debrief: Facilitate a discussion about using like units to add mixed numbers.

Daily Exit Ticket: Add mixed numbers to tenths and hundredths.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Methods Recording Page

Lesson #14: Solve word problems with tenths and hundredths

Standard: 4.NF.C.5, 4.M.A.2

Mathematical Practice: 4

Target: Solve word problems with tenths and hundredths.

Learning Activities:

<u>Fluency</u> – Students determine an unknown numerator or denominator to build fluency with fraction equivalence from module 4.

<u>Launch</u> – Students discuss strategies to add mixed numbers and fractions with units of tenths and hundredths.

<u>Learn</u> – Students examine a word problem and sample work that involves addition of tenths and hundredths; reason about, represent, and solve a comparison problem by using self-selected strategies; share solutions for the comparison word problem and reason about their connections; complete problem set.

Land – *Debrief:* Facilitate a discussion about adding decimal numbers to solve one-step word problems.

Daily Exit Ticket: Use the Read-Write-Draw process to solve a fraction word problem.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Equivalent Fractions Sprint

Topic A, B, C, D: Quizzes

Module 5: Assessment

Unit Modifications for Special Population Students		
Advanced Learners	Lesson 2-Consider inviting students to write comparison statements by	
	using the decimal number in the activity.	
	Lesson 4 -Consider inviting students to use what they know about fractions	
	greater than 1 to explain why 15 tenths is the same as 1.5.	
	model.	
	<i>Lesson 8</i> -Invite partners to create their own number and represent it in expanded form.	
	Lesson 13 -Consider challenging students to add more than two decimal fractions.	
Struggling Learners	<i>Lesson 3</i> -Consider inviting students to list partners to 10 before they list	
	Lesson 4-Consider labeling the digits in the number to help students to	
	make the connection between the place value disks and the number written	
	in decimal form.	
	<i>Lesson 6</i> -Consider presenting the total and parts in in the number bond in	
	unit form to support students as they decompose.	
	<i>Lesson 10</i> -Consider providing questions that guide self-monitoring and	
	reflection.	
	Lesson 12 -Consider providing tools to support students with renaming	
	tenths as hundredths.	
English Language Learners	Lesson 1 -Consider inviting students to label the decimal point in their total	
	with the term <i>decimal point</i> .	
	distinguish the unit from tens	
	Lesson 3 -Consider displaying sentence frames for students to refer to as	
	they count up and down by tenths.	
	Lesson 5 - Consider enunciating the th sound at the end of hundredths to	
	Lesson 9. Consider creating a bank of words students can use to compare	
	the objects	
	Lesson 10-Consider providing sentence frames for students to reference	
	when making comparison statements.	
	Lesson 14-Consider posting sentence frames for students to refer to as	
	they share their thinking about their own solutions.	
Special Needs Learners	Lesson 3-Consider allowing students to experiment with the digital	
	interactive tool to decompose 1 into tenths.	
	Lesson 4 -Consider using the digital tool to support students by reducing the	
	demands on line motor skills with organizing and exchanging disks.	
	constants, and hundredths	
	Lesson 9 -Consider presenting the information in another format by offering	
	concrete objects from students.	
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to	
	Section 504 to assist in the development of appropriate plans.	

Standards:

English Language Arts

- RI.CR.4.1. Refer to details and examples as textual evidence when explaining what an informational text says explicitly and make relevant connections when drawing inferences from the text. (Lesson 14: Students engage in reading, interpreting, and solving word problems.)
- LVL.4.2. Determine or clarify the meaning of unknown and multi-meaning academic and domainspecific words and phrases in a text relevant to a *grade 4* reading and content, choosing flexibility from a range of strategies.
 - A. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.
 - B. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., telegraph, photograph, autograph).
 - C. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases. (Lessons 1-14: Students will be introduced to, interact with, and use grade 4 mathematical vocabulary accurately in context.)
- SL.PE.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.
 - A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
 - B. Follow agreed-upon rules for discussions and carry out assigned roles.
 - C. Pose and respond to specific questions to clarify or follow up on information and make comments that contribute to the discussion and link to the remarks of others.
 - D. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

(Lessons 1-14: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)

- SL.II.4.2. Paraphrase portions of a text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally).
 (Lessons 1-14: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- SL.ES.4.3. Identify the reasons and evidence a speaker provides to support particular points. (Lessons 1-14: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- SL.PI.4.4. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace. (Lessons 1-14: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)

Science

• 3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. (Lessons 1-14: Students engage in mathematical exploration to test strategies and solutions in order to meet the desired outcome.)

Integration of 21st Century Skills

Standards:

- 8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data. (Lessons 1-14: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- 8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate. (Lessons 1-14: Students analyze mathematical data and record multiple algorithms; compare algorithms to determine the best way to solve each problem.)
- 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. (Lessons 1-14: Students engage in mathematical discourse to collaborate with classmates to analyze information, solve problems, and make sense of strategies.)
- 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. (Lessons 1-14: Students follow the given steps to solve word problems and create and solve equations.)
- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process. (Lesson 14: Students engage in reading, interpreting, and solving word 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. (Lesson 14: Students engage in reading, interpreting, and solving word problems.)

Unit Title: Module 6: Angle Measurements and Plane Figures

Unit Description: In Module 6, students identify attributes of polygons including side length and the presence or absence of pairs of parallel sides, pairs of perpendicular sides, and angle types. They use protractors to measure and draw angles accurately. Students also identify and draw lines of symmetry.

Unit Duration: 24 days

Desired Results

Standard(s):

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 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.

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.

Understandings:	Essential Questions:
 Topic A: I can define, name, and draw points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines. I can identify different types of angles and describe them in relationship to each other (e.g., an obtuse angle is larger than a right angle and smaller than a straight angle). I can use my understanding of the words parallel, perpendicular, and intersecting to identify and name relationships between lines, line segments, rays, and sides in polygons. 	 Topic A: Why do we mark points with dots and draw lines? How are line segments, lines, and rays similar and different? How are angles formed? How can you identify right, acute, obtuse, and straight angles? What tools are helpful for drawing angles? What should a drawing of an angle include? How are perpendicular and intersecting lines similar and different? How do you know when two lines are perpendicular?

Topic B:

- I can apply fractional understanding to see an angle as a fractional turn through a circle that is measured in degrees—a 1° angle is 1/360 of a turn through a circle.
- I can describe turns in real-world situations and refine my definitions of angle types to include degree measures.
- I can use protractors to measure and draw angles with accuracy and use benchmark angles to estimate the measures of angles.

Topic C:

- I can recognize and apply the additive nature of angle measure to find the unknown measures of angles within figures without using a protractor.
- I can use what is known and the part-total relationship to determine an unknown angle measure when right angles, straight angles, and angles of known measures are decomposed.
- I can extend the strategy to find the measures of multiple unknown angle measures around a point.

Topic D:

- I can recognize, identify, and draw lines of symmetry.
- I can identify attributes of polygons including side length and the presence or absence of pairs of parallel sides, pairs of perpendicular sides, and angle types to sort and classify them.
- I can classify triangles based on side lengths and angle measures and draw triangles based on given attributes.

- How do you know when two lines are parallel?
- Why is it useful to be precise when describing figures?
- Where can you find examples of figures in the real world?

Topic B:

- How are angles and fractions of a circle related?
- What is a protractor used for?
- How are 1° and a turn through 1/360 of a circle related?
- How can we measure turns?
- How is turning your body similar to the hands turning on a clock?
- How do we use a 180° protractor to measure angles?
- Why is estimation helpful when measuring angles?
- How can two angles that look different have the same measure?
- What tools can help us draw angles accurately?
- How can estimating an angle measure help determine whether a drawing is reasonable?

Topic C:

- How can angles be decomposed?
- How can decomposing an angle help find the measure of the angle?
- What strategies can we use to find an unknown angle measure when a right angle or straight angle is decomposed into smaller angles?
- How can we use addition or subtraction to find an unknown angle measure?
- How can we use the decomposed parts of an angle to find the total angle measure?
- What are some ways we can find the measure of an angle without using a protractor?
- How can knowing the angle measures of adjacent angles help us find unknown angle measures?

Topic D:

- How do you recognize lines of symmetry in figures?
- Where do you see lines of symmetry in real-world objects?
- What information is needed to classify a triangle?
- What tools or symbols are helpful when classifying triangles?
- What tools are helpful when drawing triangles?
- When drawing a triangle with certain angles and side lengths, how do you determine what to draw first—the side length or the angle type?
- What attributes can we use to describe a shape?
- Why is it important to be precise with your language when describing a shape?

Assessment Evidence

Assessments:

- Module 6 Equip Pre Assessment
- Exit Slips
- Topic Quizzes (A D)
- Module 6 Assessment

Benchmarks:

• The iReady Assessment is administered in the fall and winter.

Learning Plan

Module 6:

Topic A: Lines and Angles

Lesson #1: Identify and draw points, lines, line segments, rays, and angles

Standard: 4.G.A.1

Mathematical Practice: 6

Target: Identify and draw points, lines, line segments, rays, and angles.

Learning Activities:

<u>Fluency</u> – Students convert liters to milliliters to build fluency with expressing metric measurements in a larger unit in terms of a smaller unit from module 1; convert yards to feet to build fluency with expressing customary length measurements in a larger unit in terms of a smaller unit from module 2; identify polygons with a specified attribute to prepare for new geometric terminology.

<u>Launch</u> – Students describe and draw a geometric figure and identify the need for precise terminology. <u>Learn</u> – Students draw and label a line segment and its endpoints; draw and label a line; draw and label rays and construct an angle; identify points, line segments, lines, rays, and angles in familiar figures; complete problem set.

Land – Debrief: Facilitate a discussion emphasizing precise geometric language and differences between points, lines, line segments, rays, and angles.

Daily Exit Ticket: Draw and label examples of each figure.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, blank paper, straightedge

Lesson #2: Identify right, acute, obtuse, and straight angles

Standard: 4.G.A.1

Mathematical Practice: 7

Target: Identify right, acute, obtuse, and straight angles.

Learning Activities:

<u>Fluency</u> – Students convert kilograms to grams to build fluency with expressing metric measurements in a larger unit in terms of a smaller unit from module 1; use gestures for point, line segment, and line to develop kinesthetic memory for geometric figures; identify polygons with a specified attribute to prepare for new geometric terminology.

Launch – Students study a picture of four angles and discuss the similarities and differences.

<u>Learn</u> – Students create a right-angle tool to be used to describe the size of angles; use the right-angle tool to identify an angle as right, acute, or obtuse; use the right-angle tool to name a straight angle and angles with variations in ray length and orientation; complete problem set.

Land – Debrief: Facilitate a discussion emphasizing precise geometric language and differences between right, acute, and obtuse angles.

Daily Exit Ticket: Identify each angle as right, acute, or obtuse.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Right-Angle Tool

Lesson #3: Draw right, acute, obtuse, and straight angles

Standard: 4.G.A.1

Mathematical Practice: 6

Target: Draw right, acute, obtuse, and straight angles.

Learning Activities:

Fluency – Students convert kilometers to meters to build fluency with expressing metric measurements in a larger unit in terms of a smaller unit from module 1; convert feet to inches to build fluency with expressing customary length measurements in a larger unit in terms of a smaller unit from module 2; use gestures for ray, right angle, acute angle, obtuse angle, and straight angle to develop kinesthetic memory for geometric figures.

<u>Launch</u> – Students reason about whether statements about angles are always, sometimes, or never true. <u>Learn</u> – Students draw an angle by using a given ray and identify the angle as right, acute, obtuse, or straight; draw an angle from a given description; draw an angle and discuss the similarities and differences between their angle and the angles drawn by other students; complete problem set.

Land – Debrief: Facilitate a discussion emphasizing precise geometric language and differences between drawing different types of angles.

Daily Exit Ticket: Draw and label types of angles.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, straightedge, Right-Angle tool, blank paper **Lesson #4: Identify, define, and draw perpendicular lines**

Standard: 4.G.A.1

Mathematical Practice: 6

Target: Identify, define, and draw perpendicular lines.

Learning Activities:

Fluency – Students convert meters to centimeters to build fluency with expressing metric measurements in a larger unit in terms of a smaller unit from module 1; convert yards to feet and feet to inches to build fluency with expressing customary length measurements in a larger unit in terms of a smaller unit from module 2; identify polygons with a given attribute to develop familiarity with new geometric terminology. **Launch** – Students establish the need for the term *perpendicular* in a real-world picture. **Learn** – Students define the term *perpendicular* and identify examples and nonexamples in real-world objects; draw perpendicular line segments and use symbols to identify and describe them; identify and name perpendicular sides in polygons; complete problem set.

Land – Debrief: Facilitate a discussion about perpendicular lines and line segments.

Daily Exit Ticket: Draw, label, and identify perpendicular line segments.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Rectangular and Triangular grid paper, Identify Sides in Polygons, Right-Angle tool, straightedge

Lesson #5: Identify, define, and draw parallel lines

Standard: 4.G.A.1

Mathematical Practice: 6

Target: Identify, define, and draw parallel lines.

Learning Activities:

<u>Fluency</u> – Students convert measurements to build fluency with expressing length measurements in a larger unit in terms of a smaller unit from modules 1 and 2.

Launch – Students create categories for pictures using geometric vocabulary.

<u>Learn</u> – Students define the term *parallel* and identify parallel line segments in pictures; draw parallel line segments, lines, and rays and use symbols to identify and describe them; identify and name parallel sides in polygons; complete problem set.

Land – Debrief: Facilitate a discussion about parallel lines.

Daily Exit Ticket: Draw, label, and identify parallel line segments.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Rectangular and Triangular grid paper, Identify Sides in Polygons, Right-Angle tool, straightedge, ruler, Convert Lengths Measurement Sprint

Lesson #6: Relate geometric figures to a real-world context

Standard: 4.G.A.1

Mathematical Practice: 2

Target: Relate geometric figures to a real-world context.

Learning Activities:

<u>*Fluency*</u> – Students count by halves, thirds, fourths, and eighths to prepare for exploring angles as fractional turns in a circle beginning in lesson 7; use gestures for lines and line segments, including parallel and perpendicular line segments, to develop kinesthetic memory for geometric figures.

Launch – Students play a guessing game with precise geometric terminology that helps them identify geometric figures.

<u>Learn</u> – Students identify geometric features of real-world floor plans; examine the requirements of the project, draw a floor plan of a home using their knowledge of geometric figures, and discuss their floor plan and its features with a partner; complete problem set.

Land – Debrief: Facilitate a discussion about relating geometric figures to the real world.

Daily Exit Ticket: Identify and describe geometric figures.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Geometric Figures game, dot paper, Right-Angle tool, straightedge, sample floor plans

Topic B: Angle Measurement

Lesson #7: Explore angles as fractional turns through a circle

Standard: 4.M.B.4.a

Mathematical Practice: 7

Target: Explore angles as fractional turns through a circle.

Learning Activities:

<u>Fluency</u> – Students add or subtract whole numbers to build fluency with the operations; say and write names for a point, line segment, line, or ray to build familiarity with geometric figures from topic A; use gestures for acute angle, right angle, obtuse angle, and straight angle to build kinesthetic memory for geometric figures.

Launch – Students study a model of a fraction and consider its relationship to angles.

<u>Learn</u> – Students construct an angle-maker tool and use it to show angles; reason about the number of fractional turns needed to make 1 whole turn; use the angle-maker tool to show angles of various sizes and name them as acute, right, obtuse, straight, or reflex angles; complete problem set.

Land – Debrief: Facilitate a discussion about the relationship between an angle and a fraction of a turn through a circle. Display an angle-maker tool that shows a quarter turn.

Daily Exit Ticket: Identify turns and types of angles.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, cardstock circles, scissors, marker, straightedge

Lesson #8: Use a circular protractor to recognize a 1° angle as a turn through 1/360 of a circle

Standard: 4.M.B.4, 4.M.B.5

Mathematical Practice: 8

Target: Use a circular protractor to recognize a 1° angle as a turn through 1/360 of a circle.

Learning Activities:

<u>Fluency</u> – Students add or subtract whole numbers to build fluency with the operations; say and write the names for an angle to build familiarity with geometric figures from topic A; use gestures for point, ray, line segment, and line to build kinesthetic memory for geometric figures.

Launch – Students study pictures of various protractors and notice and wonder about them.

<u>Learn</u> – Students recognize a protractor as a tool for measuring angles; use a protractor to recognize a turn through 1/360 of a circle as a 1° angle and determine the measure of different angles; make, measure, and recognize benchmark angles; complete problem set.

Land – *Debrief:* Facilitate a discussion about the use of a protractor.

Daily Exit Ticket: Identify fractions of a turn.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Circular Protractor, Angle-maker tool

Lesson #9: Identify and measure angles as turns and recognize them in various contexts

Standard: 4.M.B.4, 4.M.B.4.a, 4.M.B.4.b

Mathematical Practice: 2

Target: Identify and measure angles as turns and recognize them in various contexts.

Learning Activities:

<u>Fluency</u> – Students say and write names for parallel and perpendicular lines and line segments to build familiarity with the geometric figures from topic A; count by 90° or 30° on a circular protractor to develop familiarity with the tool from lesson 8; classify an angle and use a circular protractor to determine the angle measure to develop fluency with the skill from lesson 8.

Launch – Students identify 90° clockwise and counterclockwise turns as right angles.

<u>Learn</u> – Students explore angle measure as turning hands on a clock; relate angle measures with turning to face different directions in a room; use degrees in relation to directions; complete problem set. Land – Debrief: Facilitate a discussion about angles as turns in real-world contexts.

Daily Exit Ticket: Identify degrees in a turn.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, prepared signs

Standard: 4.M.B.4, 4.M.B.4.a, 4.M.B.4.b, 4.M.B.5, 4.G.A.1

Mathematical Practice: 6

Target: Use 180° protractors to measure angles.

Learning Activities:

<u>Fluency</u> – Students complete an addition equation with an unknown addend to prepare for finding unknown angle measures within right angles beginning in topic C; count by 90° or 45° on a circular protractor to develop familiarity with the tool from lesson 8; classify an angle and use a circular protractor to determine the angle measure to develop fluency with the skill from lesson 8.

Launch – Students compare two angles.

<u>Learn</u> – Students relate the scale on the protractor to a number line; use a 180° protractor to determine the measures of angles when the measures are multiples of 5 or 10; measure angles with precision; complete problem set.

Land – Debrief: Facilitate a discussion about measuring angles with a 180° protractor.

Daily Exit Ticket: Measure angles with a protractor.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, protractor

Lesson #11: Estimate and measure angles with a 180° protractor

Standard: 4.M.B.4, 4.M.B.4.a, 4.M.B.4.b, 4.M.B.5, 4.G.A.1

Mathematical Practice: 6

Target: Estimate and measure angles with a 180° protractor.

Learning Activities:

<u>Fluency</u> – Students complete an addition equation with an unknown addend to prepare for finding unknown angle measures within right angles beginning in topic C; count by a unit of 20° on a 180° protractor to develop familiarity with the tool from lesson 10; classify an angle and use a 180° protractor to determine the angle measure to develop fluency with the skill from lesson 10.

<u>Launch</u> – Students estimate angle measures within real-world pictures by discussing the closest benchmark angle.

<u>Learn</u> – Students use benchmark angles to estimate the measure of an angle and match angles with rays of varying lengths and orientations to their angle measurement; extend the rays in angles to find their measure by using a protractor; practice extending rays to precisely measure angles; complete problem set. <u>Land</u> – *Debrief:* Facilitate a discussion about extending rays to measure angles.

Daily Exit Ticket: Estimate and measure angles with a protractor.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Angle Measure Sort, Paper Circles, protractor, scissors, straightedge

Standard: 4.M.B.5, 4.G.A.1

Mathematical Practice: 6

Target: Use a protractor to draw angles up to 180°.

Learning Activities:

Fluency – Students complete an addition equation with an unknown addend to prepare for finding unknown angle measures within right angles beginning in topic C.

Launch – Students watch a video and discuss the importance of accuracy in angle drawings.

Learn – Students estimate the size of an angle, draw the angle by using a protractor and a straightedge,

and use their estimate to determine whether their drawing is reasonable; sketch a given angle and then use a 180° protractor to draw the angle; complete problem set.

Land – *Debrief:* Facilitate a discussion about creating precise drawings of angles.

Daily Exit Ticket: Construct an angle.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, protractor, straightedge, Compose 90 Sprint

Topic A & B: Quizzes

Topic C: Determine Unknown Angle Measures

Lesson #13: Decompose angles by using pattern blocks

Standard: 4.M.B.6

Mathematical Practice: 2

Target: Decompose angles by using pattern blocks.

Learning Activities:

Fluency – Students use gestures for lines and line segments, including parallel and perpendicular, to develop kinesthetic memory for geometric figures; draw an example of a specified point, ray, or angle to build familiarity with the geometric figures and notations from topic A; use their bodies to show turns and relate the turns to angle measures to build kinesthetic memory for terms and measures from topic B.

Launch – Students notice and wonder about angles composed of pattern block angles.

Learn – Students find the measures of larger angles by using a pattern block with a 30° angle measure; add angle measures to find the measure of a larger angle; use pattern blocks to decompose an angle and find the measure; complete problem set.

Land – *Debrief:* Facilitate a discussion about decomposing angles.

Daily Exit Ticket: Use pattern blocks to measure angles.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Pattern Block cutouts, scissors, straightedge

Lesson #14: Find unknown angle measures within right and straight angles

Standard: 4.M.B.6

Mathematical Practice: 7

Target: Find unknown angle measures within right and straight angles.

Learning Activities:

Fluency – Students ask questions by using precise geometric terminology to identify a geometric figure to build familiarity with the geometric figures and associated terminology from topic A; turn their bodies 90, 180, 270, or 360 degrees and relate the movement to fractional turns to build kinesthetic memory for terms and measures from topic B; complete an addition equation with an unknown addend to prepare for finding unknown angle measures within straight angles.

Launch – Students add various measurement units.

Learn – Students show that angle measure is additive by folding paper; write equations and find an unknown angle measure when the sum is 90°; write equations and find an unknown angle measure when the sum of the angle measures is 180°; complete problem set.

Land – *Debrief:* Facilitate a discussion about adding angle measures.

Daily Exit Ticket: Write and solve equations to find the measures of angles.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Geometric Figure Games, blank paper, straightedge, protractor

Lesson #15: Find unknown angle measures within a decomposed angle of up to 180°

Standard: 4.M.B.6

Mathematical Practice: 5

Target: Find unknown angle measures within a decomposed angle of up to 180°.

Learning Activities:

Fluency - Students draw an example of a specified line or line segment, including parallel and perpendicular, to build familiarity with the geometric figures and notations from topic A; complete an addition equation with an unknown addend to develop fluency with finding unknown angle measures within straight angles.

Launch – Students use a protractor and addition or subtraction to find the unknown measures of angles. Learn – Students fold paper to decompose benchmark angles into three parts; choose a strategy to find the unknown measure of an angle when a straight angle is decomposed into multiple angles; find unknown angle measures in nonbenchmark angles that are decomposed into two or more angles; complete problem set.

Land – Debrief: Facilitate a discussion about using addition and subtraction to find unknown angle measures.

Daily Exit Ticket: Write and solve equations to find the measures of angles.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, blank paper, straightedge, protractor

Lesson #16: Find unknown angle measures around a point

Standard: 4.M.B.6

Mathematical Practice: 1

Target: Find unknown angle measures around a point.

Learning Activities:

<u>Fluency</u> – Students complete an addition equation with an unknown addend to develop fluency with finding unknown angle measures within straight angles.

Launch – Students begin to wonder about a group of adjacent angles around a point.

<u>Learn</u> – Students determine the measure of an unknown angle that is part of a reflex angle; find unknown angle measures in figures where the sum of the angles is 360°; find the measures of multiple unknown angles around a point; complete problem set.

<u>Land</u> – Debrief: Facilitate a discussion about using addition and subtraction to find unknown angle measures.

Daily Exit Ticket: Write and solve equations to find the measures of angles.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Compose 180 Sprint, straightedge, protractor

Topic D: Two-Dimensional Figures and Symmetry

Lesson #17: Recognize, identify, and draw lines of symmetry

Standard: 4.G.A.3

Mathematical Practice: 7

Target: Recognize, identify, and draw lines of symmetry.

Learning Activities:

Fluency – Students complete an equation to decompose a fraction into a sum of fractions with the same denominator to build fluency with the skill from module 5; count by tenths of a centimeter and rename tenths as larger units to prepare for classifying and constructing triangles beginning in lesson 18; determine if a shape is partitioned into equal parts to prepare for recognizing lines of symmetry.

Launch – Students fold a pentagon to reveal a line of symmetry.

<u>Learn</u> – Students identify lines of symmetry by folding figures; identify and draw lines of symmetry on pictures of real-life objects; use a line of symmetry to complete a drawing of a figure; complete problem set. <u>Land</u> – Debrief: Facilitate a discussion about lines of symmetry.

Daily Exit Ticket: Identify and draw lines of symmetry in shapes.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Pentagon Cutout, Figures Cutout, scissors, straightedge, colored pencil

Lesson #18: Analyze and classify triangles based on side length, angle measures, or both

Standard: 4.G.A.1, 4.G.A.2

Mathematical Practice: 3

Target: Analyze and classify triangles based on side length, angle measures, or both.

Learning Activities:

<u>Fluency</u> – Students determine whether a figure shows a line of symmetry to develop fluency with recognizing lines of symmetry from lesson 17; count by eighths of an inch and rename eighths as larger units to prepare for classifying and constructing triangles; classify an angle and use a 180° protractor to determine the angle measure to prepare for classifying triangles.

Launch – Students analyze and sort triangles into categories.

<u>Learn</u> – Students construct a triangle by drawing three points and connecting them with line segments; sort and classify triangles using side length and angle measure; classify triangles based on visible attributes and explain their reasoning; complete problem set.

Land – Debrief: Facilitate a discussion about how to classify triangles.

Daily Exit Ticket: Classify triangles by angles and side lengths.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, assorted triangles, prepared signs, Right-angle tool, ruler **Lesson #19: Construct and classify triangles based on given attributes**

Standard: 4.G.A.1, 4.G.A.2

Mathematical Practice: 6

Target: Construct and classify triangles based on given attributes.

Learning Activities:

<u>Fluency</u> – Students complete an equation to decompose a fraction into a sum of fractions with the same denominator to build fluency with the skill from module 5; count by eighths of an inch or tenths of a centimeter to prepare for constructing and classifying triangles; classify an angle and use a 180° protractor to determine the angle measure to prepare for constructing triangles.

Launch – Students classify triangles created by connecting three points.

<u>Learn</u> – Students draw a right isosceles triangle and discuss how their drawings are similar to and different from their classmates' drawings; draw a scalene triangle and discuss how their drawings are similar to and different from their classmates' drawings; construct a model of an equilateral triangle and reason about its attributes; complete problem set.

Land – Debrief: Facilitate a discussion about drawing and classifying triangles.

Daily Exit Ticket: Draw and labels triangles including lines of symmetry.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, protractor, ruler, toothpicks

Lesson #20: Sort polygons based on a given rule

Standard: 4.G.A.1, 4.G.A.2

Mathematical Practice: 1

Target: Sort polygons based on a given rule.

Learning Activities:

<u>Fluency</u> – Students complete an equation to decompose a fraction into a sum of fractions with the same denominator to build fluency with the skill from module 5.

Launch – Students draw two triangles and a square and identify their attributes.

<u>Learn</u> – Students learn how to play the Guess My Rule game; sort polygons according to a given rule while playing the Guess My Rule game; complete problem set.

Land – Debrief: Facilitate a reflection on describing and sorting shapes by using their attributes.

Daily Exit Ticket: Sort polygons based on their attributes.

Resources: Computer or device, projection device, Teach book, Learn book, dry erase marker, personal whiteboard, personal whiteboard eraser, pencil, Centimeter Grid paper, straightedge, Rules page, Guess My Rule game board, polygons for game, Decompose Fractions Sprint, sticky notes

Topic C & D: Quizzes

Module 6: Assessment

Unit Modifications for Special Population Students		
Advanced Learners	Lesson 3-Challenge students to use one of the rays to draw another in the	
	same figure.	
	Lesson 6 -Challenge students to create a second-floor plan of another	
	home, office, or store.	
	Lesson 12 -Consider challenging students to draw reflex angles.	
	Lesson 14-Consider challenging students by asking them to measure and	
Struggling Learnang	Identify more complementary angles in the picture of the shape pieces.	
Struggling Learners	Lesson 7-Consider using color coding to help students differentiate the	
	geometric lightes and their corresponding holditoris.	
	Lesson 6 . Consider providing for students what constitutes a floor plan	
	Lesson 7 -Consider creating a visual as a reference to bein students identify	
	types of angles based on their location on the angle-maker tool	
	<i>Lesson 18</i> -Consider providing sentence frames to support students in	
	sharing thoughts and ideas about how they classify triangles.	
English Language Learners	Lesson 1-Consider creating an anchor chart with samples figures and	
	notations to support students in using the new terms.	
	Lesson 2 -Consider creating an anchor chart for the types of angles.	
	<i>Lesson 3</i> -Consider providing sentence frames to support students as they	
	share and compare work.	
	Lesson 8-Consider creating an anchor chart with familiar tools for	
	measuring.	
	<i>Lesson 9</i> -Consider using a picture to support students in using the term	
	clockwise and counterclockwise.	
	Lesson 13 -Consider creating a word bank of pattern block names and	
	descriptions for students to reference when giving explanations.	
Special Needa Learnara	Lesson 17-Consider creating an anchor chart for the term line of symmetry.	
Special Needs Learners	right angle tool to support using the tool appropriately	
	Lesson 6 -Consider posting a list of questions for students to refer to when	
	they play the game independently	
	Lesson 8-Consider color-coding and labeling the location of each angle	
	type on the protractor.	
	Lesson 10 -Consider showing each equation in a number bond if students	
	need additional support.	
	<i>Lesson 11</i> -Consider providing questions that guide self-monitoring and	
	reflection.	
Learners with a 504	Refer to page four in the <u>Parent and Educator Resource Guide to</u>	
	<u>Section 504</u> to assist in the development of appropriate plans.	

Interdisciplinary Connections

Standards:

English Language Arts

- RI.CR.4.1. Refer to details and examples as textual evidence when explaining what an informational text says explicitly and make relevant connections when drawing inferences from the text. (Lessons 1-20: Students will be introduced to, interact with, and use grade 4 mathematical vocabulary accurately in context.)
- SL.PE.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.
 - A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
 - B. Follow agreed-upon rules for discussions and carry out assigned roles.
 - C. Pose and respond to specific questions to clarify or follow up on information and make comments that contribute to the discussion and link to the remarks of others.
 - D. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

(Lessons 1-20: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)

- SL.II.4.2. Paraphrase portions of a text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally). (Lessons 1-20: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- SL.ES.4.3. Identify the reasons and evidence a speaker provides to support particular points. (Lessons 1-20: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- SL.PI.4.4. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace. (Lessons 1-20: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)

Science

• 3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. (Lessons 1-20: Students engage in mathematical exploration to test strategies and solutions in order to meet the desired outcome.)

Social Studies

• 6.1.5.EconNM.4: Explain how creativity and innovation resulted in scientific achievement and inventions in many cultures during different historical periods. (Lesson 10: Students learn about the history of protractors and how they measured angles between the Earth, moon, and other objects in space.)

<u>Art</u>

- 1.5.5.Re7a: Speculate about artistic processes. Interpret and compare works of art and other responses. (Lesson 12: Students analyze a piece of artwork and discuss its connection to mathematics.)
- 1.5.5.Re7b: Analyze visual arts including cultural associations. (Lesson 12: Students analyze a piece of artwork and discuss its connection to mathematics.)
Integration of 21st Century Skills

Standards:

- 8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data. (Lessons 1-20: Students engage in mathematical discourse to describe, elaborate, and demonstrate understanding of the lesson objective.)
- 8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate. (Lessons 1-20: Students analyze mathematical data and record multiple algorithms; compare algorithms to determine the best way to solve each problem.)
- 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. (Lessons 1-20: Students engage in mathematical discourse to collaborate with classmates to analyze information, solve problems, and make sense of strategies.)
- 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. (Lessons 1-20: Students follow the given steps to solve word problems and create and solve equations.)