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):	5

Duration:	*Full Year:*	**X**	*Semester:*		*Marking Period:*	
Course Description:	Eureka Math² 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 5, students extend previous understandings of whole numbers, fractions, and decimals to explain relationships and computation strategies. They apply this work to solve problems in geometric and measurement contexts.					
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 Squared 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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BOE Approval: _____

Unit Title: <u>Module 1</u> – Place Value Concepts for Multiplication and Division with Whole Numbers

Unit Description: In Module 1, students describe place value relationships, express powers of ten with exponents, convert metric measurements, and multiply and divide by multi-digit numbers. They develop fluency with the standard algorithm for multiplication.

Unit Duration: Approximately 25 days (including days for assessments) **No optional lessons in this module*

Desired Results

Standard(s): (*Bolded standards are assessed in the end of Module Assessment***)**

5.OA.A.1

Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

5.OA.A.2

Write simple expressions that record calculations with numbers and interpret numerical expressions without evaluating them.

For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.

5.NBT.A.1

Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

5.NBT.A.2

Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

5.NBT.B.5

Fluently multiply multi-digit whole numbers using the standard algorithm.

5.NBT.B.6

Find whole-number quotients of whole numbers with up to four-digit dividends and two-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.

5.M.A.1

Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Understandings:	**Essential Questions:**
● **Module 1 – Topic A – I can** use multiplicative comparison statements to explain that a digit in one place represents 10 times as much as what it represents in the place to the right. ● **Module 1 – Topic B – I can** build fluency by multiplying multi-digit numbers by using the standard algorithm. ● **Module 1 – Topic C – I can** use methods based on place value to find quotients of whole numbers with up to four-digit dividends and two-digit divisors. ● **Module 1 – Topic D – I can** estimate quotients, then use tape diagrams, area models, and vertical form to record quotients and remainders.	● **Module 1 – Topic A - Can I use place value for understanding whole numbers?** ● **Module 1 – Topic B - Can I multiply whole numbers?** ● **Module 1 – Topic C - Can I divide whole numbers?** ● **Module 1 – Topic D - Can I use methods based on place value to find quotients of whole numbers with up to four-digit dividends and two-digit divisors?**

Assessment Evidence

Assessments:
- Daily Exit Tickets
- Equip Pre-assessments for Module
- End of Topic Quizzes
- End of Module Assessment

Benchmarks:
- The iReady Assessment is administered in the Fall and Winter.

Learning Plan

***Resources listed below are additional items that are needed in addition to the resources listed in the lesson overview in the Teacher's Manual.*

Module 1 – Topic A - Lesson #: 1

Standard: 5.NBT.A.1

Mathematical Practice: MP#5

Target/Objective: Relate adjacent place value units by using place value understanding.

Learning Activities:
Fluency: Students use unit form to identify a number modeled with place value disks, and then compose and rename to prepare for relating adjacent place value units. Students identify a place value and the value of a digit in a multi-digit number, and then write the number in expanded form to prepare for relating adjacent place value units.
Launch: Students convert among different measurements and analyze their multiplicative relationships.

Learn: Students use self-selected strategies to organize and count a collection and record their process. Students determine that the same digits in various places do not represent the same value and articulate how the digits in different place values are similar and different.
Land/Debrief: Facilitate a class discussion about relating adjacent place value units by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Daily Exit Ticket: Students will write equations to show they understand how place value units are related to one another. (2 problems)

Resources: Print or copy Money Counting Collection and cut out the collections of paper money. Prepare one collection per student pair. Consider whether to remove Place Value Chart to Millions from the student books in advance or have students remove them during the lesson.

Module 1- Topic A - Lesson #: 2

Standard: 5.NBT.A.2

Mathematical Practice: MP8

Target/Objective: Multiply and divide by 10, 100, and 1,000 and identify patterns in the products and quotients.

Learning Activities:
Fluency: Students use unit form to identify a number modeled with place value disks and then decompose and rename to maintain place value understanding from grade 4. Students identify a place value and the value of a digit in a multi-digit number and then write the number in expanded form to maintain place value understanding from grade 4.
Launch: Students apply their understanding of **10** times as much to solve a problem involving **100** times as much.
Learn: Students multiply by **10**, **100**, and **1,000** and notice patterns that help them multiply mentally. Students divide by **10**, **100**, and **1,000** and notice patterns that help them divide mentally.
Land/Debrief: Facilitate a class discussion about multiplying and dividing by 10, 100, and 1,000 by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Daily Exit Ticket: Students will answer 6 brief multiplication/division by 10, 100, 1000 problems and 1 problem to explain their understanding of this skill.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 1 – Topic A - Lesson #: 3

Standard: 5.NBT.A.2

Mathematical Practice: MP3

Target/Objective: Use exponents to multiply and divide by powers of 10.

Learning Activities:
Fluency: Students write the standard form of a four-digit number given in unit form to maintain fluency with writing numbers within 1,000,000 from grade 4. Students round a three-digit number to the nearest hundred and nearest ten to prepare for estimating products beginning in lesson 4.
Launch: Students examine representations that show factors of 10.
Learn: Students interpret an exponent as the number of times 10 is a factor. Students write powers of 10 as equations, in standard form, and in exponential form. Students multiply powers of 10 by using a variety of strategies. Students divide by powers of 10 by using a variety of strategies and share their work to compare.
Land/Debrief: Facilitate a class discussion about using exponents to multiply and divide by powers of 10 by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will practice multiplying and dividing numbers by the powers of 10 and writing product and quotients in standard and exponential forms. (8 problems to solve)

Resources: Display or recreate Powers of 10 Charts so all students can see it.

Module 1 – Topic A - Lesson #: 4

Standard: 5.NBT.A.2

Mathematical Practice: MP7

Target/Objective: Estimate products and quotients by using powers of 10 and their multiples.

Learning Activities:
Fluency: Students write the standard form of a five-digit number given in unit form to maintain fluency with writing numbers within 1,000,000 from grade 4. Students round a four-digit number to the nearest thousand and nearest hundred to prepare for estimating products.
Launch: Students estimate the number of days that someone has been alive.
Learn: Students estimate products by using powers of 10 and their multiples. Students estimate quotients by using powers of 10 and their multiples. Students estimate products and quotients in real-world situations.
Land/Debrief: Facilitate a class discussion about estimating products and quotients by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one real world number story that will practice estimating products and quotients by using powers of 10 and their multiples.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 1 – Topic A - Lesson #: 5

Standard: 5.M.A.1

Mathematical Practice: MP6

Target/Objective: Convert measurements and describe relationships between metric units.

Learning Activities:
Fluency: Students use rounding to estimate the product of a one-digit by two-digit multiplication expression to prepare for assessing the reasonableness of products in topic B. Students convert kilometers to meters, kilograms to grams, or liters to milliliters to prepare for converting metric measurement units.
Launch: Students discuss real-world objects with given metric measurements.
Learn: Students identify patterns between metric units. Students rename metric units.
Land/Debrief: Facilitate a class discussion about relationships between metric units by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve three conversion problems.

Resources: Gather 1 meter stick per group of 3–5 students.

Module 1 – Topic A - Lesson #: 6

Standard: 5.M.1

Mathematical Practice: MP2

Target/Objective: Solve multi-step word problems by using metric measurement conversion.

Learning Activities:
Fluency: Students use rounding to estimate the product of a one-digit by three-digit multiplication expression to prepare for assessing the reasonableness of products in topic B. Students convert meters to centimeters, liters to centiliters, or grams to centigrams to prepare for solving multi-step word problems involving metric measurement conversions.
Launch: Students convert metric units to compare the weights of two collections of gold coins.
Learn: Students solve multi-step problems involving metric unit conversions.
Land/Debrief: Facilitate a class discussion about solving word problems involving metric conversions by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one real-world conversion problem using the Read-Write-Draw strategy.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 1 – Topic B - Lesson #: 7

Standard: 5.NBT.B.5

Mathematical Practice: MP5

Target/Objective: Multiply by using familiar methods.

Learning Activities:
Fluency: Students write the standard form of a four- or five-digit number given in word form to maintain fluency with writing numbers within 1,000,000 from grade 4. Students use rounding to estimate the product of a one-digit by four-digit multiplication expression to prepare for assessing the reasonableness of products beginning in lesson 8.
Launch: Students represent a five-digit number by using models and expressions.
Learn: Students multiply a one-digit number by a five-digit number. Students share and compare solutions and reason about their connections. Students select a different recording method to multiply and to reason about efficiency.
Land/Debrief: Facilitate a class discussion about multiplication methods by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one 5-digit by 1 digit multiplication problem using any strategy.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 1 – Topic B - Lesson #: 8

Standard: 5.NBT.B.5

Mathematical Practice: MP8

Target/Objective: Multiply two- and three-digit numbers by two-digit numbers by using the distributive property.

Learning Activities:
Fluency: Students write the standard form of a six- or seven-digit number given in word form to build fluency with writing numbers within **10,000,000** from topic A. Students use rounding to estimate the product of a one-digit by five-digit multiplication expression to prepare for assessing the reasonableness of products.
Launch: Students solve a word problem involving two-digit by three-digit multiplication.

Learn: Students decompose factors to multiply and relate the break apart and distribute method to the area model. Students determine that designating a different unit does not change the product.
Land/Debrief: Facilitate a class discussion about multiplying by using the distributive property by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will multiply using an area model and standard algorithm. (3 parts)

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 1 – Topic B - Lesson #: 9

Standard: 5.NBT.B.5

Mathematical Practice: MP6

Target/Objective: Multiply two- and three-digit numbers by two-digit numbers by using the standard algorithm.

Learning Activities:
Fluency: Students multiply a one-digit factor by multiples of 10, 100, 1,000, or 10,000 to develop fluency with assessing the reasonableness of products.
Launch: Students discuss a real-world use of an area model.
Learn: Students multiply by using the area model and relate it to the standard algorithm. Students multiply by using the standard algorithm, discuss how it relates to the area model, and determine the more efficient strategy.
Land/Debrief: Facilitate a class discussion about using the standard algorithm for multiplication by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve 3 digit by 2 digit multiplication problems using the area model and standard algorithm. (2 problems)

Resources: Consider tearing out the Sprint pages in advance of the lesson.

Module 1 – Topic B - Lesson #: 10

Standard: 5.NBT.B.5

Mathematical Practice: MP6

Target/Objective: Multiply three- and four-digit numbers by three-digit numbers by using the standard algorithm.

Learning Activities:
Fluency: Students use a place value strategy to divide a two-digit number by a one-digit number to prepare for dividing multi-digit numbers by two-digit numbers in topic C. Students read a power of 10 in exponential form and say the value in standard form to build fluency with exponents from topic A.
Launch: Students test an ancient method of multiplication and compare it with the standard algorithm.
Learn: Students multiply by using the area model and the standard algorithm simultaneously.
Land/Debrief: Facilitate a class discussion about multiplying by using the standard algorithm by using the following prompts. Encourage students to restate their classmates' responses.

Daily Exit Ticket: Student**s** will solve one 3 digit by 3-digit multiplication problem using a standard algorithm.

Resources: Review the Math Past resource to support the delivery of the lesson.

Module 1 – Topic B - Lesson #: 11

Standard: 5.NBT.B.5

Mathematical Practice: MP3

Target/Objective: Multiply two multi-digit numbers by using the standard algorithm.

Learning Activities:
Fluency: Students read a power of 10 in exponential form and say the value in standard form to build fluency with exponents from topic A. Students use a place value strategy to divide a three-digit number by a one-digit number to prepare for dividing multi-digit numbers by two-digit numbers in topic C.
Launch: Students compare partial products with the standard algorithm for multiplication.
Learn: Students multiply two multi-digit numbers by using the standard multiplication algorithm. Students analyze sample work involving the standard algorithm for multiplication.
Land/Debrief: Facilitate a class discussion about reasons for using the standard algorithm by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one 4 digit by 3 digit multiplication problem using standard algorithm.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 1 – Topic C - Lesson #: 12

Standard: 5.NBT.B.6

Mathematical Practice: MP2

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

Learning Activities:
Fluency: Students write a multiplication expression by using only 10 as a factor and the exponential form for a power of 10 given in standard form to build fluency with exponents from topic A. Students say the first ten multiples of 2 and 20 to prepare for estimating quotients. Students divide tens by tens and say the equation with the numbers in standard form to prepare for dividing two- and three-digit numbers by multiples of 10.
Launch: Students identify methods to divide by multiples of 10.
Learn: Students use estimates and partial quotients to divide by multiples of 10. Students solve division problems that involve dividing by multiples of 10.
Land/Debrief: Facilitate a class discussion about division by multiples of 10 by using the following prompts. Encourage students to restate or add to their classmates' responses.

Daily Exit Ticket: Students will draw and label a tape diagram to represent an expression, then write an equation to check the work. (3-part problem)

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 1 – Topic C - Lesson #: 13

Standard: 5.NBT.B.6

Mathematical Practice: MP7

Target/Objective: Divide two-digit numbers by two-digit numbers in problems that result in one-digit quotients.

Learning Activities:
Fluency: Students write a power of 10 expressed in words in exponential form as a multiplication expression by using only 10 as a factor, and in standard form to build fluency with exponents from topic A. Students say the first ten multiples of 3 and 30 to prepare for estimating quotients. Students divide tens by tens and say the equation with the numbers in standard form to prepare for dividing two-digit numbers by two-digit numbers.
Launch: Students use the Co-construction routine to contextualize a statement involving division.
Learn: Students divide two-digit numbers by two-digit numbers. Students use a given tape diagram to write a division statement. Students solve real-world problems involving division.
Land/Debrief: Facilitate a class discussion about dividing two-digit numbers by two-digit numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will divide a 2 digit number by 2 digit number that results in a 1 digit quotient. (1 problem)

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 1 – Topic C - Lesson #: 14

Standard: 5.NBT.B.6

Mathematical Practice: MP1

Target/Objective: Divide three-digit numbers by two-digit numbers in problems that result in one-digit quotients.

Learning Activities:
Fluency: Students use exponential form to write a power of 10 expressed in a variety of forms to build fluency with exponents from topic A.
Launch: Students determine why expressions with the same quotient and remainder may not have the same value.
Learn: Students compare two division expressions. Students solve real-world problems involving division.
Land/Debrief: Facilitate a class discussion about division by using the following prompts. Encourage students to restate or add to their classmates' responses.

Daily Exit Ticket: Students will solve one real world problem having to divide a 3-digit dividend by a 2-digit divisor.

Resources: Consider tearing out the Sprint pages in advance of the lesson.

Module 1 – Topic C - Lesson #: 15

Standard: 5.NBT.B.6

Mathematical Practice: MP7

Target/Objective: Divide three-digit numbers by two-digit numbers in problems that result in two-digit quotients.

Learning Activities:
Fluency: Students write and evaluate an expression to prepare for two-step calculations beginning in topic D. Students say the first ten multiples of 4 and 40 to develop fluency with estimating quotients. Students divide in standard form to develop fluency with dividing three-digit numbers by two-digit numbers.
Launch: Students write multiplication and division equations that are represented by area models.
Learn: Students compare sample work that records partial quotients in area models with work that records partial quotients in vertical form. Students divide three-digit numbers by two-digit numbers without remainders by using partial quotients. Students divide three-digit numbers by two-digit numbers with remainders by using partial quotients.
Land/Debrief: Gather the class with their Problem Sets. Use the following prompts to facilitate a class discussion that emphasizes how to divide strategically with partial quotients. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one problem dividing a 3-digit number by a 2-digit number that results in a 2-digit quotient.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 1 – Topic C - Lesson #: 16

Standard: 5.NBT.B.6

Mathematical Practice: MP2

Target/Objective: Divide four-digit numbers by two-digit numbers.

Learning Activities:
Fluency: Students write and evaluate an expression to prepare for two-step calculations beginning in topic D. Students say the first ten multiples of 5 and 50 to develop fluency with estimating quotients. Students divide in standard form to prepare for dividing multi-digit numbers.
Launch: Students identify errors in work that shows division of a four-digit number by a two-digit number.
Learn: Students compare estimates for the quotient of a four-digit number and a two-digit number. Students solve a real-world division problem without a remainder. Students solve a real-world division problem involving a remainder.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about dividing four-digit numbers by two-digit numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one division problem with a 4 digit dividend and 2 digit divisor. They will check their work with multiplication.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 1 – Topic D - Lesson #: 17

Standard: 5.OA.A.1, 5.OA.A.2

Mathematical Practice: MP6

Target/Objective: Write, interpret, and compare numerical expressions.

Learning Activities:
Fluency: Students write and evaluate an expression to prepare for relating tape diagrams, statements, and expressions. Students express an addition, subtraction, multiplication, or division statement as an expression and evaluate the expression to prepare for two-step calculations.
Launch: Students consider the correct way to evaluate an expression.

Learn: Students draw and use tape diagrams to write statements as numerical expressions. Students write statements and equations to demonstrate reasoning about the groups they see in tape diagrams. Students determine whether expressions, tape diagrams, and statements match by analyzing the placement of parentheses. Students apply their understanding of the role of parentheses to compare expressions without evaluating them.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about numerical expressions by using the following prompts. Encourage students to restate or add on to their classmates' responses. Have students refer to their Problem Sets to explain their thinking.

Daily Exit Ticket: Students will solve three problems where they will write, interpret, and compare numerical expressions.

Resources: Prepare three signs on paper. Label one sign 77, another sign 128, and the third sign Undecided. Hang the signs in various locations in the classroom. Print or copy Numerical Expressions and cut out each rectangle.

Module 1 – Topic D - Lesson #: 18

Standard: 5.OA.A.1

Mathematical Practice: MP2

Target/Objective: Create and solve real-world problems for given numerical expressions.

Learning Activities:
Fluency: Students say the value of two identical adjacent digits in a four- or five-digit number, and then write a multiplication and a division equation to build fluency with place value relationships from topic A. Students say the first ten multiples of 6 and 60, and then 7 and 70 to build fluency with estimating quotients. Students write and evaluate an expression to prepare for solving real-world problems with numerical expressions.
Launch: Students use parentheses as they write expressions to match a word problem context.
Learn: Students develop word problem situations to match each operation. Students analyze tape diagrams and expressions to develop word problem situations that match.
Land/Debrief: Facilitate a class discussion about numerical expressions by using the following prompts. Encourage students to restate or add to their classmates' responses.

Daily Exit Ticket: Students will write one word problem for a given numerical expression.

Resources: Partition a chart into five columns. Label the columns Situation, Add, Subtract, Multiply, and Divide.

Module 1 – Topic D - Lesson #: 19

Standard: 5.NBT.B.6

Mathematical Practice: MP4

Target/Objective: Solve multi-step word problems involving multiplication and division.

Learning Activities:
Fluency: Students say the value of two identical adjacent digits in a six- or seven-digit number and then write a multiplication and a division equation to build fluency with place value relationships from topic A. Students write and complete an equation to represent a tape diagram to prepare for solving multi-step word problems involving the four operations.
Launch: Students sort tape diagrams into three groups: multiplication, division (number of groups known), and division (group size known).
Learn: Students reason about, represent, and solve multi-step word problems involving multiplication and division. Students share solutions and reason about the connections. Students draw models to represent and solve word problems.
Land/Debrief: Facilitate a class discussion about solving word problems by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one multi-step word problem using the Read-Write-Draw strategy involving multiplication and division.

Resources: Tear out and cut apart Multiplication and Division Tape Diagram Card Sort cards from the student books. Organize each set into an envelope (1 per student group). Consider whether to prepare these materials in advance or have students assemble them prior to the lesson.

Module 1 – Topic D - Lesson #: 20

Standard: 5.NBT.B.5, 5.NBT.B.6

Mathematical Practice: MP1

Target/Objective: Solve multi-step word problems involving the four operations.

Learning Activities:
Fluency: Students say the first ten multiples of 8 and 80, and then 9 and 90 to build fluency with estimating quotients.
Launch: Students match mathematical expressions with real-world situations.
Learn: Students solve multi-step word problems with multiple operations and compare their methods with other students. Students share and compare solutions and reason about their connections.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about solving multi-step word problems by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Invite students to turn and talk about one of the problems in the Problem Set. Have them discuss why they drew the tape diagrams the way they did and how they decided which operation to use to solve the problem.

Daily Exit Ticket: Students will use the Read-Write-Draw strategy to solve one multi-step word problem involving the four operations.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Unit Modifications for Special Population Students	
Advanced Learners	**Module 1 – Topic A – Lesson 1-** Present students with a number such as 2,458,136 and invite them to rearrange the digits to produce the number with the greatest possible value. Then ask students to choose any digit and describe its value before and after rearranging by using 10 *times as much* or 10 *times as small* language and by showing their thinking on a place value chart. **Module 1 – Topic B – Lesson 7-** Direct students to a work sample that finds the product by using the standard algorithm. Ask students whether they can see the partial products in the standard algorithm. Then ask them to explain. **Module 1 – Topic C – Lesson 13-** For students who need an additional challenge, consider using the following prompt: Write three different division expressions that can be represented by this tape diagram. For each expression, use the tape diagram to justify your thinking. Each of the five unmarked units have the same value. **Module 1 – Topic D – Lesson 17-** Ask students who finish early to write and evaluate an expression to match the tape shown. Then have them find the difference between the value of the expression in problem 1 and the value of the expression for this tape diagram.
Struggling Learners	**Module 1 – Topic A – Lesson 2-** Consider making place value disks available for students who would benefit from a concrete representation of the problem. If more than one set of partners would like to use place value disks to represent the problem, encourage them to work together. This teamwork will help ease the demand for many disks and will help students solve the problem in the allotted time. **Module 1 – Topic B – Lesson 8-** Consider offering students a template and posting an example to support students in their understanding of designating the unit. Students may highlight the unit in one color and the factor to decompose in another color. **Module 1 – Topic C – Lesson 13-** Encourage students who need additional support in making estimates to continue using the multiplication or division facts they know. This way of thinking is important for success with estimation. **Module 1 – Topic D – Lesson 19-** Consider removing one level of complexity by providing students with tape diagrams. Then have them label, write expressions, and solve the problem.

English Language Learners	**Module 1 – Topic A – Lesson 5-** Use the following sentence frames to support students in describing relationships between units. Length: _____ is _____ times as long as _____. Weight: _____ is _____ times as heavy as _____. Capacity: _____ is _____ times as much as _____. **Module 1 – Topic B – Lesson 10-** Define the words *halving* and *doubling* for students. • Halving: dividing by 2 • Doubling: multiplying by 2 **Module 1 – Topic C – Lesson 15-** To support understanding of partial quotients, consider asking students to recall what they know about partial products. Then explain that when they break a dividend into parts, they create smaller division problems, each with its own quotient. The sum of the partial quotients is the whole quotient. Discuss the similarities and differences between partial products and partial quotients. **Module 1 – Topic D – Lesson 20-** Consider directing partners to the Agree or Disagree section of the Talking Tool to support them in discussing the similarities and differences in their work and the work of their classmates throughout this segment.
Special Needs Learners	**Module 1 – Topic A – Lesson 6-** Consider posting the exemplar tape diagrams for students to refer to as they work independently. **Module 1 – Topic B – Lesson 9-** After partners find the product, consider annotating the standard algorithm to highlight decomposing the factors, multiplying the parts, and adding the partial products. **Decompose:** Think of 63 as 60 and 3, and 28 as 20 and 8 **Distribute:** Eight 63s **Distribute:** Twenty 63s **Total:** Twenty-eight 63s **Module 1 – Topic C – Lesson 14-** In this lesson, students draw tape diagrams to make sense of problems involving division and then find quotients by using vertical form. For students who need additional support, encourage them to continue to use tape diagrams to divide. **Module 1 – Topic D – Lesson 18-** Invite students to draw a tape diagram to represent and make sense of the expression before they write a word problem.
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:

SL.5.1. (A-D) Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

Module 1 – Topic A – Lesson 1* -During the Debriefing portion of the lesson, the teacher will facilitate a class discussion about relating adjacent place value units by using the following prompts. Encourage students to restate or add on to their classmates' responses.*

NJSLSA.L5. Demonstrate understanding of word relationships and nuances in word meanings.

***Module 1 – Topic D – Lesson 17* –** *During the Lauch portion, the Language Support offers suggestions how to define and explain key vocabulary for the success of the lesson.*

SL.5.2. Summarize a written text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally).

***Module 1 – Topic D – Lesson 19* –** *Students will be given 5 minutes to solve their assigned problem. Encourage students to use the Read–Draw–Write process and to use the tape diagram to guide their thinking about the problem, help them discover the operations needed to solve the problem, and help them write and evaluate an expression.*

Integration of 21st Century Skills

Standards:

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

Module 1 – Topic A – Lesson 2 -*During the Whiteboard Exchange portion of the lesson, students identify a place value and the value of a digit in a multi-digit number and then write the number in expanded form to maintain place value understanding from grade 4.*

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

***Module 1 – Topic D – Lesson 18*-**Students develop word problem situations to match each operation.

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.

***Module 1 – Topic C – Lesson 16* –** *During the Learn portion, there is a Universal Design for Learning suggestion that help students with a list of questions to help them work through division problems.*

9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.

Module 1 – Topic B – Lesson 11- *Students to think–pair–share to estimate the products throughout their class work.*

Unit Title: Module 2 – Addition and Subtraction with Fractions

Unit Description: Module 2 enhances students' prior work with fractions to add and subtract fractions and mixed numbers with unlike denominators. Students also interpret a fraction as the result of dividing the numerator by the denominator and interpret data in line plots.

Unit Duration: Approximately 22 days (including days for assessments) **No optional lessons in this module*

Desired Results

Standard(s): (*Bolded standards are assessed in the end of Module Assessment***)**

5.NF.A

Use equivalent fractions as a strategy to add and subtract fractions.

5.NF.A.1

Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, $a/b + c/d = (ad + bc)/bd$.)

5.NF.A.2

Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.

5.NF.B.3

Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?

5.DL.B.2

Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.

For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

The following standards can also be implemented through Eureka "Data Talks".

5.DL.A.1 Understand how different visualizations can highlight different aspects of data. Ask questions and interpret data visualizations to describe and analyze patterns.
5.DL.A.2 Develop strategies to collect, organize and represent data of various types and from various

sources. Communicate results digitally through a data visual (e.g. chart, storyboard, video presentation).
5.DL.A.3 Collect and clean data to be analyzable (e.g., make sure each entry is formatted correctly, deal with missing or incomplete data).
5.DL.A.4 Using appropriate visualizations (i.e. double line plot, double bar graph), analyze data across samples

Understandings:

- **Module 2 – Topic A – I can** use equal sharing to understand a fraction as the result of dividing the numerator by the denominator.
- **Module 2 – Topic B – I can** use models and equations to make like units before I add and subtract fractions. **I can** analyze expressions to determine whether the units in fractions are related or unrelated, which indicates whether one or more fractions must be renamed to make like units.
- **Module 2 – Topic C – I can** apply knowledge of addition and subtraction of whole numbers to help add and subtract mixed numbers.
- **Module 2 – Topic D - I can** create line plots from a given set of data. **I can** consider all data points to decide how much of the number line should be shown and how to label the number line to present the data so it can be easily read, analyzed, and understood. **I can** find the sum of measurements in the data set and use models to equally redistribute the sum among all data points.

Essential Questions:

- **Module 2 – Topic A - Can I understand the connection between fractions and division?**
- **Module 2 – Topic B – Can I understand how to add and subtract fractions by making like units?**
- **Module 2 – Topic C – Can I understand how to add and subtract fractions, whole numbers, and mixed numbers?**
- **Module 2 – Topic D – Can I understand problem solving and line plots with fractional measurements?**

Assessment Evidence

Assessments:

- Daily Exit Tickets
- Equip Pre-assessments for Module
- End of Topic Quizzes
- End of Module Assessment

Benchmarks:

- The iReady Assessment is administered in the Fall and Winter.

Learning Plan

Resources listed below are additional items that are needed in addition to the resources listed in the lesson overview in the Teacher's Manual.

Module 2 – Topic A - Lesson #: 1

Standard: 5.NF.B.3

Mathematical Practice: MP7

Target/Objective: Interpret a fraction as division.

Learning Activities:
Fluency: Students count by halves and rename fractions as whole or mixed numbers to prepare for interpreting a fraction as division. Students identify the number of equal parts, the fractional unit, and how many units make 1 whole to prepare for interpreting a fraction as division. Students add fractions with like units to prepare for adding fractions with related or unlike units beginning in topic B.
Launch: Students watch a video that supports a discussion about equal sharing.
Learn: Students represent equal-sharing situations with division equations. Students draw to model equal sharing pictorially and discover the relationship between division and fractions.
Land/Debrief: Facilitate a class discussion about the relationship between fractions and division by using the following prompts. Encourage students to restate or add on to their classmates' responses. Direct students to problem 3 in the Problem Set. Display the student work.

Daily Exit Ticket: Students will draw a division model and write division as expressions. (3 problems)

Resources: Consider whether to remove Pizza Slices from the student books and place inside whiteboards in advance or have students prepare them during the lesson. Gather 5 markers of assorted colors for each student and the teacher. Use chart paper to record and display division equations throughout the lesson. Keep the equations posted through the Debrief.

Module 2 – Topic A - Lesson #: 2

Standard: 5.NF.B.3

Mathematical Practice: MP5

Target/Objective: Interpret a fraction as division by writing remainders as fractions.

Learning Activities:
Fluency: Students count by thirds and rename fractions as whole or mixed numbers to develop fluency with interpreting a fraction as division. Students identify the number of equal parts, the fractional unit, and how many units make 1 and 2 wholes to develop fluency with interpreting a fraction as division. Students add mixed numbers with like units to prepare for adding mixed numbers with related or unlike units beginning in topic C.
Launch: Students notice and wonder about models that represent the same equal sharing.
Learn: Students show different ways of distributing wholes to determine whether mixed numbers are equal to fractions greater than 1. Students use division strategies to show that a mixed number and a fraction greater than 1 are equal.
Land/Debrief: Facilitate a class discussion about interpreting a fraction as division by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Display the two models and invite students to study them.

Daily Exit Ticket: Students will solve two problems to interpret a fraction as division by writing remainders as fractions.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 2 – Topic A - Lesson #: 3

Standard: 5.NF.B.3

Mathematical Practice: MP2

Target/Objective: Represent fractions as division by using models.

Learning Activities:
Fluency: Students convert liters to milliliters, meters to millimeters, or grams to milligrams to build fluency with converting metric measurements in a larger unit in terms of a smaller unit from module 1. Students count by fourths and rename fractions as whole or mixed numbers to develop fluency with interpreting a fraction as division. Students subtract fractions with like units to prepare for subtracting fractions with related or unlike units beginning in topic B.
Launch: Students reason about different models used to represent a word problem.
Learn: Students use a tape diagram to model a word problem with a quotient between 1 and 2. Students use a tape diagram to model a word problem with a quotient less than 1. Students use a tape diagram to model a word problem with a quotient greater than 2.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about how tape diagrams can be useful to solve division word problems by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one word problem in which they will represent fractions as division using models to solve.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 2 – Topic A - Lesson #: 4

Standard: 5.NF.B.3

Mathematical Practice: MP1

Target/Objective: Solve word problems involving division and fractions.

Learning Activities:
Fluency: Students convert liters to centiliters, meters to centimeters, or grams to centigrams to build fluency with converting metric measurements in a larger unit in terms of a smaller unit from module 1. Students count by fifths and rename fractions as whole or mixed numbers to develop fluency with interpreting a fraction as division. Students subtract mixed numbers with like units to prepare for subtracting mixed numbers with related or unlike units beginning in topic C.
Launch: Students reason about whether a tape diagram correctly represents a real-world problem.
Learn: Students reason about, represent, and solve real-world problems involving division and fractions. Students share solution methods and reason about the connections between methods.

Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about solving division word problems by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two-word problems using the Read-Write-Draw Strategy to solve problems involving division and fractions.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 2 – Topic B - Lesson #: 5

Standard: 5.NF.A.1

Mathematical Practice: MP6

Target/Objective: Add and subtract fractions with related units by using pictorial models.

Learning Activities:
Fluency: Students count by sixths and rename fractions as whole or mixed numbers to prepare for representing adding and subtracting fractions with like units on the number line. Students add or subtract fractions or mixed numbers with like units to prepare for adding and subtracting fractions and mixed numbers with related or unlike units beginning in lesson 6.
Launch: Students analyze models that show like units, related units, and unlike units.
Learn: Students use a tape diagram to rename fractions with related units as equivalent fractions with like units and then add or subtract the fractions. Students use a number line to show the sum or difference of fractions with related units.
Land/Debrief: Facilitate a class discussion about estimating and using a number line to add and subtract fractions with like units by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems by drawing a model to help make like units in order to add or subtract.

Resources: Consider tearing out the Sprint pages in advance of the lesson.

Module 2 – Topic B - Lesson #: 6

Standard: 5.NF.A.1

Mathematical Practice: MP7

Target/Objective: Add and subtract fractions with related units by using area models to rename fractions.

Learning Activities:
Fluency: Students count by sevenths and rename fractions as whole or mixed numbers to prepare for representing adding and subtracting fractions with related units on the number line. Students determine whether a fraction is closer to 0, 12, oz.. 1 to develop fluency with using benchmark numbers to estimate sums and differences. Students use an area model to generate an equivalent fraction for a unit fraction to prepare for adding and subtracting fractions with related units.
Launch: Students analyze four ways to represent a number and identify what makes each representation different.

Learn: Students use an area model to rename fractions with related units as equivalent fractions with like units, and then add or subtract the fractions.
Land/Debrief: Facilitate a class discussion about using area models to rename fractions by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems by drawing area models to make like units, then add or subtract.

Resources: Consider whether to have students remove Equivalent Fractions from the student books and place inside personal whiteboards in advance or have students prepare them during the lesson.

Module 2 – Topic B - Lesson #: 7

Standard: 5.NF.A.1

Mathematical Practice: MP5

Target/Objective: Add and subtract fractions with related units by finding equivalent fractions numerically.

Learning Activities:
Fluency: Students count by eighths and rename fractions as whole or mixed numbers to prepare for representing adding and subtracting fractions with related units on the number line. Students determine whether a fraction is closer to 0, 12, or 1 to develop fluency with using benchmark numbers to estimate sums and differences. Students use an area model to generate an equivalent fraction for a unit fraction to prepare for adding and subtracting fractions with related units.
Launch: Students strategize to find the sum of related units that are inefficient to draw in an area model.
Learn: Students use multiplication to make equivalent fractions and then add or subtract the fractions. Students use division to make equivalent fractions and then add or subtract the fractions. Students identify and justify their choice for finding like units and determine that using division is not always helpful when making like units.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a discussion about adding and subtracting fractions with related units by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Direct students to refer to their Problem Sets.

Daily Exit Ticket: Students will solve two adding and subtracting problems using equivalent fractions.

Resources: Consider whether to have students remove Equivalent Fractions from the student books and place inside personal whiteboards in advance or have students prepare them during the lesson. Prepare two signs on paper. Label one sign Decompose to Make Like Units and one Compose to Make Like Units. Hang the signs in various locations in the classroom.

Module 2 – Topic B - Lesson #: 8

Standard: 5. NF.A.1

Mathematical Practice: MP8

Target/Objective: Add and subtract fractions with unrelated units by finding equivalent fractions pictorially.

Learning Activities:
Fluency: Students multiply a four- or five-digit number by a one-digit number to build fluency with multiplying multi-digit whole numbers by using the standard algorithm. Students use multiplication to generate an equivalent fraction for a unit fraction to prepare for adding and subtracting fractions with unrelated units.
Launch: Students compare fractions with related units to those with unrelated units and determine when more than one fraction in an expression must be renamed.
Learn: Students determine like units to add and subtract fractions with unrelated units. Students determine like units to add and subtract fractions greater than 1.
Land/Debrief: Facilitate a class discussion about adding and subtracting fractions with unrelated units by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems by drawing area models to represent each fraction, use the area models to make like units, then add or subtract.

Resources: Gather 4 sheets of paper for each student. If possible, make 1 of the sheets a different color than the other 3.

Module 2 – Topic B - Lesson #: 9

Standard: 5.NF.A.1

Mathematical Practice: MP5

Target/Objective: Add and subtract fractions with unrelated units by finding equivalent fractions numerically.

Learning Activities:
Fluency: Students multiply a four- or five-digit number by a one-digit number to build fluency with multiplying multi-digit whole numbers by using the standard algorithm. Students use multiplication to generate an equivalent fraction for a non-unit fraction to develop fluency with adding and subtracting fractions with unrelated units.
Launch: Students consider a real-world and historical situation that requires finding the sum of three unrelated fractions.
Learn: Students find like units to add and subtract unrelated fractions numerically. Students add and subtract expressions involving three fractions. Students analyze a sample solution demonstrating another way to find like units.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about adding and subtracting fractions with unrelated units by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Direct students to problem 7 in the Problem Set.

Daily Exit Ticket: Students will add and subtract two problems by finding equivalent fractions numerically.

Resources: Review the Math Past resource to support delivery of Launch.

Module 2 – Topic C - Lesson #: 10

Standard: 5.NF.A.1

Mathematical Practice: **MP5**

Target/Objective: Add whole numbers and mixed numbers and add mixed numbers with related units.

Learning Activities:
Fluency: Students determine the unknown in an equation by decomposing a mixed number into the whole number and fraction to prepare for addition with mixed numbers. Students determine whether a mixed number is closer to 1 or 2 to prepare for using benchmark numbers to estimate sums of addition equations with mixed numbers. Students complete each equation and generate an equivalent fraction to prepare for adding and subtracting mixed numbers with related units.
Launch: Students analyze different ways of finding a sum of whole numbers.
Learn: Students find the sum of a whole number and a mixed number. Students add mixed numbers by making like units and then adding.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about adding mixed numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Have students choose a problem from 9-16 in the Problem Set and think–pair–share about the following question.

Daily Exit Ticket: Students will add two problems using the arrow way or a number bond to help make the next whole number.

Resources: Consider tearing out the Sprint pages before the lesson.

Module 2 – Topic C - Lesson #: 11

Standard: **5.NF.A.1**

Mathematical Practice: **MP2**

Target/Objective: Add mixed numbers with unrelated units.

Learning Activities:
Fluency: Students determine the unknown part to make the next whole number and write the equation to develop fluency with addition and subtraction involving mixed numbers. Students determine whether a mixed number is closer to 2 or 3 to develop fluency with using benchmark numbers to estimate sums of addition equations with mixed numbers. Students determine like units in an addition expression with related units, rename one of the fractions, and rewrite the expression to prepare for adding mixed numbers with related units.
Launch: Students solve a word problem involving mixed numbers with unrelated units.
Learn: Students add mixed numbers with unrelated units, write equations with unrelated units by using sample work, and write word problems to match an expression. Students will participate in a Gallery Walk.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about adding mixed numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Direct students to problems 9–13 in the Problem Set. Invite them to choose 2 or 3 problems and think—pair—share about why they chose the method they used.

Daily Exit Ticket: Students will solve two adding mixed numbers problems.

Resources: Prepare three signs on chart paper. Label one sign Station 1, one sign Station 2, and one sign Station 3. Hang the signs in various locations in the classroom. Print or copy Station Problems and cut each page in half. Prepare enough so each pair of students has a copy of all the problems.

Module 2 – Topic C - Lesson #: 12

Standard: 5.NF.A.1

Mathematical Practice: MP6

Target/Objective: Subtract whole numbers from mixed numbers and mixed numbers from whole numbers.

Learning Activities:
Fluency: Students determine the unknown part to make the next whole number and write the equation to develop fluency with addition and subtraction involving mixed numbers. Students determine the unknown in an equation by decomposing a whole number into a whole number and fraction equal to 1 to prepare for subtraction with whole numbers and mixed numbers. Students determine like units in a subtraction expression with related units, rename one fraction, and rewrite the expression to prepare for subtracting mixed numbers with related units beginning in lesson 13.
Launch: Students analyze different ways of finding a difference of whole numbers.
Learn: Students subtract a whole number from a mixed number by subtracting the whole numbers first and then adding the fraction to the difference. Students subtract a mixed number from a whole number by decomposing the total to take from 1.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about subtracting whole numbers and mixed numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses. Write the expressions 8−538 and 838−5.

Daily Exit Ticket: Students will solve three problems subtracting whole numbers and mixed numbers.

Resources: Gather 8 Unifix Cubes of the same color and 4 of another color.

Module 2 – Topic C - Lesson #: 13

Standard: 5.NF.A.1

Mathematical Practice: MP7

Target/Objective: Subtract mixed numbers from mixed numbers with related units.

Learning Activities:
Fluency: Students write a division expression as a fraction, and a whole number, when possible, to build fluency with fractions and division from topic A. Students determine the unknown in an equation by decomposing a mixed number into a mixed number and 1, to prepare for subtraction with mixed numbers. Students determine the unknown part to make the next whole number and write the equation to develop fluency with addition and subtraction involving mixed numbers.
Launch: Students analyze expressions to make connections between subtraction of whole numbers and subtraction of mixed numbers.
Learn: Students identify when they can subtract like units to find the difference of mixed numbers. Students show different ways they can decompose to subtract mixed numbers. Students subtract by using different methods and assess efficiency and preference.

Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about using multiple methods to subtract mixed numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems subtracting mixed numbers from mixed numbers with related units.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 2 – Topic C - Lesson #: 14

Standard: 5.NF.A.1

Mathematical Practice: MP4

Target/Objective: Subtract mixed numbers from mixed numbers with unrelated units.

Learning Activities:
Fluency: Students write a division expression as a fraction and a whole number or mixed number to build fluency with fractions and division from topic A. Students determine the unknown in an equation, decomposing a whole number or a mixed number, to develop fluency with subtraction involving mixed numbers. Students determine like units in an addition or subtraction expression with related units, rename one fraction, and rewrite the expression to develop fluency with adding and subtracting mixed numbers.
Launch: Students identify a common subtraction error.
Learn: Students apply subtraction methods to solve a one-step word problem. Students share and compare methods and reason about the connections. Students select a different method to subtract.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about subtracting mixed numbers with unrelated units by using the following prompts. Encourage students to restate or add on to their classmates' responses. Direct students to problems 2, 8, and 10 in the Problem Set.

Daily Exit Ticket: Students will solve two mixed numbers subtraction problems.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 2 – Topic D - Lesson #: 15

Standard: 5.DL. B2

Mathematical Practice: MP6

Target/Objective: Represent data on a line plot.

Learning Activities:
Fluency: Students write a division expression as a fraction, whole number, or mixed number to build fluency with fractions and division from topic A. Students make like units in an addition equation with related units and find the sum to prepare for solving problems by using data from a line plot beginning in lesson 16.
Launch: Students discuss how they use data in a calendar to answer questions.

Learn: Students use measurement data presented in a calendar to create a line plot. Students interpret the data represented on a line plot.
Land/Debrief: Facilitate a class discussion about representing data on a line plot by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will create a line plot, give it a title and label, plot data, and answer a question based on the data.

Resources: Consider tearing out the Sprint pages in advance of the lesson.

Module 2 – Topic D - Lesson #: 16

Standard: 5.DL.B.5

Mathematical Practice: MP3

Target/Objective: Solve problems by using data from a line plot.

Learning Activities:
Fluency: Students write equations with whole numbers to represent a tape diagram to prepare for multiplying a whole number by a fraction beginning in module 3. Students count by halves, fourths, or eighths on a number line to prepare for solving problems by equally redistributing a total amount in lesson 17. Students make like units in a subtraction equation with related units and find the difference to prepare for solving problems by using data from a line plot.
Launch: Students use data from a line plot to determine whether a claim is true.
Learn: Students answer questions and solve problems based on data on a line plot. Students take turns completing line plots, writing questions about line plots, and answering questions by using data presented on a line plot.
Land/Debrief: Facilitate a class discussion about solving problems with data from line plots by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve a two-part problem interpreting data.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 2 – Topic D - Lesson #: 17

Standard: 5.DL.B.2

Mathematical Practice: MP5

Target/Objective: Solve problems by equally redistributing a total amount.

Learning Activities:
Fluency: Students write equations with unit fractions to represent a tape diagram to prepare for multiplying a whole number by a fraction beginning in module 3. Students count by halves, fourths, or eighths on a number line to prepare for solving problems by equally redistributing a total amount. Students make like units in an addition or subtraction equation with related units and find the sum or difference to build fluency with adding and subtracting fractions from topic B.
Launch: Student**s** represent liquid measurements on a line plot and estimate the amount in each cup if the liquid were redistributed equally.

Learn: Students equally redistribute eighths by using concrete objects. Students equally redistribute eighths by using pictorial models. Students share and compare solution methods and reason about their connections.

Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about redistributing data by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one redistribution problem using a line plot/data.

Resources: Gather 32 Unifix Cubes of one color for the teacher. Consider whether to remove Liquid Line Plot from the student books and place inside personal whiteboards in advance or have students prepare them during the lesson.

Unit Modifications for Special Population Students	
Advanced Learners	**Module 2 – Topic A – Lesson – 3-** Consider providing additional questions to students ready for a challenge. • If the number of containers stays the same, how many liters of water might we have if the quotient is greater than 10? • If the number of containers stays the same, how many liters of water might we have if the quotient is less than 1? **Module 2 – Topic B – Lesson – 5-** Consider challenging students to evaluate expressions such as the following that have mixed addition and subtraction and more than 2 related units. Find 712−13+53; Find 516+32+78 **Module 2 – Topic C – Lesson – 14 –** Challenge students to find the difference when there are two subtrahends, such as in the following expression: (1535−728)−212 **Module 2 – Topic D – Lesson – 15 –** Ask students to consider what would be different about the line plot if the following data points had been included. 58,312,123,256 What would change, if anything, to accurately represent this data on the line plot?
Struggling Learners	**Module 2 – Topic A – Lesson – 3-** After they find the value of the unknown, students often lose track of what the quantity refers to within the problem context. When they write a sentence to answer the question, it helps students build the habit of recontextualizing their work. Recontextualizing prompts students to think about whether their answer makes sense in terms of the problem and the units. **Module 2 – Topic B – Lesson – 6-** Provide students with a template to put in their whiteboards showing each fraction represented on an area model. Then allow students to partition to show like units with a dry-erase marker. **Module 2 – Topic C – Lesson – 12 –** Consider providing cubes or centimeter cubes to support students when they need to take from 1. **Module 2 – Topic D – Lesson – 16 –** If students need support generating questions that can be answered by using the line plot, first ask this question: What do you know about this line plot? Then direct students to problem 1 and ask the following questions: What were some of the questions we answered about the pumpkins? What related questions can you ask about the kittens?
English Language Learners	**Module 2 – Topic A – Lesson – 2** Consider providing a sentence starter and listing the fractions in word form to support students in communicating whether 54 is equal to 114. They are (or are not) equal because _____54=five fourths114=one and one fourth **Module 2 – Topic B – Lesson- 7 –**

	During the Take a Stand routine, direct students to use the Agree or Disagree section of the Talking Tool to support students in discussing the reasons why they chose a specific sign. **Module 2 – Topic C – Lesson – 12 –** Support students in using precise language when they refer to the parts of a subtraction sentence by posting a labeled expression. Students might also refer to the minuend as the total, and they might refer to the subtrahend as the part, connecting to the part–total relationship. **Module 2 – Topic D – Lesson – 17 –** Contextualize the terms *distribute* and *redistribute* by distributing pieces of paper to the students. Give each student an unequal amount of paper. Collect all the paper and redistribute it equally to the students.
Special Needs Learners	**Module 2 – Topic A – Lesson – 2-** Consider creating and posting a graphic organizer to show the various representations of mixed numbers and fractions greater than 1 that all represent the same division expression. (The tape diagram can be added in the next lesson.) **Module 2 – Topic B – Lesson 6 –** Consider lessening the fine motor demands of the task by using Equivalent Fractions instead of having students draw their own square area models. **Module 2 – Topic C – Lesson – 13 –** Consider co-creating an anchor chart of methods used to subtract mixed numbers with related units. Record an example of each method while working through this lesson. Leave the anchor chart posted where students can refer to it as they work. **Module 2 – Topic D – Lesson – 15 –** Consider providing grid paper for students to use to create line plots. The grid can help space numbers equally on the number line and align the Xs as students draw them to represent the data.
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:

SL.5.1. (A-D) Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

***Module 2 - Topic D - Lesson 15** - When students are finished, use the following prompts to guide a discussion about using the data presented in the calendar and on the line plot to answer the problems.

- Which problems can you answer only by using the data presented in the calendar?
- Which problems can you answer only by using the data presented on the line plot?
- Which problems were answered more efficiently by using the data on the line plot?

Invite students to turn and talk about why it is helpful to represent measurement data on a line plot.

NJSLSA.L5. Demonstrate understanding of word relationships and nuances in word meanings.

***Module 2 - Topic D - Lesson 15 -** Students are familiar with the notation of a line break and the term *interval*, or space between tick marks, from previous grades. In grade 5, the phrases interval length or length of interval refer to the space between tick marks.

SL.5.2. Summarize a written text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally).

***Module 2 - Topic D - Lesson - 15 –** During the Launch portion of the lesson, students discuss how they use data in a calendar to answer questions.

Integration of 21st Century Skills

Standards:

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

***Module 2 - Topic D - Lesson 15 -** Students use measurement data presented in a calendar to create a line plot.

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

***Module 2 - Topic D - Lesson 16 -** Students answer questions and solve problems based on data on a line plot.

9.4.5.IML.2: **Create a visual representation to organize information about a problem or issue.**

***Module 2 - Topic A - Lesson 1 -** Students will draw a model of division in their exit ticket to show a visual representation of their understanding.

9.4.5.CI.3: **Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.**

***Module 2 - Topic C - Lesson 11 -** Students will participate in a Gallery Walk: Gather the class and invite students to share similarities and differences they noticed among the work at each station. Then facilitate a class discussion by asking the following questions.

Unit Title: Module 3 – Multiplication and Division with Fractions

Unit Description: In module 3, students use various strategies to multiply and divide with fractions. They multiply fractions by whole numbers and by fractions, divide whole numbers by unit fractions and unit fractions by whole numbers, and convert customary measurements.

**Unit Duration: Approximately 27 days (including days for assessments) ****Lesson 22, optional*

Desired Results

Standard(s): (*Bolded standards are assessed in the end of Module Assessment***)**

5.OA.A.1

Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

5.OA.A.2

Write simple expressions that record calculations with numbers and interpret numerical expressions without evaluating them.

For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.

5.M.A.1

Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

5.NF

Number and Operations—Fractions

5.NF.B.4

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

5.NF.B.5

Interpret multiplication as scaling (resizing), by:

5.NF.B.5.a

Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

5.NF.B.5.b

Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.

5.NF.B.6

Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

5.NF.B.7

Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade)

5.NF.B.7.a

Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.

For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.

5.NF.B.7.b

Interpret division of a whole number by a unit fraction, and compute such quotients.

For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.

5.NF.B.7.c

Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.

For example, how much chocolate will each person get if 3 people share 1/2 lb. of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?

5.NF.B.4.a

Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$.

For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, $(a/b) \times (c/d) = ac/bd$.)

Understandings:	**Essential Questions:**
● **<u>Module 3 – Topic A</u> – I can** extend my understanding of fractions from parts of a whole (e.g., 1 third of a shape) to parts of a set or a number (e.g., 1 third of a group of 12 items). **I can** find fractions of a set and then transition to finding a fraction of a whole number. **I can** learn that finding a fraction of a whole number means finding the product of a fraction and a whole number. **I can** apply this learning	● **<u>Module 3 – Topic A</u> – Can I use what I know about multiplication and multiply a whole number by a fraction?** ● **<u>Module 3 – Topic B</u> – Can I multiply fractions?** ● **<u>Module 3 – Topic C</u> – Can I divide a unit fraction and a whole number?** ● **<u>Module 3 – Topic D</u> - Can I solve multi-step problems involving fractions?**

to converting customary measurement units.

- **Module 3 – Topic B – I can** use area models and number lines to multiply fractions by unit fractions and then fractions by fractions. **I can** reason about the value of products by considering whether the factors involved are greater than 1 or less than 1.
- **Module 3 – Topic C – I can** use tape diagrams and number lines to divide a whole number by a unit fraction and to divide a unit fraction by a whole number**. I can** solve word problems that involve multiplication of fractions and division of whole numbers and fractions. **I can** explain the relationship between multiplication and division.
- **Module 3 – Topic D - I can** apply my previous learning about all operations with fractions to compare and evaluate expressions that contain grouping symbols. **I can** create and solve word problems involving fractions, and they write equations with parentheses for word problems that require multiple steps to solve.

Assessment Evidence

Assessments:

- Daily Exit Tickets
- Equip Pre-assessments for Module
- End of Topic Quizzes
- End of Module Assessment

Benchmarks:

- The iReady Assessment is administered in the Fall and Winter.

Learning Plan

***Resources listed below are additional items that are needed in addition to the resources listed in the lesson overview in the Teacher's Manual.**

Module 3 – Topic A - Lesson #: 1

Standard: 5.NF.B.4

Mathematical Practice: MP8

Target/Objective: Find fractions of a set with arrays.

Learning Activities:

Fluency: Students visualize a number line while counting aloud to maintain fluency with counting by halves. Students write equations with unit fractions to represent a tape diagram to prepare for multiplying a whole number by a fraction. Students write a fraction as a division expression, and as a whole number when possible, to prepare for finding fractions of a set with arrays.
Launch: Students use centimeter cubes to find fractional units of a set.
Learn: Students partition arrays to represent a fraction of a set. Students solve a real-world problem involving finding a fractional unit of a set.
Land/Debrief: Facilitate a class discussion about finding fractional parts of a set by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems finding fractions with arrays.

Resources: Prepare 12-centimeter cubes of one color for each student.

Module 3 – Topic A - Lesson #: 2

Standard: 5.NF.B.4

Mathematical Practice: MP4

Target/Objective: Interpret fractions as division to find fractions of a set with tape diagrams and number lines.

Learning Activities:
Fluency: Students visualize a number line while counting aloud to maintain fluency with counting by halves and renaming fractions greater than 1 as whole or mixed numbers. Students write equations with non-unit fractions to represent a tape diagram to prepare for multiplying a whole number by a fraction. Students write a fraction as a division expression and a whole number or mixed number to prepare for finding fractions of a set with tape diagrams and number lines.
Launch: Students reason about what type of model is most efficient to find a fraction of a set.
Learn: Students find a unit fraction of a whole number by using a number line. Students find a non-unit fraction of a whole number by using a number line. Students find a fraction of a whole number by using a tape diagram. Students solve a real-world problem involving finding a fraction of a whole number.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about how number lines and tape diagrams can be useful when finding a fraction of a set by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve three fraction of problems using tape diagrams.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 3 – Topic A - Lesson #: 3

Standard: 5.NF.B.4

Mathematical Practice: MP5

Target/Objective: Multiply a whole number by a fraction less than 1.

Learning Activities:

Fluency: Students determine the sum or product to prepare for multiplying a whole number by a fraction.
Launch: Students consider whether a fraction of a set can be found by using multiplication.
Learn: Students find a fraction of a whole number by multiplying the whole number by the fraction. Students use a tape diagram to multiply a whole number by a fraction. Students choose a method to multiply a fraction and a whole number.
Land/Debrief: Facilitate a class discussion about multiplying whole numbers by fractions by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems multiplying fractions by whole numbers.

Resources: Consider tearing out the Sprint pages in advance of the lesson.

Module 3 – Topic A - Lesson #: 4

Standard: 5.NF.B.4

Mathematical Practice: MP2

Target/Objective: Multiply a whole number by a fraction.

Learning Activities:
Fluency: Students multiply a two-digit number by a two-digit number to build fluency with multiplying multi-digit whole numbers by using the standard algorithm. Students visualize a number line while counting aloud to maintain fluency with counting by thirds. Students visualize an array partitioned into 2 or 3 equal groups to find a unit fraction of a set to develop fluency with multiplying a whole number by a fraction.
Launch: Students order expressions from the least value to the greatest value by reasoning about the products.
Learn: Students choose a method to find the product of a fraction less than 1 and a whole number. Students use a tape diagram to find the product of a fraction greater than 1 and a whole number. Students solve real-world problems involving multiplying a whole number by a fraction.
Land/Debrief: Facilitate a class discussion about multiplying a whole number by a fraction by using the following prompts. Encourage students to restate or add to their classmates' responses.
Display the following expressions.
35×1975×19

Daily Exit Ticket: Students will solve three multiplying fractions and whole number problems.

Resources: Consider whether to remove Multiplication Expression Cards from the student books and cut out the cards in advance or have students prepare them during the lesson.

Module 3 – Topic A - Lesson #: 5

Standard: 5.M.B.1

Mathematical Practice: MP6

Target/Objective: Convert larger customary measurement units to smaller measurement units.

Learning Activities:
Fluency: Students multiply a two-digit number by a two-digit number to build fluency with multiplying multi-digit whole numbers by using the standard algorithm. Students visualize a number line while

counting aloud to maintain fluency with counting by thirds and renaming fractions greater than 1 as whole or mixed numbers. Students visualize an array partitioned into 2, 3, or 4 equal groups to find a unit fraction of a set to develop fluency with multiplying a whole number by a fraction.
Launch: Students compare two different measurement units.
Learn: Students multiply a whole number by a fraction to convert larger measurement units to smaller measurement units. Students apply their understanding of converting units to real-world situations.
Land/Debrief: Facilitate a class discussion about converting larger measurement units to smaller units by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Student will solve two converting measurement problems.

Resources: Save Grade 5 Mathematics Reference Sheet for use in future lessons.

Module 3 – Topic A - Lesson #: 6

Standard: 5.M.A.1

Mathematical Practice: MP7

Target/Objective: Convert smaller customary measurement units to larger measurement units.

Learning Activities:
Fluency: Students multiply a two-digit number by a two-digit number to build fluency with multiplying multi-digit whole numbers by using the standard algorithm. Students visualize a number line while counting aloud to maintain fluency with counting by fourths. Students visualize an array partitioned into 3, 4, or 5 equal groups to find a unit fraction of a set to develop fluency with multiplying a whole number by a fraction.
Launch: Students wonder about and discuss converting smaller measurement units to larger measurement units.
Learn: Students multiply to convert smaller measurement units to larger measurement units. Students apply their understanding of converting measurement units to real-world situations.
Land/Debrief: Facilitate a class discussion about converting smaller measurement units to larger units by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Display
48 oz=48×116 lb=4816 lb=3 lb

Daily Exit Ticket: Students will solve two problems converting smaller units of measurement to larger units.

Resources: Prepare two signs on paper. Label one sign Division to Convert and label another sign Multiplication to Convert. Hang the signs in various locations in the classroom.

Module 3 – Topic B - Lesson #: 7

Standard: 5.NF.B.5.b

Mathematical Practice: MP6

Target/Objective: Multiply fractions less than 1 by unit fractions pictorially.

Learning Activities:
Fluency: Students visualize a number line while counting aloud to maintain fluency with counting by fourths and renaming fractions greater than 1 as whole or mixed numbers. Students determine an unknown numerator or denominator to build fluency with renaming a fraction with a larger unit. Students find a fraction of a whole number by using a number line to prepare for multiplying unit fractions by fractions less than 1.
Launch: Students use what they know about multiplying a whole number by a fraction to reason about how to multiply a fraction by a fraction.
Learn: Students interpret a model that represents fraction multiplication. Students model fraction multiplication by using an area model. Students find the product of a unit fraction and a fraction less than 1 by using a number line.
Land/Debrief: Facilitate a class discussion about multiplying fractions less than 1 by unit fractions by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two multiplying fractions less than one pictorially.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 3 – Topic B- Lesson #: 8

Standard: 5.NF.B.5.b

Mathematical Practice: MP3

Target/Objective: Multiply fractions less than 1 pictorially.

Learning Activities:
Fluency: Students visualize a number line while counting aloud to maintain fluency with counting by fifths. Students determine an unknown numerator or denominator to build fluency with renaming a fraction with a larger unit. Students find the product by using a number line to prepare for multiplying non-unit fractions by fractions less than 1.
Launch: Students identify an error and provide feedback on how to correct the error.
Learn: Students find the product of two fractions less than 1 by using a number line. Students find the product of two fractions less than 1 by using an area model. Students select a method to use to find the product of two fractions less than 1. Students reason about the size of the product compared to the size of the factors.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about multiplying fractions less than 1 by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two multiplying fractions less than one pictorially.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 3 – Topic B - Lesson #: 9

Standard: 5.NF.B.4

Mathematical Practice: MP8

Target/Objective: Multiply fractions by unit fractions by making simpler problems.

Learning Activities:
Fluency: Students make like units in an addition equation and find the sum to build fluency with adding fractions with unlike units from module 2. Students visualize a number line while counting aloud to maintain fluency with counting by fifths and renaming fractions greater than 1 as whole or mixed numbers. Students determine an unknown numerator or denominator to build fluency with renaming a fraction with a larger unit.
Launch: Students consider different ways to find the products of fractions with very small units.
Learn: Students use known products to multiply a unit fraction by a fraction. Students make a simpler problem by reasoning about factors before they multiply. Students identify when they can make a simpler problem before they find a product of two fractions.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about finding products by making simpler problems by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Display the summary of the problem from Learn.

Daily Exit Ticket: Students will solve four multiplying fractions problems.

Resources: Consider whether to remove Using Known Products from the student books and place inside personal whiteboards in advance or have students prepare them during the lesson.

Module 3 – Topic B - Lesson #: 10

Standard: 5.NF.B.5.b

Mathematical Practice: MP7

Target/Objective: Multiply fractions greater than 1 by fractions.

Learning Activities:
Fluency: Students write and evaluate an expression to build fluency with two-step calculations involving whole numbers from module 1. Students make like units in a subtraction equation and find the difference to build fluency with subtracting fractions with unlike units from module 2.
Launch: Students analyze a model involving a fraction greater than 1 and identify an error in the interpretation of the model.
Learn: Students use known products to multiply a fraction greater than 1 by a unit fraction. Students use known products to multiply fractions greater than 1 by fractions.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about multiplying fractions greater than 1 by fractions by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Direct students to problems 2–13 in the Problem Set.

Daily Exit Ticket: Students will solve four multiplying fractions problems.

Resources: Consider whether to remove Using Known Products with Fractions Greater Than 1 from the student books and place inside whiteboards in advance or have students prepare them during the lesson.

Module 3 – Topic B - Lesson #: 11

Standard: 5.NF.B.4

Mathematical Practice: MP3

Target/Objective: Multiply fractions.

Learning Activities:
Fluency: Students write and evaluate an expression to build fluency with two-step calculations involving fractions from module 2. Students make like units in an addition or subtraction equation and find the sum or difference to build fluency with adding and subtracting fractions with unlike units from module 2.
Launch: Students analyze incomplete representations of a multiplication expression to complete an equation.
Learn: Students reason about the size of the product compared to the size of the factors. Students compare two multiplication expressions without finding the actual products. Students solve a real-world problem involving the multiplication of fractions.
Land/Debrief: Facilitate a class discussion about multiplying fractions by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Write 34×56 and 54×56.

Daily Exit Ticket: Students will solve three multiplying fractions problems.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 3 – Topic C - Lesson #: 12

Standard: 5.NF.B.7.a

Mathematical Practice: MP1

Target/Objective: Divide a nonzero whole number by a unit fraction to find the number of groups.

Learning Activities:
Fluency: Students say a division expression to represent a question and then say the quotient to prepare for division of a whole number by a unit fraction. Students count by thirds or sixths on a number line and recognize fractions as whole numbers to prepare for division of a whole number by a unit fraction. Students determine the product to prepare for relating multiplication by unit fractions to division by unit fractions beginning in lesson 13.
Launch: Students divide 1 by a unit fraction by using a tape diagram and a number line.
Learn: Students use a number line and tape diagram to divide a nonzero whole number by a unit fraction. Students use tape diagrams to divide a nonzero whole number by a unit fraction.
Land/Debrief: Facilitate a class discussion about dividing a whole number by a unit fraction to find the number of groups by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Display the expression 3÷13 and the tape diagram.

Daily Exit Ticket: Students will solve one word problem involving division with a whole number and a fraction.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 3 – Topic C - Lesson #: 13

Standard: **5.NF.B.7.a; 5.NF.B.7.c**

Mathematical Practice: **MP2**

Target/Objective: Divide a nonzero whole number by a unit fraction to find the size of the group.

Learning Activities:
Fluency: Students say a division expression to represent a question and then say the quotient to develop fluency with dividing a whole number by a unit fraction. Students count by fourths or eighths on a number line and recognize fractions as whole numbers to develop fluency with dividing a whole number by a unit fraction. Students determine the product to prepare for relating multiplication by unit fractions to division by unit fractions.
Launch: Students model and solve an unknown factor problem.
Learn: Students interpret division of a nonzero whole number by a unit fraction as finding the size of the group. Students use a tape diagram to solve problems by dividing a nonzero whole number by a fraction to find the size of the group.
Land/Debrief: Facilitate a class discussion about dividing a nonzero whole number by a unit fraction to find the size of the group by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Display the tape diagram.

Daily Exit Ticket: Students will solve one word problem involving division with a whole number and a fraction.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 3 – Topic C - Lesson #: 14

Standard: **5.NF.B.7.a; 5.NF.B.7.c**

Mathematical Practice: **MP4**

Target/Objective: Divide a unit fraction by a nonzero whole number.

Learning Activities:
Fluency: Students partition a tape diagram into equal units and determine the value of one unit to develop fluency with dividing a whole number by a unit fraction. Students write the product to build fluency with multiplying a whole number by a fraction from topic A.
Launch: Students reason about division by using a tape diagram.
Learn: Students use a tape diagram and a number line to model dividing a unit fraction by a whole number. Students relate division with unknown group size to multiplication by using the sentence frame ___***is***___***groups of what***? Students use a tape diagram to solve problems by dividing a unit fraction by a nonzero whole number.
Land/Debrief: Facilitate a class discussion about dividing a unit fraction by a nonzero whole number by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Display the expression 13÷4 and the tape diagram.

Daily Exit Ticket: Students will solve one problem dividing a fraction by a whole number and drawing a model to represent.

Resources: Consider whether to have students remove Blank Tape Diagram from the student books and place inside whiteboards in advance or have students prepare them during the lesson. Consider tearing out the Sprint pages in advance of the lesson.

Module 3 – Topic C - Lesson #: 15

Standard: 5.NF.B.7.c

Mathematical Practice: MP3

Target/Objective: Divide by whole numbers and unit fractions.

Learning Activities:
Fluency: Students convert yards to feet or feet to inches to build fluency with converting larger customary measurement units to smaller customary measurement units from topic A. Students partition a tape diagram into equal units and determine the value of one unit to develop fluency with dividing a whole number by a unit fraction.
Launch: Distribute one envelope of Division Expressions Cards to each pair of students. Direct them to take out the cards that name the categories: Quotient Greater Than Dividend and Quotient Less Than Dividend. Then give students 2 minutes to sort the remaining cards into the appropriate category. Students should place the cards by using reasoning only, not by evaluating.
Learn: Students use the Read–Draw–Write process to model division word problems and reason about the size of the quotient. Students solve division word problems and critique a partner's work.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about dividing by whole numbers and unit fractions by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two word problems dividing whole numbers and unit fractions.

Resources: Consider whether to have students remove Blank Tape Diagram from the student books and place inside whiteboards in advance or have students prepare them during the lesson. Print or copy Division Expressions Cards and cut out each set. Each sheet has 2 sets. Place 1 set of cards in an envelope. Prepare enough sets for 1 per student pair. Print or copy Division Word Problems Set 1 and Set 2 and cut out each problem. Prepare enough copies to give both sets of problems to each student pair.

Module 3 – Topic C - Lesson #: 16

Standard: 5.NF.B.7.b

Mathematical Practice: MP7

Target/Objective: Reason about the size of quotients of whole numbers and unit fractions and quotients of unit fractions and whole numbers.

Learning Activities:
Fluency: Students convert pounds to ounces to build fluency with converting larger customary measurement units to smaller customary measurement units from topic A. Students decide whether a number sentence is true or false and make false number sentences true to build fluency with reasoning about products without evaluating from topic B.
Launch: Students use the Co-construction routine to contextualize a statement involving division.

Learn: Students choose a division expression that represents a real-world problem and reason about the size of the quotient. Students reason about the size of the quotient without finding the actual quotient. Students compare two expressions without finding the actual quotients or products.
Land/Debrief: Facilitate a class discussion about reasoning about the size of quotients by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Display the following expressions.
14÷7 and 7÷14

Daily Exit Ticket: Students will solve two comparison expressions.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 3 – Topic C - Lesson #: 17

Standard: 5.NF.B.7.c

Mathematical Practice: MP1

Target/Objective: Solve word problems involving fractions with multiplication and division.

Learning Activities:
Fluency: Students decide whether a number sentence is true or false and make false number sentences true to build fluency with reasoning about products without evaluating from topic B. Students convert gallons to quarts or pints to cups to build fluency with converting larger customary measurement units to smaller customary measurement units from topic A.
Launch: Students explain the connection between a multiplication expression and a division expression by using a tape diagram.
Learn: Students select an operation to solve a word problem involving fractions. Students share and compare solutions and reason about their connections.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about solving word problems involving fractions with multiplication and division by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two word problems involving fractions with multiplication and division.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 3 – Topic D - Lesson #: 18

Standard: 5.OA.A.1, 5.OA.A.2

Mathematical Practice: MP6

Target/Objective: Compare and evaluate expressions with parentheses.

Learning Activities:
Fluency: Students construct a number line with their fingers while counting aloud and model a composition and a decomposition to prepare for extending place value understanding to the thousandths place beginning in module 4. Students write a fraction as a division expression and determine the quotient to prepare for solving multi-step word problems involving fractions beginning

in lesson 20. Students multiply a fraction by a fraction to prepare for solving multi-step word problems involving fractions beginning in lesson 20.
Launch: Students analyze a tape diagram to prepare for writing and evaluating expressions.
Learn: Students write an equation that can be used to find an unknown value in a tape diagram. Students write and evaluate expressions given as a statement. Students compare statements and expressions by reasoning about the size of the parts.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about comparing and evaluating expressions by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Direct students to problems 4–10 in the Problem Set.

Daily Exit Ticket: Students will solve two problems comparing and evaluating expressions with parentheses.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 3 – Topic D - Lesson #: 19

Standard: 5.NF.B.6

Mathematical Practice: MP2

Target/Objective: Create and solve one-step word problems involving fractions.

Learning Activities:
Fluency: Students construct a number line with their fingers while counting aloud and model a composition and a decomposition to prepare for extending place value understanding to the thousandths place beginning in module 4. Students write a fraction as a division expression and determine the quotient to prepare for solving multi-step word problems involving fractions beginning in lesson 20. Students multiply a fraction by a fraction to prepare for solving multi-step word problems involving fractions beginning in lesson 20.
Launch: Students analyze a tape diagram and consider what problem it might represent.
Learn: Students write word problems to match tape diagrams. Students write word problems to match equations.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about creating and solving one-step word problems involving fractions by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one word problem that is a one-step problem involving fractions.

Resources: Review the Math Past resource to support delivery of Learn.

Module 3 – Topic D - Lesson #: 20

Standard: 5.OA.A.2, 5.NF.B.6

Mathematical Practice: MP4

Target/Objective: Solve multi-step word problems involving fractions and write equations with parentheses.

Learning Activities:
Fluency: Students convert feet to yards or inches to feet to build fluency with converting customary measurements in a smaller unit in terms of a larger unit from topic A. Students determine the difference to prepare for solving multi-step word problems involving fractions.
Launch: Students represent multiplicative comparison relationships concretely.
Learn: Students use the Read–Draw–Write process to solve a comparison problem involving fractions and then write a matching equation. Students use the Read–Draw–Write process to solve a word problem involving fractions and then write a matching equation.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about how using the Read–Draw–Write process helps solve word problems involving the multiplication or division of fractions by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one multi-step word problems involving fractions and write equations with parentheses.

Resources: Prepare envelopes with 3 blue construction paper strips and 3 red construction paper strips inside. Prepare 1 envelope per student pair. Print or copy Comparison Tape Diagrams Solutions. Prepare 1 copy per student pair. Consider whether to remove Comparison Tape Diagrams from the student books in advance or have students remove them during the lesson.

Module 3 – Topic D - Lesson #: 21

Standard: 5.NF.B.7.c

Mathematical Practice: MP4

Target/Objective: Solve multi-step word problems involving fractions.

Learning Activities:
Fluency: Students convert ounces to pounds to build fluency with converting customary measurements in a smaller unit in terms of a larger unit from topic A. Students determine the difference to develop fluency with solving multi-step word problems involving fractions.
Launch: Students construct a tape diagram to show how a given expression matches a real-world situation.
Learn: Students solve a multi-step word problem involving fractions. Students solve a multi-step comparison word problem involving fractions by using self-selected methods.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about solving multi-step word problems involving fractions by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Invite students to turn and talk about one of the problems in the Problem Set. Have them discuss why they drew the tape diagrams the way they did and how they decided which operation to use to solve the problem.

Daily Exit Ticket: Students will solve one multi-step word problems involving fractions.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 3 – Topic D - Lesson #: 22 (*optional*)

Standard: 5.OA.A.1

Mathematical Practice: **MP6**

Target/Objective: Evaluate expressions involving nested grouping symbols.

Learning Activities:
Fluency: Students convert quarts to gallons or cups to pints to build fluency with converting customary measurements in a smaller unit in terms of a larger unit from module 3. Students write the product to prepare for evaluating expressions involving nested grouping symbols.
Launch: Students build a complicated expression from a simple expression.
Learn: Students interpret expressions involving whole numbers and nested grouping symbols and then evaluate the expressions. Students interpret expressions involving fractions and nested grouping symbols and then evaluate the expressions. Students insert parentheses and brackets to make an equation true.
Land/Debrief: Facilitate a class discussion about evaluating expressions involving nested grouping symbols by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Display the expressions $[(4\times15)-6]\div3$ and $4\times[(15-6)\div3]$. Invite students to think–pair–share about what is the same and what is different about the expressions.

Daily Exit Ticket: Students will evaluate two expressions involving nested grouping symbols.

Resources: Consider tearing out the Sprint pages in advance of the lesson.

Unit Modifications for Special Population Students	
Advanced Learners	**Module 3 – Topic A – Lesson 3-** For students who need additional challenge, consider presenting the following problems during or after the Numbered Heads routine. 23×____=1434×____=1235×____=9 **Module 3 – Topic B – Lesson 9-** For students who recognize the repeated reasoning that is used while finding these products, consider challenging them to explore whether a product of three or more fractions can be found by using similar reasoning. **Module 3 – Topic C – Lesson 12-** Challenge students who finish early to create their own division problems for classmates to solve. Encourage students to study the problems in their classwork first and identify the quantity that represents the total, the quantity that represents the size of each group, and the question that must be answered. Tell students to include these same components in their problems and to provide work samples on a separate page that show different ways to solve the problems. **Module 3 – Topic D – Lesson 21-** Challenge students by asking them to find the weight of Noah's pet chicken. Noah's chicken weighs 19 the weight of his dog. Finding the weight of the chicken requires students to rename 2112 as 432 prior to multiplying by 19. Once they multiply, students find Noah's chicken weighs 2718 pounds.
Struggling Learners	**Module 3 – Topic A – Lesson 4-** Consider having students complete the ordering activity in pairs. Then have them compare their order with the order of other student pairs. **Module 3 – Topic B – Lesson 7-** If students need additional support with problem 4, ask questions to guide them in identifying with which number to start. Then provide students with a physical cutout of 34. Encourage students to fold the papers horizontally and use the creases to help them see 12 of 34. Then students can transfer this onto the model in their books. **Module 3 – Topic C – Lesson 13-** If students need additional support, consider offering cubes to provide a concrete experience. Students will likely use 5 cubes to represent the lemons Tyler has and then make 3 more groups of 5 to find the total number of lemons Tyler needs. After students model the problem completely, prompt them to represent the model by drawing a tape diagram that matches their thinking while they used the cubes. **Module 3 – Topic D – Lesson 20-** If students need support with this multiplicative comparison relationship, allow them to use cubes to help model the relationship. Have them start with a cube to represent the group of students who do wear glasses and a cube to represent the group who do not wear glasses. Ask students whether the model represents what the story says. Continue to add cubes until students who wear glasses is

	represented by 5 cubes. Then ask, Because students who do not wear glasses is 45 as long, how many cubes do we need to show that?
English Language Learners	**Module 3 – Topic A – Lesson 5-** Consider providing time for students to practice saying, reading, and writing the singular and plural forms of the length measurement units. Display a measurement with abbreviated units and model saying and writing the measurement. Then invite students to say and write the measurement. **Module 3 – Topic B – Lesson 8-** Consider supporting students with the Always Sometimes Never routine with sentence frames for their reference. The product of two fractions less than 1 is _____ (always or sometimes or never) less than both the factors. For example, _____. **Module 3 – Topic C – Lesson 16-** Throughout the lesson, as the class discusses what the dividend and divisor represent in each expression, consider posting both expressions and labeling the total, the size of each group, and the number of groups. **Module 3 – Topic D – Lesson 18-** Direct students to use the Share Your Thinking section of the Talking Tool to support students with sharing how they can compare statements and expressions without evaluating them.
Special Needs Learners	**Module 3 – Topic A – Lesson 1-** Consider providing cubes for students to use as they model the problem. **Module 3 – Topic B – Lesson 10-** To provide additional support, continue to write each factor in the original expression as a product of a unit fraction and a whole number. Use parentheses to emphasize the relationship between the factor and its decomposed form. **Module 3 – Topic C – Lesson 14-** Consider labeling the tick marks on the number line with sixths so students can see how the number line corresponds with the tape diagram. Encourage students to do the same. **Module 3 – Topic D – Lesson 22-** Consider having partners take turns thinking aloud as they evaluate the expressions. Partner A begins, and as she evaluates the expression, she explains her decisions to partner B. While partner B listens, he can ask partner A questions. Students who are thinking aloud can use the Share Your Thinking section of the Talking Tool, and students who are listening can use the I Can Ask Questions and Say It Again sections. Thinking aloud prompts students to focus on their reasoning and change course, as needed, as they talk through decisions. Taking turns ensures that each partner has an opportunity to describe their reasoning. Model the process for students and prompt the use of the Talking Tool as needed.
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:

SL.5.1. (A-D) Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

***Module 3 - Topic A - Lesson 1 -**

Direct students to problem 1(b). Invite them to think–pair–share about how they can use what they know about 13 of 12 to help find 23 of 12.

NJSLSA.L5. Demonstrate understanding of word relationships and nuances in word meanings.

***Module 3 - Topic A - Lesson 1 -**

This segment introduces the academic verb *demonstrate*. Consider rephrasing the meaning by using the term in a conversational context familiar to your students.

For example, you can demonstrate that you know the alphabet by saying A, B, C ….

SL.5.2. Summarize a written text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally).

***Module 3 - Topic A - Lesson 2 -**

Direct students to problem 3 and have them turn and talk about how they can find the value. Draw and label a tape diagram and direct students to do the same. Partition the tape diagram into 5 equal parts and direct students to do the same. Direct students to record the answer. Invite students to turn and talk about how they used a tape diagram to find the value.

Integration of 21st Century Skills

Standards:

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

***Module 3 - Topic D - Lesson 19 –**

Have partners construct a problem to match the equation.

Give pairs 2 minutes to compare the problem they construct with other groups.

Invite pairs to share problems and explain how their problem matches the tape diagram.

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

***Module 3 - Topic C - Lesson -17 –**

Invite students to turn and talk about what they might draw to show the fabric. Allow students to work independently or with a partner to model the problem. Encourage students to self-select their tools and methods. Look for work samples that highlight different tape diagrams to model the story. Be sure to find a student who used multiplication to solve the problem and another who used division to solve the problem. Purposefully choose work that allows for rich discussion about connections between student work samples.

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.

***Module 3 - Topic B - Lesson 7 -**

Direct students to problem 2. Have students return to their sketch of 12 of 12. If students think their model shows 12 of 12, consider having those students share their sketches with the class. Validate a range of ideas but guide the class toward using an area model.

9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.

***Module 3 - Topic A - Lesson 3 –**

Invite students to work with a partner to find the product. Students might show their work by using a tape diagram or a number line.

Unit Title: <u>Module 4</u> – Place Value Concepts for Decimal Operations

Unit Description: In module 4, students relate their understanding of whole numbers and fractions to decimals. Decimal concepts include: describing place value relationships, rounding, comparing, adding, subtracting, multiplying, dividing, and converting measurements.

Unit Duration: Approximately 35 days (including days for assessments) * *Lesson 26, optional*

Desired Results

Standard(s): (*Bolded standards are assessed in the end of Module Assessment***)**

5.OA.A.1

Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

5.OA.A.2

Write simple expressions that record calculations with numbers and interpret numerical expressions without evaluating them.

For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.

5.NBT.A

Understand the place value system.

5.NBT.A.1

Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

5.NBT.A.2

Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

5.NBT.A.3

Read, write, and compare decimals to thousandths.

5.NBT.A.3.a

Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).

5.NBT.A.3.b

Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

5.NBT.A.4

Use place value understanding to round decimals to any place.

5.NBT.B.7

Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

5.NBT.B

Perform operations with multi-digit whole numbers and with decimals to hundredths.

5.M.B.1

Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Understandings:

- **Module 4 – Topic A – I can** represent decimal numbers to thousandths by using a variety of concrete and pictorial models and name the numbers in different forms. **I can** describe relationships between adjacent decimal place value units as 10*times as much as* the next smaller unit and 1/10 *as much as* the next larger unit. **I can** compare two decimal numbers to thousandths and round decimal numbers to any place value.
- **Module 4 – Topic B – I can** apply the methods they use to add and subtract whole numbers to add and subtract decimal numbers. **I can** apply place value understanding and use concrete and pictorial models, recording the work in vertical form, to support the transition to the standard algorithm.
- **Module 4 – Topic C – I can** apply the methods used to multiply whole numbers to multiply decimal numbers to hundredths. **I can** transition to multiplying two decimal numbers by using fraction multiplication to determine the product and make sense of its units.
- **Module 4 – Topic D - I can** apply the methods they use to divide whole numbers to divide decimal numbers to hundredths. **I can** rename decimal numbers in unit form, use whole number division methods to divide, and then rename the quotient in decimal form. **I can** also connect dividing whole numbers by unit fractions to dividing numbers by 0.1 and 0.01.

Essential Questions:

- **Module 4 – Topic A – Can I understand decimal numbers with place value and fraction thinking?**
- **Module 4 – Topic B – Can I add and subtract decimals?**
- **Module 4 – Topic C – Can I multiply decimal numbers?**
- **Module 4 – Topic D – Can I divide decimal numbers?**
- **Module 4 – Topic E - Can I apply my understanding of decimals?**

- **<u>Module 4 – Topic E</u> – I can** apply their understanding of decimal place value, relationships between decimals and fractions, and computation with decimals, fractions, and whole numbers to convert measurements in both the metric and customary measurement systems. **I can** use tape diagrams to interpret and evaluate numerical expressions, and create word problems that can be represented by a given expression or tape diagram.

Assessment Evidence

Formative/Summative Assessments:

- Daily Exit Tickets
- Equip Pre-assessments for Module
- End of Topic Quizzes
- End of Module Assessment

Benchmarks:

- The iReady Assessment is administered in the Fall and Winter.

Learning Plan

***Resources listed below are additional items that are needed in addition to the resources listed in the lesson overview in the Teacher's Manual.**

<u>Module 4 – Topic A - Lesson #: 1</u>

<u>Standard</u>: 5.NBT.A.1

<u>Mathematical Practice</u>: MP8

<u>Target/Objective</u>: Model and relate decimal place value units to thousandths.

<u>Learning Activities</u>:
<u>Fluency</u>: Students count by tenths in fraction form and in decimal form to prepare for extending place value understanding to the thousandths place. Students use unit form to identify a number shown with place value disks, then write the number in fraction form and decimal form to prepare for extending place value understanding to the thousandths place. Students use unit form to identify a number shown with place value disks, and then decompose and rename to prepare for extending place value understanding to the thousandths place.
<u>Launch</u>: Students relate adjacent place value units to tenths by using division.
<u>Learn</u>: Students decompose 1 one into thousandths. Students relate adjacent place value units by using 10 *times as much as* and 1/10 *as much as*.
<u>Land/Debrief</u>: Facilitate a class discussion about decimal place value and relating adjacent place value units by using the following prompts. Encourage students to restate or add on to their classmates' responses.

<u>Daily Exit Ticket</u>: Students will solve <u>two</u> problems <u>(#1 is 3 parts</u>). They will relate decimal place value units to thousandths.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 4 – Topic A - Lesson #: 2

Standard: 5.NBT.A.3.a

Mathematical Practice: MP7

Target/Objective: Represent thousandths as a place value unit.

Learning Activities:
Fluency: Students count by hundredths in fraction form and in decimal form to develop place value understanding to the thousandths place. Students use unit form to identify a number shown with place value disks, and then compose and rename to develop place value understanding to the thousandths place. Students use unit form to identify a number shown with place value disks, and then write the number in fraction form and decimal form to develop place value understanding to the thousandths place.
Launch: Students compare various representations of tenths and hundredths.
Learn: Students represent decimal numbers to the thousandths place by using area models. Students represent decimal numbers including thousandths by using place value disks.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a discussion about thousandths as a place value unit by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems representing the thousandths as a place value unit.

Resources: Prepare deci-disks sets by gathering at least 3 ones disks, 7 tenths disks, 5 hundredths disks, and 23 thousandths disks for the teacher and each group of 3 students.

Module 4 – Topic A - Lesson #: 3

Standard: 5.NBT.A.3

Mathematical Practice: MP7

Target/Objective: Represent decimal numbers to the thousandths place in different forms.

Learning Activities:
Fluency: Students use unit form to identify a number shown with place value disks, and then write the number in fraction form and decimal form to develop place value understanding to the thousandths place. Students express a power of 10 in standard form, and then rewrite an expression and find the product to prepare for multiplying decimal numbers by powers of 10 beginning in lesson 5.
Launch: Students represent a decimal number in various forms.
Learn: Students identify and represent the values of digits in multi-digit decimal numbers. Students analyze and write different versions of expanded form for a decimal number.
Land/Debrief: Facilitate a class discussion about the relationships between place value units in whole numbers and decimal numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses. Display the place value chart and expanded form.

Daily Exit Ticket: Students will solve one problem representing a decimal in expanded form in two diverse ways.

Resources: Gather at least 2 tens disks, 5 ones disks, 6 tenths disks, 8 hundredths disks, and 3 thousandths disks for the teacher and each student pair. Consider whether to remove Place Value Chart to Thousandths from the student books and place inside personal whiteboards in advance or have students prepare them during the lesson.

Module 4 – Topic A - Lesson #: 4

Standard: 5.NBT.A.1, 5.NBT.A

Mathematical Practice: MP6

Target/Objective: Relate the values of digits in a decimal number by using place value understanding.

Learning Activities:
Fluency: Students say the values of two identical adjacent digits in a whole number, and then write a multiplication and division equation to prepare for relating the values of digits in a decimal number. Students express a power of 10 in standard form and then rewrite an expression and find the quotient to prepare for dividing decimal numbers by powers of 10 beginning in lesson 5.
Launch: Students use the relationships between place value units to relate decimal numbers in unit form.
Learn: Students represent 10 ***times as much as*** and 1/10 ***as much as*** comparison statements involving decimal numbers on a place value chart and with equations. Students relate the values of repeated digits in adjacent place units.
Land/Debrief: Facilitate a class discussion about the relationships between place value units in whole numbers and decimal numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses. Display the decimal number and the true statement.

Daily Exit Ticket: Students will solve a three-part problem relating the values of digits in a decimal number by using place value understanding.

Resources: Consider whether to remove Place Value Chart to Thousandths from the student books and place inside personal whiteboards in advance or have students prepare them during the lesson.

Module 4 – Topic A - Lesson #: 5

Standard: 5.NBT.A.2

Mathematical Practice: MP8

Target/Objective: Multiply and divide decimal numbers by powers of 10.

Learning Activities:
Fluency: Students express a power of 10 in standard form, and then rewrite an expression and find the product or quotient to prepare for multiplying and dividing decimal numbers by powers of 10. Students say the value of two identical adjacent digits in a decimal number, and then write multiplication equations to develop fluency with relating the values of digits in a decimal number.
Launch: Students order sets of unknown numbers that are related by powers of 10.

Learn: Students multiply decimal numbers by 10, 100, and 1,000 in standard form and exponential form by using a variety of methods. Students divide decimal numbers by 10, 100, and 1,000 in standard form and exponential form by using a variety of methods.
Land/Debrief: Facilitate a class discussion about multiplying and dividing decimal numbers by powers of 10 by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems multiplying and dividing decimal numbers by powers of 10.

Resources: Consider whether to remove Place Value Chart to Thousandths from the student books and place inside whiteboards in advance or to have students prepare them during the lesson.

Module 4 – Topic A - Lesson #: 6

Standard: 5.NBT.A.3.b

Mathematical Practice: MP5

Target/Objective: Compare decimal numbers to the thousandths place.

Learning Activities:
Fluency: Students make like units in an addition or subtraction expression with related units and find the sum or difference to build fluency with adding and subtracting mixed numbers from module 2. Students count by tenths in standard form on a vertical number line and identify the halfway point to prepare for rounding decimal numbers beginning in lesson 7. Students use unit form to identify a number modeled with place value disks and then decompose and rename to prepare for rounding decimal numbers beginning in lesson 7.
Launch: Students choose a method to compare decimal numbers to the thousandths place.
Learn: Students plot and compare decimal numbers involving thousandths on a number line. Students compare decimal numbers involving thousandths by using a place value chart. Students compare and order decimal numbers.
Land/Debrief: Facilitate a class discussion about comparing decimal numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems (#1 has five parts) comparing decimal numbers to the thousandths place.

Resources: Tear out and cut apart Compare Decimal Numbers Cards from the student books. Consider whether to prepare these materials in advance or to have students prepare them during the lesson.

Module 4 – Topic A - Lesson #: 7

Standard: 5.NBT.A.4

Mathematical Practice: MP6

Target/Objective: Round decimal numbers to the nearest one, tenth, or hundredth.

Learning Activities:
Fluency: Students make like units in an addition or a subtraction expression with related units and find the sum or difference to build fluency with adding and subtracting mixed numbers from module

2. Students count by hundredths in standard form on a vertical number line and identify the halfway point to prepare for rounding decimals. Students use unit form to identify a number modeled with place value disks, and then decompose and rename to prepare for rounding decimals.
Launch: Students consider the purpose of rounding decimal numbers in a real-world context.
Learn: Students round a decimal number to the ones, tenths, or hundredths place by using the halfway point on a number line. Students regroup to make the next higher unit when rounding.
Land/Debrief: Facilitate a class discussion about rounding decimal numbers to the nearest one, tenth, or hundredth by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve three problems rounding decimal numbers.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 4 – Topic A - Lesson #: 8

Standard: 5.NBT.A.4

Mathematical Practice: MP3

Target/Objective: Round decimal numbers to any place value unit.

Learning Activities:
Fluency: Students write the product or quotient to build fluency with multiplying and dividing whole numbers by powers of 10 from module 1.
Launch: Students consider which rounded numbers make sense in particular situations.
Learn: Students round a decimal number to the nearest one, tenth, and hundredth. Students use place value understanding to round a decimal number to multiple place value units. Students engage in a partner activity to round decimal numbers. Students identify and justify their choice for rounding a decimal number to a place value unit for a given context.
Land/Debrief: Facilitate a class discussion about rounding decimal numbers to any place value unit by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, four-part problem rounding a decimal number.

Resources: Consider tearing out the Sprint pages in advance of the lesson. Prepare four signs on paper. Label the signs Nearest Ten, Nearest One, Nearest Tenth, and Nearest Hundredth. Hang the signs in various locations in the classroom.

Module 4 – Topic B - Lesson #: 9

Standard: 5.NBT.B.7

Mathematical Practice: MP5

Target/Objective: Add decimal numbers by using different methods.

Learning Activities:
Fluency: Students count by tenths from 0 to 1 and then rename tenths as hundredths to prepare for adding and subtracting decimal numbers. Students write a number in unit form by using one or two

units to prepare for adding and subtracting decimal numbers. Students determine the unknown part to make the next whole and write the equation to prepare for adding and subtracting decimal numbers.
Launch: Students use a number line to add decimal numbers.
Learn: Students make the next unit to add decimal numbers by using number bonds and the arrow way. Students rename decimal numbers in unit form and fraction form to add.
Land/Debrief: Facilitate a class discussion about using different methods to add decimal numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems adding decimal numbers using different methods.

Resources: Consider whether to remove Number Line from the student books and place inside personal whiteboards in advance or have students prepare them during the lesson.

Module 4 – Topic B - Lesson #: 10

Standard: 5.NBT.B.7

Mathematical Practice: MP1

Target/Objective: Add decimal numbers by using place value understanding.

Learning Activities:
Fluency: Students count by tenths between 1 and 2 and then rename tenths as hundredths to develop fluency with adding and subtracting decimal numbers. Students write a number in unit form by using one or two units to develop fluency with adding and subtracting decimal numbers. Students determine the unknown part to make the next whole and write the equation to develop fluency with adding and subtracting decimal numbers.
Launch: Students consider methods for adding decimal numbers.
Learn: Students add decimal numbers with place value disks or a place value chart and record their work vertically. Students solve a word problem involving decimal-number addends.
Land/Debrief: Facilitate a class discussion about adding decimal numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems adding decimal numbers using different methods.

Resources: Review the Math Past resource to support discussion in Learn. Gather at least 7 ones disks, 14 tenths disks, and 11 hundredths disks for the teacher and each student pair. Consider whether to remove Place Value Chart to Hundredths from the student books and place inside whiteboards in advance or have students prepare them during the lesson.

Module 4 – Topic B - Lesson #: 11

Standard: 5.NBT.B.7

Mathematical Practice: MP7

Target/Objective: Subtract decimal numbers by using different methods.

Learning Activities:

Fluency: Students count by ones between 0 and 10 two diverse ways to develop fluency with adding and subtracting decimal numbers. Students use standard form to identify a number modeled with place value disks, and then decompose and rename to prepare for subtracting decimal numbers. Students determine the unknown part to make the next whole and write the equation to develop fluency with adding and subtracting decimal numbers.
Launch: Students watch a video and solve the associated word problem by using a self-selected method.
Learn: Students think of a subtraction problem as an unknown addend problem and record their thinking by using the arrow way. Students subtract decimal numbers by using a number bond to decompose a number. Students subtract decimal numbers by using number lines and open number lines.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about methods for subtracting decimals numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses. Direct students to problems 15–18 in the Problem Set. Invite students to share which method they used to find the differences and why.

Daily Exit Ticket: Students will solve two problems subtracting decimal numbers using different methods.

Resources: Gather at least 9 ones disks and 7 tenths disks for the teacher. Consider whether to remove Open Number Line from the student books and place inside whiteboards in advance or have students prepare them during the lesson.

Module 4 – Topic B - Lesson #: 12

Standard: 5.NBT.B.7

Mathematical Practice: MP5

Target/Objective: Subtract decimal numbers by using place value understanding.

Learning Activities:
Fluency: Students count by ones between 0 and 10 two diverse ways to develop fluency with adding and subtracting decimal numbers. Students use standard form to identify a number modeled with place value disks, and then decompose and rename to develop fluency with subtracting decimal numbers. Students determine the unknown part to make the next whole and write the equation to develop fluency with adding and subtracting decimal numbers.
Launch: Students identify and justify their choice of method to solve a whole-number subtraction problem and relate their thinking to a decimal-number subtraction problem.
Learn: Students subtract decimal numbers by drawing on a place value chart, and they record their work in vertical form. Students compare the usefulness of models and strategies for subtracting whole numbers with their usefulness for subtracting decimals.
Land/Debrief: Facilitate a class discussion about written methods for subtracting decimal numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one problem subtracting decimal numbers using place value understanding.

Resources: Prepare four signs on paper: Take From the Next Unit, Relate Addition to Subtraction, Standard Algorithm, and Place Value Chart. Post the signs in four separate locations in the

classroom. Consider whether to remove Place Value Chart to Hundredths from the student books and place inside personal whiteboards in advance or have students prepare them during the lesson.

Module 4 – Topic B - Lesson #: 13

Standard: 5.NBT.B.7

Mathematical Practice: MP6

Target/Objective: Solve word problems involving addition and subtraction of decimal numbers and fractions.

Learning Activities:
Fluency: Students find the unknown total or part to develop fluency with adding and subtracting decimal numbers.
Launch: Students compare four representations of three quarters.
Learn: Students determine that the sums are equivalent whether students rename a mixed number as a decimal number or rename a decimal number as a mixed number to add. Students rename a fraction as a decimal number to solve a word problem and record the solution in standard form. Students rename a fraction as a decimal number to compare the numbers, solve a word problem, and record the solution in standard form.
Land/Debrief: Gather the class with their Problem Sets. As time allows, invite students to share their models and methods with the class for problems 1–5. Then facilitate a class discussion about renaming fractions as decimal numbers to solve word problems by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one word problem subtracting decimal numbers and fractions.

Resources: Tear out and cut apart Decimal Number Cards from the student book. Each group of 3 students needs 1 set of cards.

Module 4 – Topic C - Lesson #: 14

Standard: 5.NBT.B.7

Mathematical Practice: MP7

Target/Objective: Multiply decimal numbers to hundredths by one-digit whole numbers by using different models.

Learning Activities:
Fluency: Students count by a unit of 2 tenths in fraction form, decimal form, and with mixed numbers to prepare for multiplying decimal numbers. Students multiply a decimal number by a power of 10 to prepare for multiplying decimal numbers. Students multiply ones, tens, or hundreds in unit form and then write the equation with the numbers in standard form to prepare for multiplying decimal numbers.
Launch: Students sort various representations of multiplication into two categories.
Learn: Students skip-count equal groups on a number line to multiply a decimal number by a one-digit whole number. Students use place value charts to multiply a decimal number by a one-digit whole number and record their work in vertical form. Students use an area model to multiply a decimal number by a one-digit whole number.

Land/Debrief: Facilitate a discussion about multiplying decimal numbers by one-digit whole numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses. Display the following multiplication expressions: 2×0.13 and 2×13. Pair students and have each partner solve one of the problems by using a self-selected model. Invite two to three pairs to share how they solved the problems.

Daily Exit Ticket: Students will solve two multiplying decimals using different methods.

Resources: Tear out and cut apart Multiplication Card Sort cards. Prepare enough for 1 set of cards per group of 3 students. Consider whether to prepare these materials in advance or have students assemble them during the lesson. Consider whether to remove the Multiplication Models from the student books and place inside whiteboards in advance or have students prepare them during the lesson.

Module 4 – Topic C - Lesson #: 15

Standard: 5.NBT.B.7

Mathematical Practice: MP1

Target/Objective: Multiply decimal numbers to hundredths by one-digit whole numbers and multiples of 10, 100, or 1,000 by using different written methods.

Learning Activities:
Fluency: Students count by a unit of 3 tenths in fraction form, decimal form, and with mixed numbers to develop fluency with multiplying decimal numbers. Students write a number to the tenths place in standard or unit form to develop fluency with multiplying decimal numbers. Students multiply a decimal number by a power of 10 to develop fluency with multiplying decimal numbers.
Launch: Students reason about the placement of the decimal point in a product and use a model to show their thinking.
Learn: Students use unit form to multiply a decimal number by a one-digit whole number. Students use vertical form and unit thinking to multiply a decimal number by a one-digit whole number. Students use unit and place value understanding to find products involving a decimal factor and a multiple of 10, 100, or 1,000 more efficiently.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about multiplying decimal numbers by whole numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses. Direct students to problems 9-14 in the Problem Set. Invite students to share which method they used to find the products and why those chose that method.

Daily Exit Ticket: Students will solve two problems multiplying decimal numbers to hundredths by one-digit whole numbers and multiples of 10, 100, or 1,000 by using different written methods.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 4 – Topic C - Lesson #: 16

Standard: 5.NBT.B.7

Mathematical Practice: MP8

Target/Objective: Multiply decimal numbers to hundredths by two-digit whole numbers by using area models and vertical form.

Learning Activities:
Fluency: Students count by a unit of 4 tenths in fraction form, decimal form, and with mixed numbers to develop fluency with multiplying decimal numbers. Students multiply tenths or hundredths in unit form, then write the equation with the numbers in standard form to develop fluency with multiplying decimal numbers. Students write a number to the hundredths place in standard or unit form to develop fluency with multiplying decimal numbers.
Launch: Students compare two ways to multiply two two-digit whole numbers.
Learn: Multiply a decimal number by a two-digit whole number by finding partial products with an area model. Students multiply a decimal number by a two-digit whole number by finding partial products with vertical form and unit form thinking. Students create decimal numbers and multiply them by given two-digit whole numbers.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about multiplying decimal numbers by two-digit whole numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one multiplying decimals problem.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 4 – Topic C - Lesson #: 17

Standard: 5.NBT.B.7

Mathematical Practice: MP5

Target/Objective: Multiply decimal numbers to hundredths by two-digit whole numbers by using different methods.

Learning Activities:
Fluency: Students determine the quotient to build fluency with dividing whole numbers by unit fractions from module 3. Students multiply a fraction by a fraction to prepare for renaming decimal multiplication as fraction multiplication in lesson 18. Students add or subtract decimal numbers to develop fluency operating with decimal numbers.
Launch: Students interpret a piece of art and relate it to mathematics.
Learn: Students analyze and use the break apart and distribute strategy to multiply a decimal number by a two-digit whole number. Students analyze and use the compensation strategy to multiply a decimal number by a two-digit whole number. Students self-select a method to multiply a decimal number by a two-digit whole number.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a discussion about methods to multiply decimal numbers by two-digit whole numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses. Direct students' attention to the list of methods. Add any additional methods that students used in the Problem Set. Invite students to think–pair–share about how the methods used for multiplying a decimal number by a two-digit whole number and multiplying multi-digit whole numbers are alike.

Daily Exit Ticket: Students will solve one, two-part problem multiplying decimals.

Resources: Print or copy and cut apart Choose a Method to Multiply cards. Prepare enough for 1 card per student pair.

Module 4 – Topic C - Lesson #: 18

Standard: 5.NBT.B

Mathematical Practice: MP8

Target/Objective: Relate decimal-number multiplication to fraction multiplication.

Learning Activities:
Fluency: Students determine the quotient to build fluency with dividing whole numbers by unit fractions from module 3. Students multiply a fraction by a fraction to prepare for renaming decimal-number multiplication as fraction multiplication in lesson 19. Students add or subtract decimal numbers to develop fluency operating with decimal numbers.
Launch: Students compare four representations of 4×0.1.
Learn: Students use fraction form and place value understanding to multiply decimal numbers by 0.1. Students use fraction form and place value understanding to multiply decimal numbers by 0.01. Students use fraction form, unit form, and place value understanding to multiply decimal numbers.
Land/Debrief: Facilitate a class discussion about multiplying decimal numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two multiplying decimal problems.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 4 – Topic C - Lesson #: 19

Standard: 5.NBT.B.7

Mathematical Practice: MP7

Target/Objective: Multiply a decimal number by a decimal number.

Learning Activities:
Fluency: Students write the quotient to build fluency with dividing whole numbers by unit fractions from module 3.
Launch: Students determine the unit of a product by using place value understanding.
Learn: Students multiply decimal numbers by using vertical form and check the reasonableness of their answers by multiplying in fraction form. Students multiply two decimal numbers and look for patterns in the factors and products. Students solve a two-step word problem involving decimal multiplication.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about multiplying a decimal number by a decimal number by using the following prompts. Encourage students to restate or add on to their classmates' responses. Restate the patterns students noticed in the number of digits in the factors and products. Invite them to consider the problems in the Problem Set to determine if the patterns they noticed still seem to be true.

Daily Exit Ticket: Students will solve one multiplying a decimal by another decimal problem.

Resources: Consider tearing out the Sprint pages in advance of the lesson.

Module 4 – Topic D - Lesson #: 20

Standard: 5.NBT.B.7

Mathematical Practice: MP7

Target/Objective: Divide decimal numbers to hundredths by one-digit whole numbers and multiples of 10, 100, or 1,000 by using unit form and place value understanding.

Learning Activities:
Fluency: Students divide ones, tens, or hundreds in unit form, and then write the equation with the numbers in standard form to prepare for dividing decimal numbers. Students count by a unit of 5 tenths in fraction form, standard form, and with mixed numbers to build fluency with multiple representations of numbers. Students determine the quotient to prepare for dividing decimal numbers.
Launch: Students determine that relationships between the dividend, divisor, and quotient in a division word problem do not change when the dividend changes from a whole number to a decimal number.
Learn: Students mentally divide decimal numbers by a one-digit whole number by using unit form. Students divide decimal numbers by one-digit whole numbers by drawing on a place value chart, including adding a column to unbundle a new unit. Students divide decimal numbers by multiples of 10, 100, or 1,000 by rewriting the divisor by using a one-digit number and a power of 10.
Land/Debrief: Facilitate a class discussion about using place value reasoning and unit form to divide decimal numbers by one-digit whole numbers and multiples of 10, 100, or 1,000 by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Write 12÷2 and 1.2÷2. Direct students to solve each problem before asking the following questions.

Daily Exit Ticket: Students will solve two dividing decimals problems.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 4 – Topic D - Lesson #: 21

Standard: 5.NBT.B.7

Mathematical Practice: MP3

Target/Objective: Divide decimal numbers to hundredths by one-digit whole numbers and multiples of 10, 100, or 1,000 by using place value understanding and vertical form.

Learning Activities:
Fluency: Students count by a unit of 6 tenths in fraction form, standard form, and with mixed numbers to build fluency with multiple representations of numbers. Students divide tenths or hundredths in unit form, and then write the equation with the numbers in standard form to develop fluency with dividing decimal numbers. Students determine the quotient to develop fluency with dividing decimal numbers.
Launch: Students rename decimal numbers to divide in unit form.
Learn: Students divide a decimal number by a one-digit whole number by using a place value chart and record their work in vertical form. Students divide decimal numbers by one-digit whole numbers by using a place value chart and record their work in vertical form, including unbundling to a new unit. Students break apart a multiple of 10 in the divisor and use place value relationships and vertical form to divide.
Land/Debrief: Facilitate a class discussion about dividing decimal numbers by one-digit whole numbers and multiples of 10, 100, or 1,000 and recording the work in vertical form by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one dividing decimals problem.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 4 – Topic D - Lesson #: 22

Standard: 5.NBT.B.7

Mathematical Practice: MP5

Target/Objective: Divide decimal numbers to hundredths by two-digit whole numbers.

Learning Activities:
Fluency: Students multiply a two-digit number by a three-digit number to build fluency with multiplying multi-digit whole numbers by using the standard algorithm. Students say the value of two identical adjacent digits in a decimal number, and then write multiplication equations to build fluency with relating the values of digits in a decimal number from topic A.
Launch: Students complete an area model representing a multiplicative relationship between a decimal number and a two-digit whole number and write multiplication and division equations represented by the model.
Learn: Students solve a word problem by dividing a decimal number by a two-digit whole number by using a self-selected method. Students share and compare solution methods for problem 2 and reason about their connections. Students solve an equal groups word problem by using a different method.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about choosing which division method to use to divide decimal numbers by two-digit whole numbers by using the following prompts. Encourage students to add on to or restate their classmates' responses.
Direct students to problems 5–9 in the Problem Set. Ask them what reasons they had for selecting different methods. Invite two or three students to share their thinking.

Daily Exit Ticket: Students will solve one dividing decimals problem.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 4 – Topic D - Lesson #: 23

Standard: 5.NBT.B.7

Mathematical Practice: MP8

Target/Objective: Relate division by 0.1 and 0.01 to division by a unit fraction.

Learning Activities:
Fluency: Students identify the number of sides and the name for a given polygon to prepare for classifying quadrilaterals based on their properties in module 5. Students determine the quotient to build fluency with dividing unit fractions by whole numbers from module 3. Students say the value of two identical adjacent digits in a decimal number and then write multiplication equations to build fluency with relating the values of digits in a decimal number from topic A.
Launch: Students solve a real-world problem involving division by 0.1.

Learn: Students rename 0.1 as 110 to divide. Students rename 0.01 as 1100 to divide. Students identify patterns when dividing numbers by 0.1 and 0.01.
Land/Debrief: Facilitate a class discussion about dividing numbers by 0.1 and 0.01 by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve three dividing decimals problems.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 4 – Topic D - Lesson #: 24

Standard: 5.NBT.B.7

Mathematical Practice: MP2

Target/Objective: Divide decimal numbers by decimal numbers, resulting in whole-number quotients.

Learning Activities:
Fluency: Students multiply a two-digit number by a three-digit number to build fluency with multiplying multi-digit whole numbers by using the standard algorithm. Students identify the number of sides and name for a given polygon to prepare for classifying quadrilaterals based on their properties in module 5. Students determine the quotient to build fluency with dividing unit fractions by whole numbers from module 3.
Launch: Students solve a real-world problem involving division of decimal numbers.
Learn: Students divide decimal numbers to hundredths by using place value disks and unit form. Students rewrite the expression with a divisor of either 0.1 or 0.01, use place value relationships to divide by 0.1 or 0.01, and then divide by a whole-number divisor. Students analyze sample work when the divisor has different units than the dividend, and then they correct the error.
Land/Debrief: Facilitate a class discussion about decimal-number division with whole-number quotients by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Display the division expressions 6.3÷0.9 and 63÷9.

Daily Exit Ticket: Students will solve two dividing decimals problems.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 4 – Topic D - Lesson #: 25

Standard: 5.NBT.B.7

Mathematical Practice: MP1

Target/Objective: Divide decimal numbers by decimal numbers, resulting in decimal-number quotients.

Learning Activities:
Fluency: Students write the quotient to build fluency with dividing unit fractions by whole numbers from module 3.
Launch: Students determine whether statements about a division expression are true or false.

Learn: Students model measurement division of decimal numbers with place value disks to interpret the meaning of a decimal-number quotient. Students rename the dividend to include a new unit to divide decimal numbers. Students rename the divisor as a whole number to divide decimal numbers.
Land/Debrief: Facilitate a class discussion about divisors and quotients when dividing decimal numbers by decimal numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses. Display the Launch problem, 2.6÷0.5.

Daily Exit Ticket: Students will solve two dividing decimals problems.

Resources: Consider tearing out the Sprint pages in advance of the lesson. Gather at least 7 tenths disks and 11 hundredths disks per student pair.

Module 4 – Topic E - Lesson #: 26 – (*optional*)

Standard: 5.M.A.1

Mathematical Practice: MP3

Target/Objective: Solve a real-world problem involving metric measurements.

Learning Activities:
Fluency: Students use gestures for point, line segment, and line to prepare for drawing, analysis, and classification of two-dimensional shapes in module 5. Students say and write names for a point, line segment, line, or ray to prepare for drawing, analysis, and classification of two-dimensional shapes in module 5. Students read a measurement scale and complete a multiplicative statement to prepare for converting metric measurement units involving decimal numbers beginning in lesson 27.
Launch: Students infer a mathematical problem from a video.
Learn: Students use self-selected strategies to find the total of various liquid metric measurements. Students discuss strategies for organizing and finding the total amount of liquid. Students convert liquid metric measurements.
Land/Debrief: Facilitate a class discussion about converting units to solve a measurement problem by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two real-world problems involving metric measurements.

Resources: Prepare one set of cards per student pair. Consider whether to prepare the cards in advance or have students tear out the pages and cut them apart during the lesson.

Module 4 – Topic E - Lesson #: 27

Standard: 5.M.1

Mathematical Practice: MP6

Target/Objective: Convert metric measurements involving decimals.

Learning Activities:
Fluency: Students use gestures for ray, right angle, acute angle, obtuse angle, and straight angle to prepare for drawing, analysis, and classification of two-dimensional shapes in module 5. Students say and print the names for an angle to prepare for drawing, analysis, and classification of two-dimensional shapes in module 5. Students read a measurement scale and complete a multiplicative statement to prepare for converting metric measurement units involving decimal numbers.

Launch: Students complete ***times as much as*** statements to relate metric units.
Learn: Students convert metric measurements involving decimals from larger units to smaller units. Students write multiplicative comparison statements and convert metric measurements from smaller units to larger units. Students convert decimal amounts of a larger unit to mixed units and convert mixed units to decimal amounts of the larger unit.
Land/Debrief: Facilitate a class discussion about converting metric measurement units involving decimals from larger units to smaller units and from smaller units to larger units by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve three converting metric measurements involving decimals.

Resources: Gather 2 markers in assorted colors.

Module 4 – Topic E - Lesson #: 28

Standard: 5.M.A.1

Mathematical Practice: MP4

Target/Objective: Convert customary measurements involving decimals.

Learning Activities:
Fluency: Students use gestures for lines and line segments to prepare for drawing, analysis, and classification of two-dimensional shapes in module 5. Students say and write names for parallel and perpendicular lines and line segments to prepare for drawing, analysis, and classification of two-dimensional shapes in module 5. Students read a measurement scale and complete multiplicative statements to develop fluency with converting metric measurement units involving decimal numbers.
Launch: Students convert gallons and quarts in fraction form and rename the measurements in decimal form.
Learn: Students convert metric measurements involving decimals from larger units to smaller units. Students convert customary measurements involving decimals from smaller units to larger units. Students solve a two-step word problem where one step requires converting customary measurements involving decimals.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about converting customary measurements involving decimals by using the following prompts. Encourage students to restate or add on to their classmates' responses. Direct students to problem 3 in the Problem Set. Invite students to think–pair–share about what they notice about the differences in the way the equations are written in parts (a)–(d).

Daily Exit Ticket: Students will solve three converting customary measurements involving decimals.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 4 – Topic E - Lesson #: 29

Standard: 5.OA.A.1

Mathematical Practice: MP6

Target/Objective: Interpret, evaluate, and compare numerical expressions involving decimals.

Learning Activities:
Fluency: Students draw a point, ray, or angle to prepare for drawing, analysis, and classification of two-dimensional shapes in module 5. Students write equations and determine an unknown measure of an angle to prepare for drawing, analysis, and classification of two-dimensional shapes in module 5.
Launch: Students reason about how to correctly model the operations represented in a tape diagram with an expression.
Learn: Students represent, evaluate, and compare expressions with decimals and insert parentheses to make equations true.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about interpreting, evaluating, and comparing numerical expressions involving decimals. Encourage students to restate or add on to their classmates' responses. Direct students to problems 5 and 6 in the Problem Set.

Daily Exit Ticket: Students will solve three interpreting, evaluating, and comparing numerical expressions involving decimals.

Resources: Print or copy and cut out one set of Numerical Expressions Stations. Post each station at a location around the classroom. Additional sets of the stations can be used if needed.

Module 4 – Topic E - Lesson #: 30

Standard: 5.OA.A.1

Mathematical Practice: MP2

Target/Objective: Create and solve real-world problems for given numerical expressions involving decimals.

Learning Activities:
Fluency: Students draw an example of a specified line or line segment, including parallel and perpendicular, to prepare for drawing, analysis, and classification of two-dimensional shapes in module 5. Students write equations and determine an unknown measure of an angle to prepare for drawing, analysis, and classification of two-dimensional shapes in module 5.
Launch: Students match an expression to a word problem context.
Learn: Students brainstorm word problem situations and develop examples for each operation. Students analyze expressions and tape diagrams to develop and solve word problems that match.
Land/Debrief: Facilitate a class discussion about writing word problems for numerical expressions with decimals by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one real-world problem for a given numerical expression involving decimals.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Unit Modifications for Special Population Students	
Advanced Learners	**Module 4 – Topic A – Lesson-2-** Consider inviting students to write the unit form in more than one way to represent the number shown with their disks without physically exchanging disks. **Module 4 – Topic B – Lesson-9-** Throughout the lesson, consider having students use more than one method to confirm their answer. Encourage them to consider which method was most efficient and why. **Module 4 – Topic C – Lesson-15-** Consider challenging students to find 9×0.48 by using a compensation strategy such as multiplying by the next higher unit first and then subtracting the difference. **Module 4 – Topic D – Lesson-22-** For students ready for a challenge, consider providing them with the following problem. Miss Baker splits 237.5 pounds of birdseed evenly among 25-pound bags. How many full bags of birdseed does Miss Baker make? How much birdseed is left over? **Module 4 – Topic E – Lesson -29-** To challenge students, revise the stations activity to include expressions that mix fractions and decimals. Sample expressions are the following: Station 1: Twice the sum of 2.56 and 3750; Station 3: The sum of three 2.07s and five 910s; Station 5: 4×215−0.3=7.6; Station 6: (2.7+1.09)×1720____1.04×(2710+1.09)
Struggling Learners	**Module 4 – Topic A – Lesson-4-** Consider having students complete only the 10 times as much relationships because those relationships are likely more familiar to them. Consider displaying a place value chart as an additional support. **Module 4 – Topic B – Lesson-11-** Consider having place value disks, place value charts, and blank number lines available for students as needed. Make these resources available and encourage their use as needed. **Module 4 – Topic C – Lesson-16-** Consider providing students with a template for the area model to maintain their focus on the math, not on the drawing. Additionally, consider providing grid paper for students to use when using the vertical form method. **Module 4 – Topic D – Lesson-23-** Consider having students directly model the problem with dimes or having them draw $2 worth of dimes. **Module 4 – Topic E – Lesson-27-** Consider displaying the metric units anchor chart from module 1 for students to refer to as they write their statements.
English Language Learners	**Module 4 – Topic A – Lesson-1**- The decimal place value units, terms, and models for *tenths* and *hundredths* are familiar from grade 4. Thousandths is a new unit and term in this lesson. Consider creating an anchor chart like the table in problem 1. **Module 4 – Topic B – Lesson-10-**

	Having students use place value disks or draw on a place value chart supports and solidifies the relationship between the concrete or pictorial representations and the vertically written recording, particularly when regrouping is involved. **Module 4 – Topic C – Lesson-14-** As students share their ideas about where the regroupings took place, revoice their responses by using precise language. For example, if students say, "These 10 dots were moved to this column to make 1," respond by saying, "Yes, you regrouped 10 hundredths as 1 tenth." **Module 4 – Topic D – Lesson-20-** To lessen the language demands of determining what is different about the latest version of the problem, consider displaying the new problem along with the previous problem. Alternatively, consider giving students a printed copy of all the problem statements so they may highlight or underline the changes. **Module 4 – Topic E – Lesson-27-** The modules in grade 5 refer to metric weight rather than mass. Students may use either term. If they do, consider relating mass to weight by using the following explanation. Technically weight and mass are not equivalent, but both terms can be used to describe the same measure if the object being measured stays on Earth and is subject to Earth's gravity.
Special Needs Learners	**Module 4 – Topic A – Lesson-8-** Encourage students to first use a place value chart to rename 7.209 with different units. Students can refer to their chart to help them determine the appropriate unit and interval to consider for rounding to each given place. **Module 4 – Topic B – Lesson-13-** Consider having students skip-count by eights or use long division to divide 100 by 8 to determine that 100 is not a multiple of 8. Then ask students whether they would rather skip-count by eights to 1,000 or use long division to find 1,000÷8. Expect students to determine that using long division is more efficient than skip-counting because the quotient is a considerable number. **Module 4 – Topic C – Lesson-18-** Watch for students using unit form thinking who mistakenly say that the answer is 12 tenths. Encourage those students to use fractions to see why the product is not 12 tenths. **Module 4 – Topic D – Lesson-25-** If students need help reasoning about the expression and its quotient, guide them to think about 0.5 as 5 tenths or 12. Also consider rephrasing the equation as measurement division and ask, About how many groups of 0.5 make 2.6? **Module 4 – Topic E – Lesson-28-** Consider directing students to the tape diagrams shown in the Problem Set to support relating customary measurements.
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:

SL.5.1. (A-D) Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

***Module 4 - Topic E - Lesson 29 -**

Organize students into groups of 3 or 4. Direct each group to one of the posted stations to begin the activity. Allow groups a few minutes to complete the prompt at that station in their books. Then direct groups to rotate to a new station. Continue until all groups have completed the prompts at all stations.

NJSLSA.L5. Demonstrate understanding of word relationships and nuances in word meanings.

***Module 4 - Topic D - Lesson 21 -**

The term *long division* is familiar from grade 4. Consider clarifying the use of the word long in the term *long division*. Some students might hear the word long and make assumptions about long division based on their understanding of long in reference to time or length. Clarify that long division is a process we can use to divide when mental math is not efficient. Ask, "Would you use long division to find 40÷2? Why?"

SL.5.2. Summarize a written text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally).

***Module 4 - Topic E - Lesson 26 -**

Partner students and intentionally assign each pair a set of cards. The sets of cards vary in treatment of the measurements, increasing in complexity as follows:

- Sets A and B list all measurements in whole number milliliters.
- Set C lists all measurements in decimal numbers of liters.
- Set D lists measurements in a mixture of whole number milliliters and decimal numbers of liters.

Invite partners to work together to predict the total amount each person drinks and write their estimate in their books. Then have students find the total amount of liquid the person drinks. Ask them to record their work in their books.

Integration of 21st Century Skills

Standards:

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

***Module 4 - Topic A - Lesson 6 –**

Consider having students create an interactive number line. Hang a string about 6 feet long horizontally. Prepare five index cards by folding them in half and labeling them 0, 10, 20, 30, and 40. Hang them equally spaced down the line. Then give each pair one index card to label with a number from the activity. Invite them to decide where to place the card on the line. Have students use the interactive number line to confirm that their comparisons are true.

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

***Module 4 - Topic A - Lesson 8 –**

Have students remain with their partner from the turn and talk. Engage students in a partner activity where each student writes a decimal number on their whiteboard and passes the whiteboard to their partner to round the decimal number.

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.

***Module 4 - Topic C - Lesson 16 –**

Direct students to work with a partner to find 33×4.6 and 2.05×24. Have pairs use an area model for one problem and vertical form for the other problem. For each problem, invite one pair that used each method to share their work.

9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.

***Module 4 - Topic C - Lesson 16 –**

Have students brainstorm about how they might find the product. Then suggest trying an area model first. Invite students to think–pair–share about why other models may not be the best choice for this problem.

Unit Title: <u>Module 5</u> – Addition and Multiplication with Area and Volume

Unit Description: In module 5, students connect operations to geometric concepts. They find area of rectangles with fraction side lengths, multiply mixed numbers, and find the volume of right rectangular prisms. Students also categorize two-dimensional figures in a hierarchy.

Unit Duration: Approximately 33 days (including days for assessments) **No optional lessons in this module*

Desired Results

Standard(s): (*Bolded standards are assessed in the end of Module Assessment***)**

5.NF.B.4

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

5.NF.B.6

Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

5.M.B.2

Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

5.M.B.2.b

A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.

5.M.B.3

Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

5.M.B.

Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

5.M.B.4a

Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.

5.M.B.4b

Apply the formulas V = l × w × h and V = b × h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

5.M.B.

Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

5.G.B.3

Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.

For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.

5.G.B.4

Classify two-dimensional figures in a hierarchy based on properties.

5.NF.B.4.a

Interpret the product $(a/b) \times q$ as a part of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$.

For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, $(a/b) \times (c/d) = ac/bd$.)

5.NF.B.4.b

Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.

5.M.B.2a

A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.

Understandings:

- **Module 5 – Topic A – I can** construct, analyze, and classify trapezoids, kites, parallelograms, rectangles, rhombuses, and squares. **I can** identify properties of quadrilaterals that involve pairs of parallel sides, angle measures, side lengths, diagonals, and lines of symmetry and use these properties to create a hierarchy of quadrilaterals. **I can** use the hierarchy to determine the most specific name of any quadrilateral and all names for the quadrilateral.
- **Module 5 – Topic B – I can** find areas of rectangles with fraction side lengths, first by tiling with tiles that are squares with unit-fraction side lengths and then by tiling with rectangles with fraction side lengths.
- **Module 5 – Topic C – I can** count the number of unit cubes that pack right rectangular prisms. **I can** build right rectangular prisms with improvised units to find volume by using something other

Essential Questions:

- **Module 5 – Topic A – Can I draw, analyze, and classify two-dimensional figures?**
- **Module 5 – Topic B – Can I find areas of rectangular figures with fraction side lengths?**
- **Module 5 – Topic C – Can I begin to understand volume concepts?**
- **Module 5 – Topic D – Can I find volume using the operations of multiplication and addition?**

than unit cubes. **I can** compose and decompose right rectangular prisms into layers in diverse ways, finding the volume of each layer and multiplying the number of layers by the volume of each layer to find the volume of the right rectangular prism. **I can** explore conceptual ideas about volume and capacity by differentiating between packing with cubes and filling with a liquid.

- **Module 5 – Topic D - I can** synthesize the work of topic C by determining that the volume of any right rectangular prism is calculated either by multiplying the area of the base by the height, $V = B \times h$, or by multiplying the three dimensions of the prism, $V = l \times w \times h$. **I can** use these two formulas to find volumes and unknown dimensions of right rectangular prisms in both mathematical and real-world problems. **I can** find the volume of a figure composed of right rectangular prisms by decomposing the figure into right rectangular prisms, finding the volume of each prism, and adding the volumes together.

Assessment Evidence

Assessments:

- Daily Exit Tickets
- Equip Pre-assessments for Module
- End of Topic Quizzes
- End of Module Assessment

Benchmarks:

- The iReady Assessment is administered in the Fall and Winter.

Learning Plan

***Resources listed below are additional items that are needed in addition to the resources listed in the lesson overview in the Teacher's Manual.**

Module 5 – Topic A - Lesson #: 1

Standard: 5.G.B.4

Mathematical Practice: MP8

Target/Objective: Analyze hierarchies and identify properties of quadrilaterals.

Learning Activities:

Fluency: Students count by a unit of 20° on a 180° protractor to prepare for classifying quadrilaterals based on their properties. Students classify an angle, estimate the angle measure, and determine the angle measure by using a 180° protractor to prepare for classifying quadrilaterals based on their

properties. Students identify polygons with a specified attribute to prepare for classifying quadrilaterals based on their properties.
Launch: Students explore how to use and interpret a hierarchy.
Learn: Students explain and interpret the structure of hierarchies. Students sort a collection of figures. Students classify figures into a hierarchy. Students discover that the measures of the angles inside a quadrilateral sum to 360°.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about hierarchies and quadrilaterals by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will analyze two hierarchy problems, #1 is three parts.

Resources: Consider whether to remove Collection of Figures from the student books and cut out one set of figures for each student pair in advance or to have students prepare them during the lesson. Save the quadrilateral cutouts for use in lesson 2.

Module 5 – Topic A - Lesson #: 2

Standard: 5.G.B.4

Mathematical Practice: MP7

Target/Objective: Classify trapezoids based on their properties.

Learning Activities:
Fluency: Students count by a unit of 30° on a 180° protractor to develop fluency with classifying quadrilaterals based on their properties. Students classify an angle, estimate the angle measure, and determine the angle measure by using a 180° protractor to develop fluency with classifying quadrilaterals based on their properties. Students identify polygons with a specified property to develop fluency with classifying quadrilaterals based on their properties.
Launch: Students sort quadrilaterals.
Learn: Students use a right-angle tool and a straightedge to construct a trapezoid. Students cut and manipulate their trapezoids to discover relationships between the measures of the angles at each vertex. Students identify trapezoids and begin to classify quadrilaterals into a hierarchy.
Land/Debrief: Facilitate a class discussion about properties of trapezoids by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems classifying trapezoids based on their properties.

Resources: Gather the quadrilaterals cut out from Collection of Figures in lesson 1 and have them available to distribute to student pairs.

Module 5 – Topic A - Lesson #: 3

Standard: 5.G.B.4

Mathematical Practice: MP3

Target/Objective: Classify parallelograms based on their properties.

Learning Activities:

Fluency: Students multiply a two-digit number by a three-digit number to build fluency with multiplying multi-digit whole numbers by using the standard algorithm. Students count by a unit of 500 grams and rename grams as kilograms to build fluency with converting measurements from module 1. Students determine whether a given line is a line of symmetry for a figure to develop fluency with classifying quadrilaterals based on their properties.
Launch: Students make a conjecture about whether all parallelograms are trapezoids.
Learn: Students construct a parallelogram and identify its properties. Students discover that the diagonals of a parallelogram intersect at their midpoints. Students use the hierarchy of quadrilaterals to classify and analyze statements about parallelograms.
Land/Debrief: Facilitate a class discussion about properties of parallelograms by using the following prompts. Encourage students to restate or add to their classmates' responses. Continue to display the hierarchy of quadrilaterals.

Daily Exit Ticket: Students will classify two parallelogram problems, #1 is three parts.

Resources: Prepare three signs on paper—one that says Strongly Agree, one that says Strongly Disagree, and one that says Undecided. Hang the signs up in three separate locations in the classroom. Ensure students have access to a ruler for the Problem Set.

Module 5 – Topic A - Lesson #: 4

Standard: 5.G.B.4

Mathematical Practice: MP6

Target/Objective: Classify rectangles and rhombuses based on their properties.

Learning Activities:
Fluency: Students round a number to the nearest ten and one to build fluency with rounding decimals from module 4. Students count by a unit of 500 milliliters and rename milliliters as liters to build fluency with converting measurements from module 1. Students determine whether a given line is a line of symmetry for a figure to develop fluency with classifying quadrilaterals based on their properties.
Launch: Students examine and compare four quadrilaterals.
Learn: Students construct a rhombus and identify its properties. Students analyze a rectangle and identify its properties. Students use the hierarchy of quadrilaterals to classify and analyze statements about rectangles and rhombuses.
Land/Debrief: Facilitate a class discussion about properties of parallelograms by using the following prompts. Encourage students to restate or add to their classmates' responses.
Continue to display the hierarchy of quadrilaterals.

Daily Exit Ticket: Students will solve three problems classifying rectangles and rhombuses based on their properties.

Resources: Prepare four signs on paper—two labeled *Rectangles* and two labeled *Rhombuses*. Hang the signs up in various locations in the room.

Module 5 – Topic A - Lesson #: 5

Standard: 5.G.B.4

Mathematical Practice: MP6

Target/Objective: Classify kites and squares based on their properties.

Learning Activities:
Fluency: Students multiply a two-digit number by a three-digit number to build fluency with multiplying multi-digit whole numbers by using the standard algorithm. Students round a number to the nearest one and tenth to build fluency with rounding decimals from module 4.
Launch: Students sketch a kite.
Learn: Students construct a kite and identify its properties. Students construct a square and identify properties of a square. Students reason about where squares and kites belong in the hierarchy of quadrilaterals.
Land/Debrief: Facilitate a class discussion about properties of kites and squares by using the following prompts. Encourage students to restate or add on to their classmates' responses. Direct students to the hierarchy of quadrilaterals.

Daily Exit Ticket: Students will solve three problems classifying kites and squares based on their properties.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 5 – Topic A - Lesson #: 6

Standard: 5.G.B.4

Mathematical Practice: MP1

Target/Objective: Identify quadrilaterals from given properties.

Learning Activities:
Fluency: Students multiply a two-digit number by a three-digit number to build fluency with multiplying multi-digit whole numbers by using the standard algorithm. Students round a number to the nearest one and tenth to build fluency with rounding decimals from module 4.
Launch: Students reason about the most specific names of quadrilaterals.
Learn: Students sketch quadrilaterals from given descriptions. Students identify quadrilaterals based on common properties.
Land/Debrief: Use the following prompts to facilitate a class discussion about identifying quadrilaterals from given properties. Encourage students to restate or add on to their classmates' responses.
Display the description from Quadrilateral Card 4 and the quadrilaterals.

Daily Exit Ticket: Students will solve one problem identifying quadrilaterals.

Resources: Print or copy Quadrilateral Cards and cut out the cards. Prepare enough cards for each student pair to have the cards for Quadrilaterals 1–6 or Quadrilaterals 7–12. Prepare 12 posters on paper titled Quadrilateral 1, Quadrilateral 2, Quadrilateral 3, … , Quadrilateral 12. Hang them around the room. Provide tools for sketching quadrilaterals, such as rulers, straightedges, and index cards (right-angle tools), for students to self-select.

Module 5 – Topic A - Lesson #: 7

Standard: 5.G.B.4

Mathematical Practice: MP7

Target/Objective: Classify quadrilaterals in a hierarchy based on properties.

Learning Activities:
Fluency: Students round a number to the nearest one to build fluency with rounding decimal numbers from module 4.
Launch: Students reason about triangles that are organized in a Venn diagram.
Learn: Students analyze a quadrilateral Venn diagram and compare it to the hierarchy of quadrilaterals. Students sort quadrilaterals and non-quadrilaterals. Students name all classifications for given quadrilaterals.
Land/Debrief: Facilitate a class discussion about classifying quadrilaterals by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one problem classifying quadrilaterals.

Resources: Consider tearing out the Sprint pages in advance of the lesson. Consider whether to remove Quadrilateral Venn Diagram from the student books in advance or to have students remove them during the lesson. Consider whether to remove Polygons from the student books and cut them out in advance or to have students prepare them during the lesson.

Module 5 – Topic B - Lesson #: 8

Standard: 5.NF.B.4.b

Mathematical Practice: MP7

Target/Objective: Find areas of square tiles with fraction side lengths by relating the tile to a unit square.

Learning Activities:
Fluency: Students count by a unit of 50 centimeters and rename centimeters as meters to build fluency with converting measurements from module 1. Students determine the sum to build fluency with adding decimals from module 4. Students determine the product to prepare for using multiplication to find areas of rectangles beginning in lesson 10.
Launch: Students identify a need to find the area of squares with fraction side lengths by partitioning a unit square.
Learn: Students reason about the number of square tiles with fraction side lengths that are needed to tile larger squares. Students determine the areas of squares with fraction side lengths by tiling a unit square.
Land/Debrief: Facilitate a class discussion about areas of squares with fraction side lengths by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one problem finding the area of a square tile with fraction side lengths by relating the tile to a unit square.

Resources: Prepare 2″×2″ squares by folding and cutting a piece of 4" x 4" patty paper vertically and horizontally. Prepare enough for each student group of three to have at least 8 small squares.

Module 5 – Topic B - Lesson #: 9

Standard: 5.NF.B.4.b

Mathematical Practice: MP5

Target/Objective: Organize, count, and represent a collection of square tiles.

Learning Activities:
Fluency: Students count by a unit of 50 centiliters and rename centiliters as liters to build fluency with converting measurements from module 1. Students determine the product to prepare for using multiplication to find areas of rectangles with fraction side lengths beginning in lesson 10.
Launch: Students reason about how to find the number of square tiles with fraction side lengths that are needed to cover a rectangular area.
Learn: Students determine the number of square tiles with fraction side lengths that are needed to cover a rectangle. Students use self-selected strategies to organize and count a collection and to record their process. Students discuss strategies for organizing and compare their efficiency.
Land/Debrief: Facilitate a class discussion about using square tiles to tile a rectangle and find its area by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems counting and representing square tiles.

Resources: Tear out and cut apart Tiles Counting Collection from the student books and place one tile set in each envelope. Prepare enough collections for each student pair to have one. Provide tools for students to choose from to help organize their counts. Tools may include cups, whiteboards, or bags.

Module 5 – Topic B - Lesson #: 10

Standard: 5.NF.B.4.b

Mathematical Practice: MP7

Target/Objective: Find the area of a rectangle with fraction side lengths by relating the rectangle to a unit square.

Learning Activities:
Fluency: Students determine differences to build fluency with subtracting decimals from module 4. Students determine products to prepare for finding the area of rectangles with fraction side lengths by multiplying. Students determine the sum of a whole number and a mixed number or fraction greater than one to prepare for adding partial products beginning in lesson 12.
Launch: Students determine the area of a square that is part of a unit square.
Learn: Students create a unit square to find the area of a rectangle with unit-fraction side lengths. Students create a unit square to find the area of a rectangle with one unit-fraction side length and one side length that is not a unit fraction.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about finding the area of rectangles with fraction side lengths by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one problem finding the area of a rectangle with fractional lengths.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 5 – Topic B - Lesson #: 11

Standard: 5.NF.B.4.b

Mathematical Practice: MP8

Target/Objective: Find areas of rectangles with fraction side lengths by using multiplication.

Learning Activities:
Fluency: Students round a number to the nearest tenth and hundredth to build fluency with rounding decimals from module 4. Students determine products to develop fluency with finding the area of rectangular figures with fraction side lengths by multiplying. Students determine the sum of a whole number and a mixed number or fraction greater than one to prepare for adding partial products beginning in lesson 12.
Launch: Students reason about how to find the area of a rectangle with fraction side lengths greater than 1.
Learn: Students find areas of rectangles with one side length that is a fraction greater than 1. Students use rectangular tiles to find areas of rectangles when both side lengths are fractions greater than 1. Students conclude that they can find the area of a rectangle with any side lengths by multiplying its length and width.
Land/Debrief: Facilitate a class discussion about using multiplication to find the area of rectangles with fraction side lengths by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one problem finding the area of a rectangle with fraction side lengths by using multiplication.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 5 – Topic B - Lesson #: 12

Standard: 5.NF.B.4

Mathematical Practice: MP5

Target/Objective: Multiply mixed numbers.

Learning Activities:
Fluency: Students round a number to the nearest tenth and hundredth to build fluency with rounding decimals from module 4. Students determine sums and differences to build fluency with adding and subtracting decimals from module 4.
Launch: Students relate the break apart and distribute strategy and the area model.
Learn: Students use an area model to multiply a mixed number by a whole number. Students multiply two mixed numbers by using two different methods.
Land/Debrief: Facilitate a class discussion about multiplying mixed numbers by using the following prompts. Encourage students to restate or add on to their classmates' responses. Display the area model and work showing 235×318.

Daily Exit Ticket: Students will solve one problem multiplying mixed numbers.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 5 – Topic B - Lesson #: 13

Standard: 5.NF.B.4

Mathematical Practice: MP7

Target/Objective: Solve mathematical problems involving areas of composite figures with mixed-number side lengths.

Learning Activities:
Fluency: Students round a number to the nearest tenth to build fluency with rounding decimal numbers from module 4.
Launch: Students compare composite figures.
Learn: Students determine the area of a tetromino. Students determine the total shaded and unshaded area in a figure. Students compare methods for determining the total area of the unshaded regions inside a large square.
Land/Debrief: Facilitate a class discussion about the area of composite figures with mixed-number side lengths by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one problem involving areas of composite figures with mixed-number side lengths.

Resources: Consider tearing out the Sprint pages in advance of the lesson.

Module 5 – Topic B - Lesson #: 14

Standard: 5.NF.B.4.b

Mathematical Practice: MP1

Target/Objective: Solve real-world problems involving areas of composite figures with mixed-number side lengths.

Learning Activities:
Fluency: Students round a number to the nearest one or tenth to build fluency with rounding decimals from module 4.
Launch: Students examine a floor plan for a house.
Learn: Students determine the area of the garden and the cost to cover it with compost. Students compare methods for finding the area of the composite figure in problem 1. Students determine the area of the house to be covered with flooring.
Land/Debrief: Facilitate a class discussion about areas in the real world by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one problem involving areas of composite figures with mixed-number side lengths.

Resources: Tear out and cut apart Rounding Cards, Set 1 from the student books. Place each set into an envelope. Prepare enough sets for 1 per student pair.

Module 5 – Topic B - Lesson #: 15

Standard: 5.NF.B.6

Mathematical Practice: MP2

Target/Objective: Solve multi-step word problems involving multiplication of mixed numbers.

Learning Activities:
Fluency: Students round a number to the nearest one, tenth, or hundredth to build fluency with rounding decimals from module 4.
Launch: Students interpret a tape diagram representing a real-world situation with mixed numbers and multiple steps.
Learn: Students solve multi-step problems involving multiplication of mixed numbers. Students share and compare solutions and reason about their connections.
Land/Debrief: Facilitate a class discussion about solving multi-step word problems by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one multi-step problem involving multiplication of mixed numbers.

Resources: Tear out and cut apart Rounding Cards, Set 2 from the student books. Place each set into an envelope. Prepare enough sets for 1 per student group of three. Print or copy and cut out Multi-Step Problem Cards. Prepare enough cards to set up four stations with a few copies of a single problem at each station.

Module 5 – Topic C - Lesson #: 16

Standard: 5.G.B.3

Mathematical Practice: MP7

Target/Objective: Identify attributes and properties of right rectangular prisms.

Learning Activities:
Fluency: Students complete a pattern to build fluency with decimals. Students determine the sum then write and say an addition equation or related subtraction equation to build fluency with adding and subtracting decimals from module 4.
Launch: Students identify similarities and differences between a square and a cube.
Learn: Students predict and explain how changing length, width, or height affects the size of a rectangle and of a right rectangular prism. Students compare a rectangle to a right rectangular prism and identify faces, edges, and vertices of a right rectangular prism. Students reason about whether a sheet of paper is a rectangle or a right rectangular prism.
Land/Debrief: Facilitate a class discussion about properties and attributes of right rectangular prisms by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve six problems identifying attributes and properties of right rectangular prisms.
Resources: Tear out and cut apart Decimal Number Cards, Set 1 from the student books. Place each set in an envelope. Prepare enough sets for each student pair to have one. Tear out Hidden Addends Mat from the student books. Consider whether to prepare this material in advance or during the lesson. Consider saving for reuse in lesson 17. Consider tearing out Right Rectangular Prism for students in advance of the lesson. Prepare four signs on paper: Rectangle, Right Rectangular Prism, Both, and Neither. Hang the signs in various locations in the classroom. Leave one sheet of paper blank for use in a demonstration. Review the Math Past resource to support delivery of Launch.

Module 5 – Topic C - Lesson #: 17

Standard: 5.M.B.3

Mathematical Practice: MP2

Target/Objective: Find the volume of right rectangular prisms by packing with unit cubes and counting.

Learning Activities:
Fluency: Students complete a pattern to build fluency with decimals. Students determine the sum and then write and say an addition equation or related subtraction equation to build fluency with adding and subtracting decimals from module 4.
Launch: Students reason about which container takes up more space.
Learn: Students pack containers shaped like right rectangular prisms with centimeter cubes to find volumes of solids with the same dimensions. Students compare volumes of right rectangular prisms. Students compare volumes of right rectangular prisms.
Land/Debrief: Facilitate a class discussion about volume of right rectangular prisms by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, (four-part) problem finding the volume of right rectangular prism by packing it with unit cubes and counting.

Resources: Tear out and cut apart Decimal Number Cards, Set 2 from the student books. Place each set in an envelope. Prepare enough sets for each student pair to have one. Consider whether your students should only use cards with tenths or if they should use cards with tenths, hundredths, and/or ones. Tear out Hidden Addends Mat from the student books. Consider whether to prepare this material in advance or to have students prepare it during the lesson. Consider labeling the prisms in the rectangular prisms set as *A*, *B*, *C*, and *D* with a permanent marker to help students identify each prism during the lesson.

Module 5 – Topic C - Lesson #: 18

Standard: 5.M.B.3

Mathematical Practice: MP3

Target/Objective: Find the volume of right rectangular prisms by packing with improvised units.

Learning Activities:

Fluency: Students determine the quotient and remainder to build fluency dividing with two-digit divisors and two- and three-digit dividends from module 1. Students write and evaluate an expression to build fluency with two-step calculations involving decimals from module 4.
Launch: Students reason about finding the number of pieces of gum in a pack and in a box.
Learn: Students build 3 unit × 1 unit × 1 unit right rectangular prisms and use them to compose a larger right rectangular prism and find its volume. Students build 3 unit × 2 unit × 2 unit right rectangular prisms and use them to compose a larger right rectangular prism and find its volume.
Land/Debrief: Facilitate a class discussion about finding the volume of right rectangular prisms by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one problem finding the volume of a right rectangular prism by packing with improvised units.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 5 – Topic C - Lesson #: 19

Standard: 5.M.B.3

Mathematical Practice: MP8

Target/Objective: Compose and decompose right rectangular prisms to find their volume by using layers.

Learning Activities:
Fluency: Students determine the quotient and remainder to build fluency with dividing three- and four-digit dividends by two-digit divisors from module 1. Students write and evaluate an expression to build fluency with two-step calculations involving fractions from module 3.
Launch: Students examine layers of figures.
Learn: Students compose right rectangular prisms from layers. Students decompose right rectangular prisms into layers.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a class discussion about decomposing right rectangular prisms by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, (three-part) problem composing and decomposing a right rectangular prism to find its volume by using layers.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 5 – Topic C- Lesson #: 20

Standard: 5. M.B.2a

Mathematical Practice: MP2

Target/Objective: Interpret volume as filling.

Learning Activities:

Fluency: Students complete a pattern to build fluency with decimals. Students identify equivalent expressions and create equations to build fluency with adding and subtracting fractions with unlike units from module 2.
Launch: Students compare volumes of various objects.
Learn: Students determine why packing with cubes is not always useful for finding volume. Students make connections between packing and filling as methods for finding volume.
Land/Debrief: Facilitate a class discussion about filling and packing by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two, (two-part) problems interpreting volume as filling.

Resources: Tear out Equivalent Expression Cards, Set 1 from the student books. Cut the cards apart and place each set in an envelope. Prepare enough sets for 1 set per student pair.

Module 5 – Topic C - Lesson #: 21

Standard: 5.M.B,3

Mathematical Practice: MP2

Target/Objective: Relate volumes of solids and liquid volume.

Learning Activities:
Fluency: Students complete a pattern to build fluency with decimals. Students identify equivalent expressions and create equations to build fluency with adding and subtracting mixed numbers with unlike units from module 2.
Launch: Students explore a method for finding the volume of a space that cannot be packed with cubes.
Learn: Students determine that 1 cubic centimeter has the same volume as 1 milliliter. Students use the fact that an object with a volume of 1 cubic centimeter also has a volume of 1 milliliter to solve real-world problems.
Land/Debrief: Facilitate a class discussion about volumes of solids and liquid volume by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, (three-part) problem relating volumes of solids and liquid volume.

Resources: Tear out Equivalent Expression Cards, Set 2 from the student books. Cut the cards apart and place each set in an envelope. Prepare enough sets for 1 set per student pair.

Module 5 – Topic D - Lesson #: 22

Standard: 5.M.B.4b

Mathematical Practice: MP7

Target/Objective: Find the volumes of right rectangular prisms by using the base area.

Learning Activities:
Fluency: Students determine the product and then write and say a multiplication equation or related division equation to build fluency with multiplying and dividing decimals from module 4. Students determine how many centimeter cubes are in one layer and then count to find the volume of a right rectangular prism.

Launch: Students compare methods for finding the volume of a right rectangular prism.
Learn: Students determine that they can find the volume of a right rectangular prism by multiplying the area of its base by its height. Students use a base area to determine the volume of a right rectangular prism. Students determine an unknown height or face area of a right rectangular prism.
Land/Debrief: Facilitate a class discussion about using multiplication to find the volume of right rectangular prisms by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve two problems finding the area of a right rectangular prism by using the area of the base.

Resources: Tear out and cut apart Decimal Number Cards from the student book. Place each set in an envelope. Prepare enough sets for each student pair to have one. Consider saving them for reuse in lesson 23.
Tear out Hidden Factors Mat from the student book. Consider whether to prepare this material in advance or during the lesson. Consider saving it for reuse in lesson 23.

Module 5 – Topic D - Lesson #: 23

Standard: 5.M.B.4a

Mathematical Practice: MP7

Target/Objective: Find the volumes of right rectangular prisms by multiplying the edge lengths.

Learning Activities:
Fluency: Students determine the product and then write and say a multiplication equation or related division equation to build fluency with multiplying and dividing decimals from module 4. Students determine how many centimeter cubes are in one layer and then count to find the volume of a right rectangular prism.
Launch: Students determine whether they have enough information to find the volume of a right rectangular prism.
Learn: Students determine that they can calculate the volume of a right rectangular prism by multiplying its length, width, and height. Students use $V=l\times w\times h$ to determine the volumes of right rectangular prisms. Students write an equation for finding the unknown edge length of a right rectangular prism.
Land/Debrief: Facilitate a class discussion about using multiplication to find the volume of prisms by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one problem finding the volume of a right rectangular prism by multiplying the edge lengths.

Resources: Tear out and cut apart Decimal Number Cards (in the student book). Place each set in an envelope. Prepare enough sets for each student pair to have one. Tear out Hidden Factors Mat (in the student book). Consider whether to prepare this material in advance or during the lesson.

Module 5 – Topic D - Lesson #: 24

Standard: 5. M.B.4b

Mathematical Practice: MP2

Target/Objective: Solve word problems involving volumes of right rectangular prisms.

Learning Activities:
Fluency: Students write the product to build fluency multiplying with decimals from module 4.
Launch: Students compare aquariums with different dimensions.
Learn: Students use a formula for the volume of a right rectangular prism to calculate capacities and liquid volumes. Students determine possible dimensions of a right rectangular prism when given its volume. Students find the height and the area of the base of a right rectangular prism when given its volume.
Land/Debrief: Facilitate a class discussion about solving word problems involving volumes of right rectangular prisms by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve three word problems involving volumes of right rectangular prisms.

Resources: Consider tearing out the Sprint pages in advance of the lesson.

Module 5 – Topic D - Lesson #: 25

Standard: 5. M.B.4b

Mathematical Practice: MP1

Target/Objective: Find the volumes of solid figures composed of right rectangular prisms.

Learning Activities:
Fluency: Students write a number in standard and expanded forms when given the word form to build fluency with reading and writing decimals to the thousandths place from module 4. Students determine the product to build fluency multiplying with decimals from module 4.
Launch: Students discuss methods they can use to determine the volume of a solid figure composed of right rectangular prisms.
Learn: Students build solid figures out of prisms to determine that volume is additive. Students determine the volume of figures composed of right rectangular prisms.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a discussion about finding the volume of solid figures composed of right rectangular prisms by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Display the L-shaped solid figure.

Daily Exit Ticket: Students will solve one problem finding the volume of a solid figure composed of right rectangular prisms.

Resources: Gather 20 cubes of one color for each student. Provide a different color to each student in every group of three.

Module 5 – Topic D - Lesson #: 26

Standard: 5.M.B.4

Mathematical Practice: MP1

Target/Objective: Solve word problems involving perimeter, area, and volume.

Learning Activities:
Fluency: Students write a number in standard and expanded forms when given the word form to build fluency with reading and writing decimals to the thousandths place from module 4. Students determine the product to build fluency multiplying with decimals from module 4.
Launch: Students sort situations into categories based on whether the situation requires finding perimeter, area, or volume.
Learn: Students solve real-world problems by finding perimeter, area, and volume.
Land/Debrief: Facilitate a class discussion about solving problems involving perimeter, area, and volume by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, (three-part) word problem involving perimeter, area, and volume.

Resources: Consider whether to remove Perimeter, Area, or Volume Cards from the student books and cut out the cards in advance or to have students prepare them during the lesson.

Module 5 – Topic D - Lesson #: 27

Standard: 5. M.B.4b

Mathematical Practice: MP4

Target/Objective: Apply concepts and formulas of volume to design a sculpture by using right rectangular prisms, part 1.

Learning Activities:
Fluency: Students multiply with whole numbers and fractions to build fluency with calculating the area of a rectangle with fraction side lengths from topic B. Students use symbols to compare two numbers in standard form to build fluency with comparing decimals from module 4.
Launch: Students notice and wonder about a sculpture composed of right rectangular prisms.
Learn: Students reason about how to create a right rectangular prism with a volume that is a fraction of another prism's volume. Students create sculptures with rectangular prisms and calculate the sculpture's total volume.
Land/Debrief: Facilitate a class discussion about creating a sculpture with right rectangular prisms by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, (two-part) problem applying concepts and formulas to find volume.

Resources: Print or copy Sculpture Guidelines and cut out one copy for each student pair. Print or copy Base 6 cm by 3 cm and Lids with Flaps. Prepare enough for the teacher to have one copy and for each student pair to have three copies. Print or copy Base 5 cm by 5 cm and Base 7 cm by 10 cm. Prepare three copies for each student pair. Consider whether to remove Sculpture Recording Sheet from the student books in advance or to have students remove them during the lesson. Save the index cards, Sculpture Guidelines, Sculpture Recording Sheets, and student-created sculptures for reuse in lesson 28.

Module 5 – Topic D - Lesson #: 28

Standard: 5. M.B.4c

Mathematical Practice: MP3

Target/Objective: Apply concepts and formulas of volume to design a sculpture by using right rectangular prisms, part 2.

Learning Activities:
Fluency: Students multiply with whole numbers, fractions, and mixed numbers to build fluency with calculating the area of a rectangle with fraction side lengths from topic B. Students use symbols to compare two numbers in different forms to build fluency with reading, writing, and comparing decimals from module 4.
Launch: Students describe a sculpture and compare it to their own sculptures created in the previous lesson.
Learn: Students critique a sculpture and check that it meets guidelines given in lesson 27. Students review sculptures and check that the sculptures meet given guidelines.
Land/Debrief: Facilitate a class discussion about reviewing a sculpture with right rectangular prisms by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one problem applying concepts and formulas of volume.

Resources: Gather index cards with numbers and student names, Sculpture Guidelines cards, Sculpture Recording Sheets, and student-created sculptures used in lesson 27. Assign the same student pairs and numbers on the index cards from lesson 27. Consider whether to label student-created sculptures with the number assigned to each pair on the index card in advance or have students label them during the lesson.

Unit Modifications for Special Population Students	
Advanced Learners	**<u>Module 5 – Topic A – Lesson 3</u> –** Consider presenting the following problem for students who need additional challenge: In parallelogram *ABCD*, the measure of ∠A is 13 the measure of ∠B. Find the measures of all the angles in the parallelogram. **<u>Module 5 – Topic B – Lesson 12</u> –** Challenge students to predict and then determine whether 235×318 has the same value as 218×335. **<u>Module 5 – Topic C – Lesson 16</u> –** Challenge students by asking them to draw a pyramid and identify how many faces, edges, and vertices it has. **<u>Module 5 – Topic D – Lesson 23</u> –** Consider challenging students to identify three edge lengths that would create a prism with a volume that is 4 times the volume of prism *A* from problem 1 or half the volume of prism *A* from problem 1.
Struggling Learners	**<u>Module 5 – Topic A – Lesson 1 –</u>** Students are familiar with the symbols used to notate parallel sides and equal side lengths from grade 4. Before they sort the figures on Collection of Figures, consider displaying just figure *B* and brainstorming what the symbols used to notate parallel sides mean. Repeat with figure *I* and the symbols used to notate equal side lengths. **<u>Module 5 – Topic B – Lesson 8 –</u>** Consider using the Tiling digital interactive to tile the unit square to confirm that 4 tiles with side lengths of 12 unit are needed to cover 1

	square unit. Students will explore more with the digital interactive in the next segment. **Module 5 – Topic C – Lesson 16 –** Consider posting pictures that show diverse ways to turn and label the same right rectangular prism. Highlight that the length, width, and height can be labeled in many ways. **Module 5 – Topic D – Lesson 24 –** Support students in monitoring their progress by having them take turns thinking aloud with a partner as they complete problem 3. For example, partner A thinks aloud and explains how they decompose 30,000, first into two factors and then into three factors, while partner B listens and asks questions. Then partners switch roles and repeat.
English Language Learners	**Module 5 – Topic A – Lesson 1 –** Students are familiar with the names of polygons taught in previous grades (i.e., triangle, quadrilateral, pentagon, trapezoid, parallelogram, rhombus, rectangle, square). Consider asking what students know about polygons to activate prior knowledge. List the names of familiar polygons and discuss the definition of each while displaying an example. **Module 5 – Topic B – Lesson 15 –** Consider showing pictures or videos of the contexts at the stations to support students with the word problems. For example, you might show a video of a ballet recital or a photo of a tray of doughnuts. **Module 5 – Topic C – Lesson 19 –** The term *layer* has multiple meanings in mathematics and everyday life (e.g., layers of a cake, layers of clothing). In this lesson, *layer* refers to a right rectangular prism with one dimension, that is one unit. Consider activating prior knowledge by asking when students may have used the word *layer*. **Module 5 – Topic D – Lesson 26 –** Presenting the situations in a picture format helps students by removing barriers associated with written and spoken language. Use these pictures to build background knowledge by inviting students to share their past experiences with each situation. If students do not recall the meaning of the familiar term *perimeter*, encourage them to set the cards that do not represent area or volume to the side as they sort. After they sort, encourage them to revisit the cards they set to the side, look for what the situations have in common, and use the commonalities to determine the meaning of *perimeter*.
Special Needs Learners	**Module 5 – Topic A – Lesson 6 –** Students may make assumptions about the given attributes and properties and become frustrated when their assumptions do not work or they encounter an unfamiliar property. For example, they may assume that the statement *at least 2 right angles* for quadrilateral 3 means the quadrilateral can be drawn with exactly 2 right angles, but a parallelogram with at least 2 right angles actually requires 4 right angles. The descriptions for quadrilaterals 11 and 12 include properties not previously discussed. Consider discussing strategies such as the following for persevering and dealing with frustration: • Use self-talk with statements such as "I can do this."

	• Have a growth mindset; instead of thinking "I don't get it," think "I don't get it *yet*." • Pause to take deep breaths and calm down before working again. • Choose a different approach. • Ask a classmate or the teacher a clarifying question. **Module 5 – Topic B – Lesson 13 –** Consider providing students with tetromino cutouts to use throughout this lesson to build composite figures. A template is available in grade 3 module 6 lesson 11. **Module 5 – Topic C – Lesson 17 –** Consider offering a straightedge to support students in drawing the cubes. If sketching a right rectangular prism packed with unit cubes presents a challenge to students, consider offering them the option of writing a description of what the prism looks like instead. **Module 5 – Topic D – Lesson 23 –** If you created an anchor chart in a previous lesson to summarize ways to find volume, add the V=l×w×h formula to that chart. In addition, consider color-coding the chart to show that l×w has the same value as *B*.
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:

SL.5.1. (A-D) Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

***Module 5 - Topic C - Lesson 16 -**

Invite students to think–pair–share about any similarities and differences they notice between the right rectangular prism and the rectangle. Invite students to turn and talk about what they think what will happen to the rectangle and to the right rectangular prism if you change the length and width. Then direct students to watch the rectangle and right rectangular prism as you adjust the length and then adjust the width.

NJSLSA.L5. Demonstrate understanding of word relationships and nuances in word meanings.

***Module 5 - Topic A - Lesson 1 –**

The term *plane* is introduced in this segment. Support students in developing an understanding of the use of the term *plane* in this module and how it is different from the word *plain* and other meanings of the word *plane*.

- A piece of paper is like a *plane* except that it has thickness and does not extend forever in all directions.
- Students are likely to think of *planes* as airplanes.
- Something that is *plain* might be considered ordinary.

SL.5.2. Summarize a written text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally).

***Module 5 - Topic C - Lesson 20 -**

Display the visual with the objects, quantities, and the question about volume from Launch.

Which quantity has the greatest volume?

1 cubic foot of popcorn	1 cubic foot of juice boxes	1 cubic foot of marbles	1 cubic foot of water

The following series of questions is challenging and is designed to advance student thinking about volume. Add to or omit questions to meet the class's needs. Invite students to turn and talk about what substances besides water they could use to fill a container.

Integration of 21st Century Skills

Standards:

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

***Module 5 - Topic A - Lesson 6 –**

Students sketch quadrilaterals from given descriptions.

Display the description and quadrilaterals:

Description	Quadrilaterals
• parallelogram • 2 different side lengths	

Invite students to think–pair–share about which quadrilateral *A–F* can be drawn from the description and which cannot. Encourage students to share their reasoning.

9.4.5.CT.1: **Identify and gather relevant data that will aid in the problem-solving process.**
***Module 5 - Topic C - Lesson 18 -**
Give each student pair 80 interlocking cubes and have them make the prism from problem 1 by connecting 3 cubes that are the same color.
Then direct them to remove Box 1 from one of their books. Tell them to cut out box 1, fold the sides up, and tape the box together.
Direct students to erase the interior lines that show individual cubes, leaving only the edges of the prism in part (a).
Then read problem 1(c) aloud. Have students complete problem 1(c) with their partners.

9.4.5.IML.2: **Create a visual representation to organize information about a problem or issue.**
***Module 5 - Topic B - Lesson 14 –**
Students determine the area of the garden and the cost to cover it with compost. Direct students to problem 1 in their books. Have students work with a partner to use the Read–Draw–Write process to solve the problem. Encourage students to self-select their approaches and materials. Circulate and observe student methods. Select two or three students to share in the next segment. Look for work samples that use a variety of methods to multiply mixed numbers and to determine the area of the garden.
The following student work samples demonstrate different methods for determining the area of the garden.

9.4.5.CI.3: **Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.**
***Module 5 - Topic D - Lesson 22 -**
Direct students to problem 1 in their books. Invite students to turn and talk about whether they need to determine the edge lengths of the top face before determining the prism's volume.
Ask students to complete problem 1 with a partner. Circulate as students work, asking the following questions:

- Can you use a formula to calculate the volume of the prism?
- How do you use the formula?
- Does your answer make sense? Why?

Unit Title: **Module 6** – Foundations to Geometry in the Coordinate Plane

Unit Description: Module 6 introduces the coordinate plane. Students construct a coordinate plane, identify the location of points in the plane, and identify patterns in ordered pairs that create lines. They draw quadrilaterals in the plane and use the plane to represent data.

Unit Duration: **Approximately 25 days (including days for assessments)** **Lessons 10 and 19 are optional*

Desired Results

Standard(s): (*Bolded standards are assessed in the end of Module Assessment***)**

5.OA.B.3

Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.

5.NF.B.4

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

5.G.A.2

Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

5.G.B.3

Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.

For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.

5.G.B.4

Classify two-dimensional figures in a hierarchy based on properties.

5.NF.B.4.a

Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$.

For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, $(a/b) \times (c/d) = ac/bd$.)

5.NF.B.4.b

Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by

multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

5.G.A.1

Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

Understandings:

- **Module 6 – Topic A – I can** build on their understanding of number lines to construct a coordinate system composed of intersecting horizontal and vertical number lines. **I can** plot points and identify ordered pairs for points. **I can** describe the location of a point in the coordinate plane as a horizontal distance from the *y*-axis and a vertical distance from the x-axis. **I can** conclude the topic by using a map on a coordinate plane to identify locations and describe distances and directions between those locations.
- **Module 6 – Topic B – I can** extend my understanding of the coordinate plane by identifying properties of horizontal and vertical lines in the coordinate plane. **I can** then work with two number patterns simultaneously, generating terms when given rules and starting numbers, using the patterns to create ordered pairs, and plotting the points that represent the ordered pairs. **I can** transition to using tables and graphs to examine relationships between corresponding terms in two number patterns. **I can** identify, describe, and compare addition, subtraction, multiplication, and division number relationships in the coordinate plane.
- **Module 6 – Topic C – I can** develop the understanding that lines have an infinite number of points. **I can** realize that one point has many lines through it, but any two points can have only one line that passes through them both. **I can** work with geometric figures in the coordinate

Essential Questions:

- **Module 6 – Topic A – Can I build my understanding of a coordinate system?**
- **Module 6 – Topic B – Can I build my understanding of finding patterns in a coordinate system?**
- **Module 6 – Topic C – Can I solve mathematical problems in a coordinate plane?**
- **Module 6 – Topic D - Can I recognize that coordinate planes are useful tools for representing data, modeling relationships, and solving real-world problems?**

plane. **I can** classify angles, identify parallel and perpendicular line segments, and use those observations to classify quadrilaterals **I can** graph in the coordinate plane. **I can** identify lines of symmetry and look for patterns in the coordinates of symmetric points. **I can** solve problems by drawing rectangles in the coordinate plane and determining their vertices, perimeters, and areas.

- **Module 6 – Topic D - I can** recognize that the coordinate plane is a useful tool for representing data, modeling relationships, and solving real-world problems. **I can** come to understand that graphs can tell stories. **I can** interpret the meaning of points and line segments in a line graph that represents real-world data. **I can** revisit relationships between two number patterns. **I can** solve problems by using a graph to identify and describe the number patterns in the *x*- and *y*-coordinates.

Assessment Evidence

Assessments:

- Daily Exit Tickets
- Equip Pre-assessments for Module
- End of Topic Quizzes
- End of Module Assessment

Benchmarks:

- The iReady Assessment is administered in the Fall and Winter.

Learning Plan

***Resources listed below are additional items that are needed in addition to the resources listed in the lesson overview in the Teacher's Manual.**

Module 6 – Topic A - Lesson #: 1

Standard: 5.G.A.1

Mathematical Practice: MP6

Target/Objective: Construct a coordinate system on a line.

Learning Activities:

Fluency: Students identify a fractional unit and count to 4 by halves and then by fourths on a horizontal number line to prepare for constructing a coordinate system on a line. Students determine an interval, the value represented by a point, and a point's distance from 0 on a horizontal number line to prepare for constructing a coordinate system on a line. Students use gestures for a point, line segments, and lines to prepare for constructing a coordinate system.
Launch: Students describe the location of a point on a line.

Learn: Students construct a coordinate system to describe and identify the locations of points on a line. Students use a coordinate system to identify a point's coordinate and to plot a point on a line.
Land/Debrief: Facilitate a class discussion about constructing a coordinate system on a line by using the following prompts. Encourage students to restate or add on to their classmates' responses. Display the slanted line with a single point from Launch.

Daily Exit Ticket: Students will solve one, four-part problem constructing, plotting and labeling points on a line.

Resources: Consider whether to remove Slanted Line from the student books in advance or to have students remove them during the lesson.

Module 6 – Topic A - Lesson #: 2

Standard: 5.G.A.2

Mathematical Practice: MP7

Target/Objective: Construct a coordinate system in a plane.

Learning Activities:
Fluency: Students identify a fractional unit and count to 4 by halves, and then by fourths, on a vertical number line to prepare for constructing a coordinate system in a plane. Students determine an interval length, a coordinate of a point, and a point's distance from 0 on a vertical number line to prepare for constructing a coordinate system in a plane. Students use gestures for a point, ray, and angles to prepare for working with angles in the coordinate plane beginning in topic C.
Launch: Students describe the location of a point in a plane.
Learn: Students construct a coordinate system to describe and identify the locations of points in a plane. Students identify the locations of points in a coordinate plane by using ordered pairs. Students plot points in the coordinate plane by using ordered pairs.
Land/Debrief: Facilitate a class discussion about plotting and identifying the locations of points in the coordinate plane by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, three-part problem finding and plotting points on a coordinate plane.

Resources: Consider whether to remove Number Line and Coordinate System in a Plane from the student books in advance or to have students remove them during the lesson.

Module 6 – Topic A - Lesson #: 3

Standard: 5.G.A.2

Mathematical Practice: MP1

Target/Objective: Identify and plot points by using ordered pairs.

Learning Activities:
Fluency: Students determine the volume of a solid figure when all cubes are visible to build fluency with measuring volume from module 5. Students answer questions about points on a horizontal number line with an interval length of 14 to develop fluency with identifying points in the coordinate plane.

Launch: Students analyze points plotted in the coordinate plane and discuss similarities and differences in the points' coordinates.
Learn: Students construct a coordinate system and describe the location of points on axes in the coordinate plane. Students plot points in the coordinate plane.
Land/Debrief: Facilitate a class discussion about describing locations of points in a coordinate plane by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, six-part problem finding and plotting points on a coordinate plane.

Resources: Consider whether to remove Grid with Points from the student books in advance or to have students remove them during the lesson.

Module 6 – Topic A - Lesson #: 4

Standard: 5.G.A.2

Mathematical Practice: MP2

Target/Objective: Describe the distance and direction between points in the coordinate plane.

Learning Activities:
Fluency: Students determine the volume of a solid figure when some cubes are not visible to build fluency with measuring volume by counting cubes. Students answer questions about points on a vertical number line with an interval length of 14 to develop fluency with identifying points in the coordinate plane.
Launch: Students explore the benefit of describing locations with points in the coordinate plane.
Learn: Students describe how to move from one point to another point in a coordinate plane. Students use distance and direction to determine the locations of points.
Land/Debrief: Facilitate a class discussion about how to describe movement in the coordinate plane by using the following prompts. Encourage students to restate or add on to their classmates' responses.
Display the map of the zoo with the compass rose.

Daily Exit Ticket: Students will solve one, three-part problem locating and describing the distance and direction between points in the coordinate plane.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 6 – Topic B - Lesson #: 5

Standard: 5.G.A.1

Mathematical Practice: MP8

Target/Objective: Identify properties of horizontal and vertical lines.

Learning Activities:
Fluency: Students identify quadrilaterals with a specified property and use the most precise names to prepare for graphing and classifying polygons in the coordinate plane beginning in topic C.

Students use ordered pairs with whole number coordinates to identify and plot points in a coordinate plane to prepare for identifying properties of horizontal and vertical lines.
Launch: Students compare and reason about the locations of points plotted in the coordinate plane.
Learn: Students identify and compare characteristics of horizontal and vertical lines. Students compare different horizontal lines. Students use given criteria to create vertical lines.
Land/Debrief: Facilitate a class discussion about the properties of horizontal and vertical lines by using the following prompts. Encourage students to restate or add on to their classmates' responses. Display the coordinate plane showing lines c and m.

Daily Exit Ticket: Students will solve one, four-part problem involving horizontal and vertical lines.

Resources: Consider whether to have students remove Coordinate Plane with Points and Ordered Pairs and Grid from the student books in advance or to have students remove them during the lesson.

Module 6 – Topic B - Lesson #: 6

Standard: 5.G.A.1

Mathematical Practice: MP6

Target/Objective: Use properties of horizontal and vertical lines to solve problems.

Learning Activities:
Fluency: Students identify quadrilaterals with a specified property and use the most precise names to prepare for graphing and classifying polygons in the coordinate plane beginning in topic C. Students use ordered pairs with whole number and fraction coordinates to identify and plot points in a coordinate plane to prepare for using properties of horizontal and vertical lines to solve problems.
Launch: Students compare graphs of vertical and horizontal lines.
Learn: Students draw horizontal and vertical lines in the coordinate plane. Students determine the distance between parallel lines. Students identify regions of the coordinate plane and their characteristics.
Land/Debrief: Gather students with their Problem Sets. Facilitate a discussion about the properties of horizontal and vertical lines in the coordinate plane by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, four-part problem using properties of horizontal and vertical lines to solve problems.

Resources: Consider whether to remove Coordinate Plane with Points from the student books in advance or to have students remove it during the lesson. Gather three colored pencils (red, green, and blue) for each student.

Module 6 – Topic B - Lesson #: 7

Standard: 5.OA.B.3

Mathematical Practice: MP7

Target/Objective: Generate number patterns to form ordered pairs.

Learning Activities:

Fluency: Students write and evaluate an expression to build fluency with two-step calculations involving decimals from module 4. Students draw an example of a specified line or line segment to prepare for working with line segments in the coordinate plane beginning in topic C. Students complete a pattern to prepare for describing patterns in the coordinates of points on a line.
Launch: Students notice and wonder about patterns of points in a coordinate plane.
Learn: Students determine numbers in a number pattern and compare number patterns. Students generate two number patterns by using two rules. Students form ordered pairs from corresponding terms of two patterns and graph the ordered pairs in the coordinate plane.
Land/Debrief: facilitate a discussion about number patterns and ordered pairs by using the following prompts. Encourage students to restate or add on to their classmates' responses. Display the table and the plotted points representing pattern A and pattern B.

Daily Exit Ticket: Students will solve one, two-part problem generating number patterns to form ordered pairs.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 6 – Topic B - Lesson #: 8

Standard: 5.OA.B.3

Mathematical Practice: MP8

Target/Objective: Identify addition and subtraction relationships between corresponding terms in number patterns.

Learning Activities:
Fluency: Students apply the formula $V=l\times w\times h$ to calculate the volume of a right rectangular prism and build fluency with finding volume from module 5. Students draw an example of a specified ray or angle to prepare for working with angles in the coordinate plane beginning in topic C. Students complete a pattern to prepare for describing patterns between points and lines in the coordinate plane.
Launch: Students examine graphs that show patterns between points plotted in the coordinate plane.
Learn: Students use addition rules to generate ***x***- and ***y***-coordinates, form ordered pairs, and plot points in the coordinate plane. Students identify addition and subtraction relationships between corresponding ***x***- and ***y***-coordinates.
Land/Debrief: Gather the class with their Problem Sets. Use the following prompts to facilitate a class discussion about addition rules for coordinates and addition and subtraction relationships between corresponding coordinates. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will complete a table (two problems) and plot four ordered pairs on a coordinate plane.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 6 – Topic B - Lesson #: 9

Standard: 5.OA.B.3

Mathematical Practice: MP8

Target/Objective: Identify multiplication and division relationships between corresponding terms in number patterns.

Learning Activities:
Fluency: Students apply the formula V=B×h to calculate the volume of a right rectangular prism and build fluency with finding volume from module 5. Students write and evaluate an expression to build fluency with two-step calculations involving decimals from module 4. Students complete a pattern to prepare for describing patterns between points and lines in the coordinate plane.
Launch: Students examine tables of coordinates and look for patterns.
Learn: Students use addition rules to generate ***x***- and ***y***-coordinates, form ordered pairs, and plot points in the coordinate plane. Students identify and use multiplication and division relationships between corresponding ***x***- and ***y***-coordinates.
Land/Debrief: Facilitate a class discussion about multiplication and division relationships between coordinates by using the following prompts. Encourage students to restate or add on to their classmates' responses. Display the two tables from Launch.

Daily Exit Ticket: Students will solve one problem using a table to plot ordered pairs.

Resources: No additional materials or manipulatives other than what is suggested in the Lesson Overview.

Module 6 – Topic B - Lesson #: 10 (optional)

Standard: 5.OA.B.3

Mathematical Practice: MP7

Target/Objective: Identify mixed-operation relationships between corresponding terms in number patterns.

Learning Activities:
Fluency: Students find the product of a two- or three-factor expression to build fluency with finding the volume of right rectangular prisms from module 5.
Launch: Students examine tables of coordinates and look for patterns.
Learn: Students determine a relationship with two operations between coordinates. Students generate number patterns of coordinates that have a relationship with two operations. Students identify mixed-operation relationships between coordinates given in tables and graphs.
Land/Debrief: Facilitate a class discussion about relationships between coordinates by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will complete one table using a plotted coordinate plane.

Resources: Consider tearing out the Sprint pages in advance of the lesson. Gather two different colored pencils for each student. Print or copy Pattern and Relationship Cards and cut out the cards. Prepare enough for 1 set of cards per group of 4 students.

Module 6 – Topic C- Lesson #: 11

Standard: 5.G.A.1

Mathematical Practice: MP3

Target/Objective: Draw lines in the coordinate plane and identify points on the lines.

Learning Activities:
Fluency: Students count by a unit of 20° on a 180° protractor to prepare for graphing and classifying polygons in the coordinate plane beginning in lesson 12. Students classify an angle, estimate the angle measure, and determine the angle measure by using a 180° protractor to prepare for graphing and classifying polygons in the coordinate plane beginning in lesson 12. Students determine the rule for ***x***-coordinates and ***y***-coordinates and then describe the relationship between the ***x***- and ***y***-coordinates to prepare for drawing lines in the coordinate plane.
Launch: Students draw lines through points plotted in the coordinate plane.
Learn: Students identify points on a line other than the two points used to draw the line. Students draw lines through a point and identify points on each line.
Land/Debrief: Facilitate a class discussion about lines and points on lines by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will complete one, three-part problem in which they will plot and labeled ordered pairs on a coordinate plane.

Resources: Prepare three signs: Strongly Agree, Strongly Disagree, and Undecided. Hang the signs in various locations in the classroom. Consider whether to remove Coordinate Planes A–D from the student books in advance or to have students remove them during the lesson.

Module 6 – Topic C - Lesson #: 12

Standard: 5.G.A.2

Mathematical Practice: MP7

Target/Objective: Graph and classify quadrilaterals in the coordinate plane.

Learning Activities:
Fluency: Students count by a unit of 30° on a 180° protractor to prepare for graphing and classifying quadrilaterals in the coordinate plane. Students classify an angle, estimate the angle measure, and determine the angle measure by using a 180° protractor to prepare for graphing and classifying quadrilaterals in the coordinate plane. Students determine the rule for ***x***-coordinates and ***y***-coordinates and then describe the relationship between the ***x***- and ***y***-coordinates to build fluency with describing patterns in the coordinate plane from topic B.
Launch: Students discuss properties of a figure drawn in the coordinate plane.
Learn: Students draw vertical and horizontal line segments in the coordinate plane and determine lengths of line segments. Students draw and measure angles in the coordinate plane and determine whether angles are acute, obtuse, or right. Students draw quadrilaterals in the coordinate plane and classify quadrilaterals based on their properties.
Land/Debrief: Facilitate a class discussion about line segments, angles, and quadrilaterals graphed in the coordinate plane by using the following prompts. Encourage students to restate or add to their classmates' responses.

Daily Exit Ticket: Students will complete one, three-part problem in which they will plot ordered pairs on a coordinate plane.
Resources: Print or copy Quadrilateral Cards. Prepare 1 set of cards for each group of four students.

Module 6 – Topic C - Lesson #: 13

Standard: 5.G.A.2

Mathematical Practice: MP1

Target/Objective: Draw symmetric figures in the coordinate plane.

Learning Activities:
Fluency: Students multiply a three-digit number by a three-digit number to build fluency with multiplying multi-digit whole numbers by using the standard algorithm. Students count by a unit of 1 foot and rename feet as yards to build fluency with converting measurements from module 3. Students decide whether a given line is a line of symmetry for a figure to prepare for drawing symmetric figures in the coordinate plane.
Launch: Students identify lines of symmetry in a piece of art.
Learn: Students draw figures in the coordinate plane with a vertical line of symmetry. Students draw figures in the coordinate plane with a horizontal line of symmetry.
Land/Debrief: Facilitate a class discussion about drawing symmetric figures in the coordinate plane by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, two-part problem by drawing a symmetric figure using ordered pairs on a coordinate plane.

Resources: Consider whether to remove Coordinate Plane from the student books in advance or to have students remove them during the lesson. Gather four different colored pencils for each student. Review the Math Past resource to support delivery of Launch.

Module 6 – Topic C - Lesson #: 14

Standard: 5.G.A.2

Mathematical Practice: MP5

Target/Objective: Solve mathematical problems with rectangles in the coordinate plane.

Learning Activities:
Fluency: Students count by a unit of 1 quart and rename quarts as gallons to build fluency with converting measurements from module 3. Students calculate the area and perimeter of a rectangle to prepare for using the coordinate plane to reason about area and perimeter of rectangles in lesson 15. Students decide whether a given line is a line of symmetry for a figure to develop fluency with drawing symmetric figures in the coordinate plane.
Launch: Students compare rectangles graphed in the coordinate plane.
Learn: Students determine the location of a rectangle's vertex in the coordinate plane when given the locations of the other three vertices. Students determine the ordered pairs for two vertices of a rectangle when given the ordered pairs for two other vertices. Students determine the ordered pairs for two vertices of a rectangle when given information about side lengths.
Land/Debrief: Gather students with their Problem Sets. Facilitate a class discussion about solving mathematical problems with rectangles in the coordinate plane by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, three-part problem with rectangles in a coordinate plane.

Resources: Consider whether to remove Rectangle Vertices from the student books in advance or to have students remove them during the lesson.

Module 6 – Topic C - Lesson #: 15

Standard: 5.G.A.2

Mathematical Practice: MP3

Target/Objective: Use the coordinate plane to reason about perimeters and areas of rectangles.

Learning Activities:
Fluency: Students multiply a three-digit number by a three-digit number to build fluency with multiplying multi-digit whole numbers by using the standard algorithm. Students calculate the area and perimeter of a rectangle to prepare for using the coordinate plane to reason about area and perimeter of rectangles.
Launch: Students determine lengths of line segments graphed in coordinate planes with different scales.
Learn: Students determine the perimeters of rectangles graphed in the coordinate plane. Students determine the areas of rectangles graphed in the coordinate plane.
Land/Debrief: Facilitate a class discussion about determining perimeters and areas of rectangles in the coordinate plane by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, two-part problem using the coordinate plane to reason about perimeters and areas of rectangles.

Resources: Prepare four signs on paper: one with the letter sequence *B*, *A*, *C*; one with *B*, *C*, *A*; one with *C*, *B*, *A*; and one with *C*, *A*, *B*. Hang the signs in various locations in the classroom.

Module 6 – Topic D - Lesson #: 16

Standard: 5.G.A.2

Mathematical Practice: MP3

Target/Objective: Interpret graphs that represent real-world situations.

Learning Activities:
Fluency: Students sort equivalent expressions and draw a model to represent each division expression to build fluency with interpreting a fraction as division from module 2. Students count by a unit of 500 millimeters and rename millimeters as meters to prepare for interpreting graphs that represent real-world situations.
Launch: Students compare a bar graph with a graph of points in the coordinate plane.
Learn: Students interpret data shown in a bar graph and as points in the coordinate plane. Students solve real-world problems by using coordinates of points.
Land/Debrief: Gather the class with their Problem Sets. Facilitate a discussion about interpreting graphs that represent real-world situations by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, five-part problem interpreting graphs that represent real-world situations.

Resources: Prepare four signs, labeled A, B, C, and D, on paper. Hang the signs in various locations in the classroom. Tear out and cut apart Equivalent Expressions Cards, Set A from the student books. Consider whether to prepare these materials in advance or to have students prepare them during the lesson.

Module 6 – Topic D - Lesson #: 17

Standard: 5.G.A.2

Mathematical Practice: MP2

Target/Objective: Plot data in the coordinate plane and analyze relationships.

Learning Activities:
Fluency: Students sort equivalent expressions and draw a model to represent each division expression to build fluency with interpreting a fraction as division from module 2. Students count by a unit of 500 milligrams and rename milligrams as grams to build fluency with converting measurements from module 1.
Launch: Students consider whether they can represent data with a bar graph.
Learn: Students collect data, represent data in the coordinate plane, and use the graph to draw conclusions. Students collect data, represent data in the coordinate plane, and use the graph to draw conclusions.
Land/Debrief: Facilitate a class discussion about representing data in the coordinate plane by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, three-point problem plotting data in the coordinate plane and analyze relationships.

Resources: Tear out and cut apart Equivalent Expressions Cards, Set B from the student books. Consider whether to prepare these materials in advance or to have students prepare them during the lesson. Consider whether to remove Grid Paper from the student books in advance or to have students remove them during the lesson. Gather 2 different colored pencils for each student.

Module 6 – Topic D - Lesson #: 18

Standard: 5.G.A.2

Mathematical Practice: MP2

Target/Objective: Interpret line graphs.

Learning Activities:
Fluency: Students match rectangles with the same area and record an expression to build fluency with finding the area of a rectangle with fraction side lengths from module 5. Students complete a table by using two given rules to build fluency with generating patterns with whole numbers from topic B.
Launch: Students interpret a graph that represents real-world data.
Learn: Students interpret the meaning of points on a line graph. Students interpret trends from a line graph. Students interpret and compare two graphs that show distance walked over time.

Land/Debrief: Gather the class with their Problem Sets. Facilitate a discussion about how the coordinate plane can be used to represent data by using the following prompts. Encourage students to restate or add to their classmates' responses.

Daily Exit Ticket: Students will solve one, five-part problem interpreting line graphs.

Resources: Tear out and cut apart Area Match Cards, Set A from the student books. Consider whether to prepare these materials in advance or to have students prepare them during the lesson. Consider whether to remove Number Patterns Table from the student books and place inside whiteboards in advance or to have students prepare them during the lesson. Consider whether to remove Distance Walked from the student books in advance or to have students remove them during the lesson.

Module 6 – Topic D - Lesson #: 19 (optional)

Standard: 5.OA.B.3

Mathematical Practice: MP5

Target/Objective: Reason about visual patterns by using tables and graphs.

Learning Activities:
Fluency: Students match rectangles with the same area and record an expression to build fluency with finding the area of a rectangle with fraction side lengths from module 5. Students complete a table by using two given rules to build fluency with generating patterns with whole numbers and fractions from topic B.
Launch: Students compare two visual patterns.
Learn: Students use tables and graphs to analyze patterns. Students use information from a graph to create two visual patterns.
Land/Debrief: Gather students with their Pattern A, B, or C. Invite a couple of students to share their process for creating steps of a visual pattern based on information in a graph. Then facilitate a discussion by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will solve one, five-part problem about visual patterns by using tables and graphs.

Resources: Print or copy Pattern A, Pattern B, and Pattern C. Prepare enough copies so that each student pair can select one pattern. Tear out and cut apart Area Match Cards, Set B from the student book. Consider whether to prepare these materials in advance or to have students prepare them during the lesson. Consider whether to remove Number Patterns Table from the student books and place inside whiteboards in advance or to have students prepare them during the lesson. Gather 2 different colored pencils for each student pair.

Module 6 – Topic D - Lesson #: 20

Standard: 5.OA.B.3

Mathematical Practice: MP4, MP5

Target/Objective: Reason about patterns in real-world situations.

Learning Activities:
Fluency: Students calculate the areas of a pair of rectangles to build fluency with finding the area of a rectangle with fraction side lengths from module 5. Students plot points in a coordinate plane by using ordered pairs in a table to build fluency with plotting ordered pairs in a coordinate plane from topic A.
Launch: Students watch a video and generate questions about the number of nickels put into a jar on the last day of a fundraiser.
Learn: Students develop and apply strategies for determining the number of nickels put into the jar on the last day of the coin drive. Students share and compare solution strategies and reason about their connections.
Land/Debrief: Facilitate a class discussion about how students used patterns and relationships between corresponding terms to answer the focus question by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Daily Exit Ticket: Students will write a reflection about today's lesson.

Resources: Consider whether to have students remove Coordinate Plane from the student books in advance or during the lesson.

Unit Modifications for Special Population Students	
Advanced Learners	**Module 6 – Topic A – Lesson 3 –** Invite students who need an additional challenge to construct and label a coordinate plane that could be used to plot the exact locations of the points (412,12) and (12,21). **Module 6 – Topic B – Lesson 9 –** To challenge students, have them determine how they can identify the 50th *x*- and *y*-coordinates in problem 2. Have them use the corresponding coordinates to form the 50th ordered pair. **Module 6 – Topic C – Lesson 15 –** Consider asking students who need additional challenge to determine coordinates of points *P* and Q if the perimeter of the rectangle is 17 ½ units. **Module 6 – Topic D – Lesson 20 –** Consider challenging students to use a different approach to find the number of nickels put into the jar on the last day of the coin drive. Also consider having students answer other questions generated in Launch or one or both of the following questions: • How many days did the fundraiser last? • How much money is in the jar on the last day of the coin drive?
Struggling Learners	**Module 6 – Topic A – Lesson 1 –** Consider labeling the tick marks on the line so students can refer to them while identifying the coordinate of each point. **Module 6 – Topic B – Lesson 5 –** Consider providing a completed, labeled coordinate plane to students who need additional support with using grid paper. **Module 6 – Topic C – Lesson 11 –** Consider giving students a list of ordered pairs to sort into two categories: points on the line and points not on the line. **Module 6 – Topic D – Lesson 17 –** Consider asking students whether they have ever heard the word ambidextrous before. Tell them that people are ambidextrous if they can use their right and left hands equally well. Invite volunteers to share something they do with their non-dominant hand, such as throw a ball, play an instrument, or use a fork.
English Language Learners	**Module 6 – Topic A – Lesson 1 –** To support the terms *coordinate* and *coordinate system*, consider creating an anchor chart titled Coordinate System to connect the written terms to a visual representation. This anchor chart can be added to as the topic progresses. **Module 6 – Topic B – Lesson 8 –** Consider supporting student responses with the Talking Tool. Invite students to use the Share Your Thinking section to explain their reasoning. **Module 6 – Topic C – Lesson 13 –** Consider supporting student responses with the Talking Tool throughout the lesson. Invite students to use the Share Your Thinking section to explain their reasoning and methods. Encourage precise language by posting a word bank that includes the following terms: • Symmetric, line of symmetry

	• Horizontal, vertical, diagonal • Side, angle, line segment, midpoint • x-coordinate, *y*-coordinate **Module 6 – Topic D – Lesson 16 –** *Bar graph* is a familiar term. In previous grades, students learn a bar graph is one where each category's value is represented by a rectangular bar. Consider previewing the term by displaying a bar graph and asking students to define it in their own words before they notice and wonder about the graphs. Ask students how many rectangular bars they see in the graph, and then confirm by counting aloud as a class while tracing the outline of each rectangular bar.
Special Needs Learners	**Module 6 – Topic A – Lesson 3 –** To support students in constructing the coordinate system, consider providing a checklist that students can refer to as they work. • Use a straightedge to draw a horizontal line through point *A*. Label this line as *x*. • Use a straightedge to draw a vertical line through point *B*. Label this line as *y*. • Label the origin as 0. • Label every other grid line along the axes with a whole number. Offer students the option of working with a partner to support one another in drawing and labeling the axes. **Module 6 – Topic B – Lesson 7 –** To support students in recognizing relationships in the coordinate plane, invite them to draw and label the horizontal and vertical distances from one point to the next in their books. **Module 6 – Topic C – Lesson 14 –** Consider drawing or displaying a diagram to show how a line of symmetry can be a useful tool for determining the locations of vertices. For example, in this graph, highlight that the distance from point *A* to the line of symmetry is the same as the distance from point *D* to the line of symmetry. **Module 6 – Topic D – Lesson 18 –** Consider providing students with printed copies of the spelling bee graph, the graph of Fido's weight, and the graph of Yuna's walk. Allow students to trace or annotate the graphs during the discussions. Drawing or pointing to data points and line segments may help students make more sense of the information provided in the graphs.
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:

SL.5.1. (A-D) Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

***Module 6 - Topic B - Lesson 10 -**

Direct students to problem 1 in their books. Have students use one color to plot points with the coordinates shown in table A and use another color to plot points with the coordinates shown in table B. Have them fill in each box with the color that corresponds to its set of points. Have students turn and talk to a partner about what they notice about the location of each set of points. Point to the column of *x*-coordinates in each table. Have students think–pair–share about how we can use this information to determine a relationship with two operations between the *x*- and *y*-coordinates in table B. Invite students to turn and talk about how they used the relationships between coordinates in both tables to determine the relationship between the coordinates in table B.

NJSLSA.L5. Demonstrate understanding of word relationships and nuances in word meanings.

***Module 6 - Topic A - Lesson 4 -**

If students need support with identifying a new location for the restrooms, consider asking guiding questions to help students associate *east* and *south* with the directional words *right* and *down*. Tell students that on this map we know that south is down and that east is right because of the compass rose.

- How would you describe the direction of east?
- How would you describe the direction of south?

Students may also benefit from labeling the compass rose with the directional words *up*, *right*, *down*, and *left*.

SL.5.2. Summarize a written text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally).

***Module 6 - Topic C - Lesson 15 -**

Introduce the Take a Stand routine to the class. Draw students' attention to the signs hanging in the classroom that list various orders of *A*, *B*, and *C*. Display the graphs of the line segments. Invite students to mentally list the line segments from shortest to longest and to stand beside the sign that best describes their thinking. When all students are standing near a sign, allow 1 minute for groups to discuss the reasons why they chose that sign. Then call on each group to share reasons for their selection. Invite students who change their minds during the discussion to join a different group. If needed, confirm that the list of line segments from shortest to longest is *C*, *A*, *B*. Have students return to their seats. As a class, reflect on determining lengths of line segments in the coordinate plane.

Integration of 21st Century Skills

Standards:

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

***Module 6 - Topic C - Lesson 12 -**

Invite students think–pair–share about where to plot point *N* so that ∠MLN is a right angle. As students share, record several ordered pairs in a table. Direct students to confirm the angle's measure with a protractor and record their answer to part (b). Direct students to work with a partner to plot point *O* so that ∠MLO is an obtuse angle. Have them use a protractor to measure the angle to confirm its measure is greater than 90° and record their answer to part (c). Invite several pairs to share the ordered pairs they chose for point *O*. Add a column to the table and record the ordered pairs as students share. Direct students to work with a partner to plot point *P* so that ∠MLP

is an acute angle. Have them measure the angle with a protractor to confirm its measure is less than 90° and record their answer to part (d). Invite several pairs to share the ordered pairs they chose for point *P*. Add a column to the table and record the ordered pairs as students share. Have students turn and talk about how to determine whether angles graphed in the coordinate plane are right, acute, or obtuse.

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process.
***Module 6 - Topic A - Lesson 4 -**
Display the coordinate plane with the compass rose. Point to the compass rose in the corner of the coordinate plane. Write the coordinates of the first aid station, (6, 7). As students share, write the suggested coordinates of the restrooms. Then ask the following questions. Invite students to turn and talk to describe how to move from the lion exhibit to the locations they chose for the restrooms. Point to giraffe exhibit. As students share the movements, trace the path with your finger.
Invite students to turn and talk to describe the movement from the first aid station to the panda exhibit.

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.
***Module 6 - Topic D - Lesson 16 -**
Students may draw various models to represent the division expression, including area models or tape diagrams. Encourage the use of highlighters or colored pencils as a support.
9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.
***Module 6 - Topic B - Lesson 6 -**
Ask students to turn and talk about how they know the two lines are parallel. Draw some horizontal line segments showing the distance between line ℓ and the *y*-axis. Ask students to think–pair–share about the following prompt. Highlight similarities and differences in student methods. Invite students to use their fingers to trace the following lines on the displayed graph, keeping in mind that there may be more than one possibility:

- A line that is parallel to line m and 3 units from line m
- A line that is perpendicular to line ℓ and 4 units above the x-axis
- A vertical line that is 2 units closer to the *y*-axis than line m

Ask students to turn and talk about how to determine the distance between parallel lines in the coordinate plane.