



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): Third

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 3, students multiply and divide within 100 by using different strategies. They recognize fractions as numbers, built from unit fractions, and use visual fraction models to describe parts of a whole. Students develop an understanding of area concepts and relate area to addition and multiplication. They reason about shapes and their attributes and recognize perimeter and area as attributes of plane figures. Students use place value understanding and properties of operations to perform multi-digit arithmetic.

Grading Procedures:

Weighted Categories:
60% Major Assessments
40% Minor Assessments

Primary Resources:

Eureka Math Squared by Great Minds
Zearn Math Independent Digital Lesson Component

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

Designed by: Suzanne Brennan

Under the Direction of: Gretchen Gerber and Janine Ryan

Written: _____

Revised: _____

BOE Approval: _____

Unit Title: Module 1 Multiplication and Division with Units of 2, 3, 4, 5, and 10	
Unit Description: Students relate repeated addition, equal groups and arrays to multiplication and division. Students use the commutative and distributive properties as strategies to multiply, with a focus on units of 2, 3, 4, 5, and 10. Students will write expressions with three factors as a foundation of the associative property. Students express division as both unknown factor problems and division equations and break apart and distribute the totals to divide. Students use their understanding of multiplication and division concepts to reason about and solve one- and two-step word problems.	
Unit Duration: 30 days (23 lessons; 5 Topic quizzes; 1 Equip; 1 End of Module 1 Assessment)	
Desired Results	
Standard(s): <ul style="list-style-type: none"> • 3.OA.A.1 Interpret products of whole number, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. <i>For example, describe and/or represent a context in which a total number of objects can be expressed as 5×7.</i> • 3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. <i>For example, describe and/or represent a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.</i> • 3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. • 3.OA.A.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers. <i>For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$, $\square \div 3$, $6 \times 6 = ?$</i> • 3.OA.B.5 Apply properties of operations as strategies to multiply and divide. <i>Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$ (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)</i> • 3.OA.B.6 Understand division as an unknown-factor problem. <i>For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.</i> • 3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. • 3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. • 3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. 	
Understandings: <ul style="list-style-type: none"> • I can identify the number of groups, the number in each group, and the total within equal-groups modes and arrays. I can write multiplication equations to represent the equal groups and arrays. I can interpret the meaning of the factors as the number of groups and the number in each group and solve word problems. 	Essential Questions: <ul style="list-style-type: none"> • How can we use groups to help us organize? What is the relationship between equal groups, repeated addition, unit form and multiplication equations? How does an array show equal groups? How does an array show each number in a multiplication equation? What do factors represent in multiplication equations? How is a tape diagram a useful model to use when solving multiplication word problems?

<ul style="list-style-type: none"> I can use equal-groups models and arrays to explore the two interpretations of division. I can determine the total and either the number of groups or the number in each group based on the problem situation. I can identify what is known and what is unknown, relate it to an unknown factor problem, and write a division equation. I can solve word problems involving division and make connections between multiplication and division. I can use properties of multiplication to explore strategies to use to multiply efficiently. I can explore the commutative property of multiplication by skip-counting the rows and columns in arrays. I can use arrays and number bonds to model the distributive property when finding the products of unfamiliar facts. I can strengthen my understanding of the relationship between multiplication and division and express division as both unknown factor problems and division equations. I can describe the quotient as either the number of groups or the size of each group. I can draw a tape diagram to represent the problems. I can apply the distributive property to complete multiplication and division problems. I can explore the foundations of the associative property of multiplication by breaking apart arrays into smaller arrays. I can solve two-step word problems using multiplication and division. 	<ul style="list-style-type: none"> How can equal sharing be done in different ways? Why is it helpful to think about what the numbers in a division problem represent? How is dividing like multiplying? How is it different? How can arrays be used to represent division? How can equations be used to represent division? How does thinking about what is known and unknown help you solve division word problems? Why is it helpful to compare different strategies that are used to solve the same problem? How can the commutative property of multiplication help us learn new multiplication facts? How does knowing the large arrays are composed of smaller arrays help find the total? How do parentheses show the smaller arrays within a larger total? How does the break apart and distribute strategy help us multiply larger numbers more efficiently? What is the relationship between the quotient in division and the unknown factor in a related multiplication equation? What helps you identify the unknown as either the number of groups or the size of each group? How can we use multiplication and division equations to represent the same problem? How does the tape diagram help us see relationships and select a solution path? How is using a number bond to represent break apart and distribute similar to using an array? How is it different? How do we use tens to help us multiply by nines? How are five facts helpful for breaking apart division problems? How is breaking apart an array into three factors different than describing an array with two factors? How can a problem be solved using different representations? How can a problem be solved using different equations?
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Assessment Evidence

Assessments:

- Equip Module 1 Preassessment
- Topic A Quiz
- Topic B Quiz
- Topic C Quiz
- Topic D Quiz
- Topic E Quiz
- End of Module 1 Assessment

Benchmarks:

- Eureka Math Squared Benchmark Assessments are administered three times per year (Optional).**
- The Star Math assessment is administered in the fall, winter, and spring.**

Learning Plan

Lesson # 1: Organize, count, and represent a collection of objects.

Standard: 2.NBT.A.2

Mathematical Practice: MP7

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

Learning Activities:

Fluency: Students count by tens in unit and standard form to develop an understanding of multiplication. Students relate counting on the rekenrek to counting the math way to develop a strategy for multiplying beginning in lesson 2.

Launch: Students estimate the total of a class collection and prepare to count one of their own.

Learn: Partners organize and count a collection and record their process. Students discuss strategies for organizing and compare the efficiency of each.

Land/Debrief: Facilitate a discussion about *Flower Vendor, 1049, by Diego Rivera* and how the painting can relate to their experience with the counting collection.

Daily Exit Ticket: Students will write about the units used to count their collection and if they would choose the same units if they counted their collection again.

Resources: 100-bead rekenrek; Color tiles, plastic, 1 inch (60-150 per student pair); Interlocking cubes, 1 cm (60-150- per student pair)

Lesson #2: Interpret equal groups as multiplication.

Standard: 3.OA.A.1

Mathematical Practice: MP6

Target: Interpret equal groups as multiplication.

Learning Activities:

Fluency: Students find the total and say an addition equation to maintain fluency within 10 from grade 1. Students count by tens in unit and standard form to develop an understanding of multiplication. Students construct a number line with their fingers while counting aloud to develop a strategy for multiplying.

Launch: Students determine an efficient way to organize and count an unknown number of objects.

Learn: Students represent equal groups with repeated addition, unit form, and a multiplication equation. Students represent pictorial equal groups with repeated addition and multiplication equations.

Land/Debrief: Facilitate a discussion about interpreting equal groups as multiplication and the relationship between equal groups, repeated addition, unit form, and multiplication equations.

Daily Exit Ticket: Students will use equal groups to count, write a repeated addition equation and a multiplication equation.

Resources: 100-bead rekenrek; Interlocking cubes, 1 cm (12)

Lesson # 3: Relate multiplication to the array model.

Standard: 3.OA.A.1

Mathematical Practice: MP2

Target: Relate multiplication to the array model.

Learning Activities:

Fluency: Students find the total and say an addition equation to maintain fluency within 10 from grade 1. Students relate an equal groups picture with a unit of 5 or 10 to a repeated addition expression and unit form to develop an understanding of multiplication.

Launch: Students consider ways to organize and count an unknown number of objects. Students interpret an array and represent it as a multiplication equation.

Learn: Students interpret an array and represent it as a multiplication equation. Students interpret a pictorial array and represent it as multiplication. Students relate tape diagrams to equal groups.

Land/Debrief: Facilitate a discussion about how multiplication equations relate to array models.

Daily Exit Ticket: Using the array given, skip count by 5 and write a multiplication equation to represent the array.

Resources: Interlocking cubes, 1 cm (20); 100-bead rekenrek

Lesson # 4: Interpret the meaning of factors as number of groups or number in each group.

Standard: 3.OA.A.1

Mathematical Practice: MP6

Target: Interpret the meaning of factors as number of groups or number in each group.

Learning Activities:

Fluency: Students count by fives in unit and standard form to develop an understanding of multiplication. Students construct a number line with their hands while counting aloud by fives to develop a strategy for multiplying. Students relate an equal groups picture, array, or tape diagram with a unit of 5 or 10 to a repeated addition expression, unit form, and multiplication equation to develop an understanding of multiplication.

Launch: Students learn the term factor and relate it to a multiplication equation.

Learn: Students draw an array to represent groups of concrete objects and interpret the meaning of factors. Students draw arrays to represent pictures of equal groups and interpret the meaning of factors. Students relate an array and a tape diagram to the factors in a multiplication equation.

Land/Debrief: Facilitate a discussion about what the factors in a multiplication equation represent and how the same multiplication equation can represent an equal-group picture and an array.

Daily Exit Ticket: Use equal groups to write a multiplication equation.

Resources: 100-bead rekenrek; Interlocking cubes, 1 cm (15)

Lesson # 5: Represent and solve multiplication word problems by using drawings and equations.

Standard: 3.OA.A.3

Mathematical Practice: MP 4

Target: Represent and solve multiplication word problems by using drawings and equations.

Learning Activities: Fluency: Students relate an equal groups picture, an array, or a tape diagram with a unit of 5 or 10 to a repeated addition expression, a unit form, and a multiplication equation to develop an understanding of multiplication.

Launch: Students work together to determine which picture accurately represents a given multiplication scenario.

Learn: Students collect information from a video and solve an equal groups with unknown product word problems. Students collect information from a video and solve an array with unknown product word problem.

Land/Debrief: Facilitate a discussion about the usefulness of equal groups, arrays, and tape diagrams to represent different multiplication scenarios.

Daily Exit Ticket: Students will use equal groups, an array, or a tape diagram to represent and solve a problem.

Resources: Interlocking cubes, 1 cm (45)

Lesson # 6: Explore measurement and partitive division by modeling concretely and drawing.

Standard: 3.OA.A.2

Mathematical Practice: MP1

Target: Explore measurement and partitive division by modeling concretely and drawing.

Learning Activities:

Fluency: Students identify and describe equal parts of a shape to maintain geometry concepts from grade 2. Students construct a number line with their fingers while counting aloud to build fluency with counting by tens, fives, and twos and develop a strategy for multiplying. Students say the value of a number given in unit form to prepare for using $5 + n$ with the distributive property beginning in topic C.

Launch: Students determine 5 as either the number of groups or the number in each group. Students model, discuss, and compare two interpretations of division.

Learn: Students model, discuss, and compare two interpretations of division with a larger total.

Land/Debrief: Facilitate a discussion about the two interpretations of division.

Daily Exit Ticket: Students will separate items into groups of 4 and identify the number in each group and the number of equal groups.

Resources: Paper plates (5 per student pair); Crackers (20 per student pair)

Lesson # 7: Model measurement and partitive division by drawing equal groups.

Standard: 3.OA.A.2

Mathematical Practice: MP2

Target: Model measurement and partitive division by drawing equal groups.

Learning Activities:

Fluency: Students identify and describe equal parts of a shape to maintain geometry concepts from grade 2. Students construct a number line with their fingers while counting aloud to build fluency with counting by tens and twos and develop a strategy for multiplying. Students count with an emphasis on multiples of three to develop fluency with counting by threes.

Launch: Students determine whether 5 represents the number of equal groups or the number in each group. Students watch, discuss, and model a division story, where the unknown is the number of groups.

Learn: Students watch, discuss, and model a division story, where the unknown is the number in each group.

Land/Debrief: Facilitate a discussion about two different ways to divide and how is dividing is similar to and different from multiplying.

Daily Exit Ticket: Students will draw equal groups picture to represent 30 beads and identify how many beads are in each group.

Resources: None

Lesson # 8: Model measurement and partitive division by drawing arrays.

Standard: 3.OA.A.2; 3.OA.A.3

Mathematical Practice: MP1

Target: Model measurement and partitive division by drawing arrays.

Learning Activities:

Fluency: Students construct a number line with their fingers while counting aloud to build fluency with counting by twos and fives and develop a strategy for multiplying. Students count with an emphasis on multiples of three to develop fluency with counting by threes. Students relate an equal groups picture, array, or tape diagram with a unit of 2 or 3 to a repeated addition expression, unit form, and multiplication equation to build an understanding of multiplication.

Launch: Students discuss the similarities and differences between equal groups and arrays.

Learn: Students draw arrays and write equations to represent measurement and partitive division. Students draw arrays and write division equations to represent measurement and partitive division word problems.

Land/Debrief: Facilitate a discussion about arrays and division.

Daily Exit Ticket: Students will draw an array to find the number of rows, write a division equation to show the number of rows.

Resources: Straightedge

Lesson # 9: Represent and solve division word problems using drawings and equations.

Standard: 3.OA.A.2; 3.OA.A.3

Mathematical Practice: MP5

Target: Represent and solve division word problems using drawings and equations.

Learning Activities:

Fluency: Students construct a number line with their fingers while counting aloud to build fluency with counting by twos, develop fluency with counting by threes, and develop a strategy for multiplying. Students relate an array or tape diagram with a unit of 2 or 3 to a repeated addition expression, unit form, and multiplication equation to build an understanding of multiplication. Students say the value of a number given in unit form to prepare for using $5 + n$ with the distributive property beginning in topic C.

Launch: Students identify and justify their choice of models to represent division word problems. Students reason about, represent, and solve an equal groups with group size unknown word problem.

Learn: Students reason about, represent, and solve an array with number of groups unknown word problem.

Land/Debrief: Facilitate a discussion about solving division word problems.

Daily Exit Ticket: Students will use a drawing to divide into equal groups and solve an equation.

Resources: None

Lesson # 10: Demonstrate the commutative property of multiplication using a unit of 2 and the array model.

Standard: 3.OA.A.1; 3.OA.B.5

Mathematical Practice: MP3

Target: Demonstrate the commutative property of multiplication using a unit of 2 and the array model.

Learning Activities:

Fluency: Students construct a number line with their fingers while counting aloud to build fluency with counting by tens, develop fluency with counting by threes, and develop a strategy for multiplying. Students identify and sort models with units of 2, 3, 5, and 10 that represent the same multiplication expression and record the expression to build an understanding of multiplication.

Launch: Students engage in mathematical discourse to compare representations of equal groups.

Learn: Students create and rotate an array to represent related multiplication equations. Students draw an array and relate it to multiplication equations.

Land/Debrief: Facilitate a discussion reflecting on the work they did with cubes and arrays.

Daily Exit Ticket: Students will draw an array to represent a multiplication equation and explain how the array represents the multiplication equation.

Resources: Envelopes of Equal Group cards, Set A and Set B (1 per student pair); Sticky notes (6 per student pair); Interlocking cubes, 1 cm (10)

Lesson # 11: Demonstrate the commutative property of multiplication using a unit of 4 and the array model.

Standard: 3.OA.A.1; 3.OA.B.5

Mathematical Practice: MP7

Target: Demonstrate the commutative property of multiplication using a unit of 4 and the array model.

Learning Activities:

Fluency: Students construct a number line with their fingers while counting aloud to build fluency with counting by fives, develop fluency with counting by fours, and develop a strategy for multiplying. Students identify and sort models with units of 2, 3, 5, and 10 that represent the same multiplication expression and record the expression to build an understanding of multiplication.

Launch: Students build on their knowledge of twos to see the relationship between twos and fours.

Learn: Students relate units of 2 to units of 4 by using a cube array and skip-counting. Students skip-count by the rows and columns of an array to show the commutative property and use it to solve problems. Students draw tape diagrams to represent the rows and columns in an array.

Land/Debrief: Facilitate a discussion about how knowing 6 fours is 24 helps us know 4 sixes is 24.

Daily Exit Ticket: Students will use an array to explain the commutative property of multiplication.

Resources: Envelopes of Equal Group cards, Set A and Set B (1 per student pair); Sticky notes (6 per student pair); Interlocking cubes, 1 cm (10)

Lesson # 12: Demonstrate the distributive property using a unit of 4.

Standard: 3.OA.B.5; 3.OA.C.7

Mathematical Practice: MP7

Target: Demonstrate the distributive property using a unit of 4.

Learning Activities:

Fluency: Students identify and find the unknown in a number bond and equation to maintain work with addition and subtraction from grade 2. Students construct a number line with their fingers while counting aloud to build fluency with counting by twos, develop fluency with counting by fours, and develop a strategy for multiplying. Students find the product and use the commutative property to state a related equation, which develops use of the property as a strategy for multiplication.

Launch: Students describe the composition of an array's parts and find the total.

Learn: Students use the columns as groups in an array to skip-count and write an equation. Students represent the distributive property with number bonds and equations with parentheses. Students transition from concrete to pictorial representations with arrays by partitioning a large array into two smaller arrays.

Land/Debrief: Facilitate a discussion about how breaking apart an array helps us multiply.

Daily Exit Ticket: Students will shade an array to show two parts. Students will demonstrate the distributive property using a unit of 4.

Resources: Interlocking cubes, 1 cm (40)

Lesson # 13: Demonstrate the commutative property of multiplication using a unit of 3 and the array model.

Standard: 3.OA.1; 3.OA.B.5

Mathematical Practice: MP8

Target: Demonstrate the commutative property of multiplication using a unit of 3 and the array model.

Learning Activities:

Fluency: Students identify and find the unknown in an equation where the change is unknown to maintain work with addition and subtraction from grade 2. Students construct a number line with their fingers while counting aloud to develop fluency with counting by threes, fluency with counting by fours, and a strategy for multiplying. Students find the product and use the commutative property to state a related equation, which develops use of the property as a strategy for multiplication.

Launch: Students count the number of wheels on tricycles by skip-counting by threes.

Learn: Students connect units of 3 to multiplication equations by building a cube array and skip-counting. Students skip-count by the rows and columns of an array to show the commutative property and use it to solve problems. Students draw tape diagrams to represent the rows and columns in an array.

Land/Debrief: Facilitate a discussion about what can we draw to show $3 \times 7 = 7 \times 3$ and how the commutative property helps us learn unfamiliar multiplication facts.

Daily Exit Ticket: Students will draw an array to demonstrate the commutative property of multiplication.

Resources: Interlocking cubes, 1 cm (30)

Lesson # 14: Demonstrate the distributive property using units of 2, 3, 4, 5, and 10.

Standard: 3.OA.B.5; 3.OA.C.7

Mathematical Practice: MP2

Target: Demonstrate the distributive property using units of 2, 3, 4, 5, and 10.

Learning Activities:

Fluency: Students identify and find the unknown in an equation where the start is unknown to maintain work with addition and subtraction from grade 2. Students construct a number line with their fingers while counting aloud to develop fluency with counting by threes, fluency with counting by fours, and a strategy for multiplying. Students find the product or factor and use the commutative property to state a related equation to develop use of the property as a strategy for multiplication.

Launch: Students skip-count to find the total number of objects in an array.

Learn: Students concretely represent and solve an array with unknown product word problem by using the distributive property. Students transition from concrete to pictorial representations of the break apart and distribute strategy with arrays by tracing and shading a large array on grid paper. Students decompose an array pictorially into smaller arrays and name the strategy as the break apart and distribute strategy. Students apply the break apart and distribute strategy to find a product.

Land/Debrief: Facilitate a discussion about the benefits and limitations of the break apart and distribute strategy to prepare students for choosing an appropriate strategy on future problems.

Daily Exit Ticket: Students will demonstrate the distributive property by filling in the blanks of a multiplication equation to match an array.

Resources: Interlocking cubes, 1 cm (40)

Lesson # 15: Model division as an unknown factor problem.

Standard: 3.OA.A.2; 3.OA.A.4

Mathematical Practice: MP4

Target: Model division as an unknown factor problem.

Learning Activities:

Fluency: Students tell time on a digital clock to the nearest five minutes, using picture clues to distinguish between a.m. and p.m., to maintain work with time from grade 2. Students construct a number line while counting aloud to build fluency with counting by twos and threes to develop a strategy for multiplying. Students write division equations to describe an equal-groups picture to build fluency with two interpretations of division and associated terminology.

Launch: Students relate division to multiplication by seeing division as an unknown factor problem.

Learn: Students represent an equal-groups with number of groups unknown word problem and solve it with a related multiplication equation. Students reason about, represent, and solve equal groups with number of groups unknown word problems using array and tape diagram models.

Land/Debrief: Facilitate a discussion about the use of models to identify the unknown as the number of groups or the size of each group in multiplication and division situations.

Daily Exit Ticket: Students will draw a picture to represent a word problem. Students will complete a division equation and find the unknown.

Resources: None

Lesson # 16: Model the quotient as the number of groups using units of 2, 3, 4, 5, and 10.

Standard: 3.OA.A.2; 3.OA.A.3; 3.OA.A.4; 3.OA.B.6

Mathematical Practice: MP3

Target: Model the quotient as the number of groups using units of 2, 3, 4, 5, and 10.

Learning Activities:

Fluency: Students tell time on an analog clock to the nearest half hour, using picture clues to distinguish between a.m. and p.m., to maintain work with time from grade 2. Students construct a number line while counting aloud to build fluency with counting by tens and fours and develop a strategy for multiplication. Students write division equations to describe an equal-groups picture to build fluency with the two interpretations of division and associated terminology.

Launch: Students write multiplication and division equations to represent equal groups, arrays, and tape diagrams.

Learn: Students draw a tape diagram to represent an equal group with number of groups unknown word problem and solve it with a related multiplication equation. Students critique a flawed response and provide a correct solution strategy

Land/Debrief: Facilitate a discussion emphasizing the relationship between multiplication and division and the use of tape diagrams to represent division problems when the number of groups is unknown.

Daily Exit Ticket: Students will use a tape diagram to represent a problem and write an equation to solve the problem.

Resources: None

Lesson # 17: Model the quotient as the size of each group using units of 2, 3, 4, 5, and 10.

Standard: 3.OA.A.2; 3.OA.A.3; 3.OA.A.4; 3.OA.B.8

Mathematical Practice: MP4

Target: Model the quotient as the size of each group using units of 2, 3, 4, 5, and 10.

Learning Activities:

Fluency: Students tell time on an analog clock to the nearest five minutes, using picture clues to distinguish between a.m. and p.m., to maintain work with time from grade 2. Students construct a number line while counting aloud to build fluency with counting by fives and threes and develop a strategy for multiplying. Students write division equations to describe an equal-groups picture to build fluency with two interpretations of division and associated terminology.

Launch: Students write multiplication and division equations to represent a picture.

Learn: Students draw a tape diagram to represent an equal group with group size unknown word problem and solve it with a related multiplication equation. Students draw tape diagrams to represent and solve equal groups with group size unknown word problems.

Land/Debrief: Facilitate a discussion that emphasizes how the tape diagram represents division problems when group size is unknown.

Daily Exit Ticket: Students will use a tape diagram to represent a problem and write an equation to solve the problem.

Resources: None

Lesson # 18: Represent and solve measurement and partitive division word problems.

Standard: 3.OA.A.2; 3.OA.A.3

Mathematical Practice: MP2

Target: Represent and solve measurement and partitive division word problems.

Learning Activities:

Fluency: Students write the unknown number in a sequence to build fluency with counting by tens and fives.

Launch: Students match word problems with tape diagrams and equations, focusing on how the information in a word problem provides support with how to start drawing a tape diagram.

Learn: Students collect information from a video, solve division word problems, and reason about the similarities and differences between measurement and partitive division. Students reason about, represent, and solve an equal groups with group size unknown word problems and an equal groups with number of groups unknown word problems.

Land/Debrief: Facilitate a discussion emphasizing the differences between partitive and measurement division.

Daily Exit Ticket: Students will draw a picture to represent a division problem and write an equation to represent the problem.

Resources: Count by Tens and Fives Sprint (in the student book); Tape Diagram and Equation Card Sort (1 per student pair, in the student book); Scissors (1 per student pair)

Lesson # 19: Use the distributive property to break apart multiplication problems into known facts.

Standard: 3.OA.B.5; 3.OA.C.7

Mathematical Practice: MP6

Target: Use the distributive property to break apart multiplication problems into known facts.

Learning Activities:

Fluency: Students construct a number line with their fingers while counting aloud to build fluency with counting by threes and fours and develop a strategy for multiplying. Students add within 1,000 to prepare for similar work beginning in module 2. Students say the value of a number given in unit form to build fluency for using $5 + n$ with the distributive property.

Launch: Students select and explain an efficient strategy to solve an equal groups with unknown product word problems.

Learn: Students solve a multiplication problem by breaking apart the rows in an array and using a number bond to represent the decomposition. Students multiply by 9 by finding 10 units and subtracting 1 unit.

Land/Debrief: Facilitate a discussion on using the break apart and distribute strategy.

Daily Exit Ticket: Students will use an array to complete multiplication equations.

Resources: None

Lesson # 20: Use the distributive property to break apart division problems into known facts.

Standard: 3.OA.B.6; 3.OA.C.7

Mathematical Practice: MP3

Target: Use the distributive property to break apart division problems into known facts.

Learning Activities:

Fluency: Students answer a question about a picture graph to maintain measurement concepts from grade 2. Students add or subtract within 1,000 to prepare for similar work beginning in module 2.

Launch: Students explore efficient strategies to concretely model division as equal sharing.

Learn: Students divide by breaking apart an array into a fives fact and another fact.

Land/Debrief: Facilitate a discussion about how five facts are helpful for breaking apart division problems and how using the break apart and distribute strategy for division is similar to and different from multiplication.

Daily Exit Ticket: Students will use the break apart strategy to solve a division problem and explain their thinking.

Resources: Interlocking cubes, 1 cm (28 per student pair); Ruler (1 per student pair), Blue colored pencil; Red colored pencil

Lesson # 21: Compose and decompose arrays to create expressions with three factors.

Standard: 3.OA.C.7

Mathematical Practice: MP8

Target: Compose and decompose arrays to create expressions with three factors.

Learning Activities:

Fluency: Students answer a question about a bar graph to maintain measurement concepts from grade 2. Students construct a number line with their fingers while counting aloud to build fluency with counting by twos and fours and develop a strategy for multiplying. Students say the value of a number given in unit form to build fluency for using $5 + n$ with the distributive property.

Launch: Students build equal groups of arrays.

Learn: Students break an array into three factors. Students break one array into various three-factor expressions. Land – **There is no Land for this lesson.**

Daily Exit Ticket: Students will fill in the blanks to match the arrays.

Resources: Interlocking cubes, 1 cm (20 per student)

Lesson # 22: Represent and solve two-step word problems using the properties of multiplication.

Standard: 3.OA.A.3; 3.OA.C.7; 3.OA.D.8

Mathematical Practice: MP5

Target: Represent and solve two-step word problems using the properties of multiplication.

Learning Activities:

Fluency: Students write the unknown number in a sequence to build fluency with counting by twos and fours.

Launch: Students use the properties of multiplication to write equations or statements to represent a picture.

Learn: Students reason about and solve a two-step word problem using self-selected strategies.

Land/Debrief: Facilitate a discussion about how a problem can be solved using different representations and how a problem can be solved using different equations.

Daily Exit Ticket: Write a concise, one sentence summary of what students do on the exit ticket.

Resources: Count by Twos and Fours Sprint (in the student book)

Lesson # 23: Represent and solve two-step word problems using drawings and equations.

Standard: 3.OA.A.3; 3.OA.C.7; 3.OA.D.8

Mathematical Practice: MP5

Target: Represent and solve two-step word problems using drawings and equations.

Learning Activities:

Fluency: Students answer a question about a bar graph to maintain measurement concepts from grade 2. Students add or subtract within 1,000 to prepare for similar work beginning in module 2.

Launch: Students use the properties of multiplication to write equations or statements to represent a given picture.

Learn: Students reason about and solve a two-step word problem using self-selected strategies.

Land/Debrief: Facilitate a discussion about how a pictorial model helps us understand the problems, how you use familiar strategies to solve problems and which tool or strategy did you see today that you'd like to try and why.

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

Resources: None

****Zearn Math is available for independent digital lessons.**

Unit Modifications for Special Population Students

Advanced Learners	<ul style="list-style-type: none"> • Lesson 2 – Students who demonstrate fluency adding within 10 can be challenged to add within 20. Each partner should be encouraged to use both of their hands to show a number of fingers. • Lesson 14 – Consider challenging students to identify as many ways as possible to break apart an array that represents a fact. Ask them to explain how some combinations are more efficient than others and how they decide how to break apart the array. • Lesson 21 – Challenge students to find various ways to break apart an array with 3 rows of 8 cubes into equal groups. Direct students to complete the sentence frame ____ groups of ____ x ____ to describe each arrangement. Consider prompting them to compare the sentence for the 4 rows of 6 cubes and the 3 rows of 8 cubes.
Struggling Learners	<ul style="list-style-type: none"> • Lesson 6 – To promote relevance of the concept of equal sharing, make connections to contexts that are familiar to students. For example, before asking about what it means to share equally, invite students to think about a time they had to share a snack with friends. Ask students to indicate, by a show of fingers, how many friends shared the snack. Tell students to give a thumbs up if they think their snack was shared equally. • Lesson 8 – Provide access to manipulatives, such as interlocking cubes, square tiles, or two-color counters, for direct modeling. This supports students as they transition from concrete to pictorial representations and allows for flexibility in demonstrating learning. • Lesson 9 – Some students may need to work through the problem to select a preferred representation and explain their choice rather than only processing mentally and verbally. Consider supporting these students by encouraging them to use a whiteboard to show their thinking. Also consider displaying pictures of the representations instead of just their names to assist students who need visual cues.
English Language Learners	<ul style="list-style-type: none"> • Lesson 2 – The term <i>times</i> is associated with multiplication but not explicitly taught. Consider creating an anchor chart for the terms and symbols associated with multiplication (i.e., <i>multiplication</i>, <i>multiply</i>, <i>times</i>, and <i>x</i>). • Lesson 4 – Consider reviewing the terms <i>factors</i> and <i>product</i>. Follow up each question in this section with, “Is this a factor or a product?” (heavier support) or “What is this number in the equation called?” (lighter support). • Lesson 11 – Model a think aloud that includes “groups of” language and unit form to support students in understanding how the tape diagrams and expressions represent the rows and columns of an array.
Special Needs Learners	<ul style="list-style-type: none"> • Lesson 3 – Consider creating a web graphic organizer to help students make connections between the idea of multiplication and the different representations of it. Label the center of the web <i>multiplication</i>. Ask students to think about the representations that they already know, such as repeated addition and unit form. Then explain that an array is another way to show multiplication. Add <i>array</i> to the web. Later in the lesson, add <i>tape diagram</i> to the web. • Lesson 4 – Consider providing resources to support organization and alternatives that minimize fine-motor demands when students are required to draw arrays. Examples include the following <ul style="list-style-type: none"> ▪ Provide lined paper to help draw circles in even rows. ▪ Provide stamp markers to create circles of the same size.

	<ul style="list-style-type: none"> ▪ Provide physical manipulatives, such as circle-shaped counters as an alternative to drawing. • Lesson 6 – Consider creating and posting a chart to clarify the difference between the phrases <i>number of groups</i> and <i>number in each group</i>. Use numbers that are not included in this lesson to provide an additional example and to help students generalize both phrases. Color coding and using different shapes for each phrase may further support students' understanding. • Lesson 10 – In topic C, multiplication is presented in a variety of ways. Students explore <ul style="list-style-type: none"> ○ Concrete interlocking cubes arranged in arrays, ○ Pictorial representations of arrays and tape diagrams, and ○ Equations using abstract numbers and symbols. <p>Students learn that they can rotate an array and represent a multiplication scenario with the same two factors in a different order, yet the product stays the same. Prior knowledge is activated by using familiar models and by explicitly connecting to students' understandings about skip-counting. Finally, students practice applying multiplication in context, promoting transfer of learning.</p>
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:

- Lesson 1 – 1.2.5.A.2 (Art) Characteristic approaches to content, form, style, and design define art genres. Relate common artistic elements that define distinctive art genres in dance, music, theatre, and visual arts. *Students are asked to view a painting called Flower Vendor and notice and wonder elements of the painting. Students will then relate the elements of the painting to counting collections.*
- Lesson 23 - 1.2.5.A.2 (Art) Characteristic approaches to content, form, style, and design define art genres. Relate common artistic elements that define distinctive art genres in dance, music, theatre, and visual arts. *Students are asked to view the painting Flower Vendor again and relate it to the concepts developed in module 1.*
- Lessons 1, 6, 10, 11, 18, and 20 – NJSLA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will work collaboratively in pairs to explore strategies, analyze problems, and discuss ideas relating to lessons' target.*
- Lessons 1 – Lessons 23 – SL.3.1.B – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly. Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). *During the "Land" section of each lesson, students will participate in a discussion to reinforce skills taught in each lesson.*

Integration of 21st Century Skills

Standards:

- Lesson 18 - 9.4.5.CI.3 - Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a) *Students will discuss the similarities and differences in the problems, tape diagrams, and equations. The goal is for the student to see that sometimes the unknown is the number of groups and sometimes it is the size of the groups. The same equation can describe two different division situations.*

- Lesson 5 - 9.4.5.CT.1 – Identify and gather relevant data that will aid in the problem-solving process. *Students will work together to determine which picture accurately represents a given multiplication scenario. Students will observe 3 pictures and turn and talk to respond to questions which help them identify and gather data to solve the problem. How are the cards represented in picture A? Picture B? Picture C? Where do you see 5 in picture A? Picture B? Picture C? Where do you see 4 in picture A? Picture B? Picture C? How are the pictures similar? How are they different?*
- Lesson 3 - 8.1.5.DA.1 – Collect, organize, and display data in order to highlight relationships or support a claim. *Students will then of ways to organize and count the cubes. Students will be paired to discuss their thinking. Record their ideas and have them help facilitate discussion questions.*
- Lesson 10 - 8.1.5.DA.3 – Organize and present collected data visually to communicate insights gained from different view of the data. *Students engage in mathematical discourse to compare representations of equal groups. Students will look at a picture and be given 3 minutes to find a category in which three of the pictures belong, but a fourth picture does not. Students will explain their chosen categories and justify why one picture does not fit.*
- Lesson 22 - 8.1.5.DA.5 – Propose cause and effect relationships, predict outcomes, or communicate ideas using data. *Students will share and compare solution strategies for problem 1 and reason about their connections.*
- Lesson 19 - 8.1.5.AP.1 – Compare and refine multiple algorithms for the same task and determine which is the most appropriate. *Students will select and explain an efficient strategy to solve an equal groups with unknown product word problem.*

Unit Title: Module 2 – Place Value Concepts Through Metric Measurement	
Unit Description: Students compose and decompose metric measurement units and relate them to place value units up to 1 thousand. Students use place value understanding and the vertical number line to round two- and three-digit numbers. Students also add and subtract two- and three-digit numbers within 1,000 by using a variety of strategies, including standard algorithm.	
Unit Duration: 31 Days (25 lessons, 4 Topic quizzes, 1 Equip Preassessment, 1 End of Module 2 Assessment)	
Desired Results	
Standard(s): <ul style="list-style-type: none"> 3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. 3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100. 3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. 3.MD.A.2 Measures and estimates liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. 3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information represented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i> 	
Understandings: <ul style="list-style-type: none"> I can estimate and measure weight and liquid volume by using grams, kilograms, liters, and milliliters. I can apply composing and decomposing place value units to the relationship between the smaller unit and the unit that represents 1,000. I can use the number line as a model for understanding how to read circular and vertical measurement scales. I can solve one-step word problems that have measurement contexts. I can read temperatures on a thermometer to help round to the nearest ten or hundred. I can round a number by determining the two consecutive tens or hundreds that the number is between and then determine which ten or hundred is closer by thinking about the number in relation to the halfway mark. I can use a number line to help round numbers. I can apply my rounding skills to estimate sums and differences. I can apply my knowledge of the vertical number line to the scale on a scaled bar graph. I can 	Essential Questions: <ul style="list-style-type: none"> How are grams and kilograms related? How is composing 1-gram cubes to weigh a total of 1 kilogram like composing ones to make 1 thousand? How do gram cubes help you estimate the weight of objects in the classroom? How can you use a tape diagram to represent each of the four operations? How are the units we use for capacity like the units we use for weight? How does creating a 1,000-ml beaker with 100 ml intervals relate to place value? How is a vertical number line similar to and different from other number lines? How does making a drawing help us understand the problem? How is a thermometer like a number line? How does the number line help you round? How do you round numbers that are halfway between tens? How can renaming numbers in unit form help to round numbers to the nearest ten? How can knowing halfway between tens help you round a number to the nearest ten? How is rounding to the nearest hundred different from rounding to the nearest ten? How do we use rounding to estimate? How can a scaled bar graph be a useful tool for representing data? When would you use a scale

<p>represent data in a scaled bar graph and solve addition and subtraction problems related to a scaled bar graph. I can explore a variety of addition and subtraction strategies based on place value, properties of operations, and the relationship between addition and subtraction. I can think flexibly and build toward the use of mental math.</p> <ul style="list-style-type: none"> I can use concrete and pictorial place value models alongside vertical form to represent and record the work of the standard algorithm for addition and the standard algorithm for subtraction. I can compose and decompose units as needed and estimate to assess the reasonableness of my answer. I can apply computation skills to select an appropriate strategy and solve one- and two-step word problems involving measurement contexts and units. 	<p>other than 1 to represent data on a graph? How does place value help us add and subtract? How are models such as the number bond and the arrow way helpful in recording and explaining our thinking? How can knowing partners to ten help simplify addition problems that are harder to add in your head? When is compensation a useful addition strategy? When is the take from a ten-strategy useful? How can the take from a hundred strategy be used when subtracting from three-digit numbers? How does compensation help make it easier to subtract mentally?</p> <ul style="list-style-type: none"> How do you decide which addition strategy to use? How do place value models help us add? How does vertical form show place value understanding? How can we show our thinking with vertical form when we subtract? How do you decide which subtraction strategy to use? How do place value models help us subtract? When is the standard algorithm a useful subtraction strategy? How is it helpful to unbundle all the units before subtracting? How do drawings help us understand how to solve a two-step problem? How does the size of each group help you count? How can multiplication be helpful when counting?
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Assessment Evidence

Assessments:

- Equip – Preassessment for Module 2 & 3
- Topic A Quiz
- Topic B Quiz
- Topic C Quiz
- Topic D Quiz
- End of Module 2 Assessment

Benchmarks:

- Eureka Math Squared Benchmark Assessments are administered three times per year (Optional).**
- The Star Math assessment is administered in the fall, winter, and spring.**

Learning Plan

Lesson # 1: Connect the composition of 1 kilogram to the composition of 1 thousand.

Mathematical Practice: MP7

Standard: 3.MD.A.2

Target: Connect the composition of 1 kilogram to the composition of 1 thousand.

Learning Activities:

Fluency: Students way the value of a number given in unit form to prepare for place value concepts. Students construct and visualize a number line with their fingers while counting aloud and model compositions to prepare for place value concepts.

Launch: Students compare and describe objects as heavier or lighter and identify the need to find the exact weight of the objects.

Learn: Students use gram cubes to compose 1,000 grams by using familiar place value units of ones, tens, hundreds, and thousands. Students represent the composition of 1 kilogram with tape diagrams.

Land/Debrief: Facilitate a discussion that emphasizes the relationship between grams and kilograms and reiterates the connection between the metric system and place value units.

Daily Exit Ticket: Students will use the Read-Draw-Write process to solve a problem.

Resources: Classroom objects (60); Interlocking cubes, 1 cm (1,264); Digital compact scale; resealable bags (sandwich-size 12); Resealable bags (gallon size)

Lesson # 2: Estimate the weight of familiar objects and read scales when weighing objects.

Mathematical Practice: MP5

Standard: 3.MD.A.2

Target: Estimate the weight of familiar objects and read scales when weighing objects.

Learning Activities:

Fluency: Students write a division equation and a related multiplication equation to describe a tape diagram to build fluency with the skills and associated terminology from module 1. Students use the math way to find the product of two one-digit numbers when one number is 5 to prepare for using the distributive property in module 3. Students say the value of a number given in unit form to build fluency with place value concepts.

Launch: Students use benchmark weights to estimate the weight of classroom objects.

Learn: Students estimate the weight of classroom objects in grams and then use a digital scale to find their actual weights. Students apply the number line concepts to read the weight of objects on platform scales.

Land/Debrief: Facilitate a discussion focused on estimating the weight of objects and reading the number line on a scale.

Daily Exit Ticket: Students will circle the correct unit for estimates and read and write weights and units.

Resources: Resealable bag, sandwich-size (1 per student pair); Interlocking cubes, 1 cm (111 per student pair); Classroom objects; Digital compact scale (1 per student group); Platform scale (1 per student group)

Lesson # 3: Use all four operations to solve one-step word problems involving weight.

Mathematical Practice: MP2

Standard: 3.MD.A.2

Target: Use all four operations to solve one-step word problems involving weight.

Learning Activities:

Fluency: Students determine whether an object is best measured in grams or kilograms to develop an understanding and knowledge of metric weights.

Launch: Students engage in discussion about the combined weights of objects.

Learn: Students weigh two objects by using a digital scale and add to find the total weight. Students reason about a take from with change unknown situation involving weight. Students solve an equal group with unknown product problem involving weight by using the Read-Draw-Write process. Students solve an equal group with group size unknown problem involving weight by using the Read-Draw-Write process.

Land/Debrief: Facilitate a discussion about balance by looking at the painting *Woman Holding a Balance* by Johannes Vermeer.

Daily Exit Ticket: Students will answer questions, comparing the weights of two objects.

Resources: Classroom objects (2); Digital compact scale; Collection of objects

Lesson # 4: Connect decomposition of 1 liter to the decomposition of 1 thousand.

Mathematical Practice: MP7

Standard: 3.MD.A.2

Target: Connect decomposition of 1 liter to the decomposition of 1 thousand.

Learning Activities:

Fluency: Students complete equations to build fluency with multiplying and dividing by 5 and 10s. Students construct a number line with their fingers while counting aloud and model decompositions to prepare for place value concepts.

Launch: Students compare the capacities of containers with different shapes and sizes to 1 liter.

Learn: Students illustrate and explain the decomposition of 1 liter of water into equal parts of 100 ml as the teacher demonstrates. Students illustrate and explain the decomposition of 100 ml into 10 equal parts of 10 ml as the teacher demonstrates. Students illustrate and explain the decomposition of 10 ml into 10 equal parts of 1 ml as the teacher demonstrates. Students skip-count milliliters as the liter is composed and reason about composing and decomposing metric units.

Land/Debrief: Facilitate a discussion on the relative size of milliliters and liters and the similarities between decomposing a liter and decomposing 1,000.

Daily Exit Ticket: Students use the Read-Draw-Write process to solve a problem decomposing milliliters.

Resources: Container, 2L; Graduated Cylinder, 1,000 ml; Liquid food coloring, blue; Container, about 1 liter; Container, less than 1 liter; Container, greater than 1 liter; Clear plastic cups, about 150 ml (30); Syringe, 10 ml

Lesson # 5: Estimate and measure liquid volume using a vertical number line and connect composition of 1 liter to composition of 1 thousand.

Mathematical Practice: MP6

Standard: 3.MD.A.2

Target: Estimate and measure liquid volume using a vertical number line and connect composition of 1 liter to composition of 1 thousand.

Learning Activities:

Fluency: Students use the math way to find the product of two one-digit numbers when one number is 2 to prepare for using the distributive property in module 3. Students say the value of a number given in unit form to build fluency with place value concepts.

Launch: Students estimate the capacity of real-world containers.

Learn: Students measure and pour 100 ml quantities of water into a container and mark each increment. Students use the vertical number line to estimate and measure liquid volume. Students estimate the capacity of containers larger than 1,000 ml and revise estimates as the containers are filled during the teacher demonstration.

Land/Debrief: Facilitate a discussion about the connection between measurement units and place value units.

Daily Exit Ticket: Students identify the correct unit of liquid volume for each estimate.

Resources: Graduated cylinder, 100 ml; Clear plastic cups, about 150 ml (3); Container, 2 L; Pitcher of water, 1.5 L or larger; permanent marker; Graduated cylinder, 1,000 ml; Painters Tape; Container, 2l (1 per student group); Clear plastic cup, about 150 ml (1 per student group); Permanent marker (1 per student group), Pitcher of water, 1.5 l or larger (1 per student group)

Lesson # 6: Use all four operations to solve one-step word problems involving liquid volume.

Mathematical Practice: MP3

Standard: 3.MD.A.2

Target: Use all four operations to solve one-step word problems involving liquid volume.

Learning Activities:

Fluency: Students use the math way to find the product of two one-digit numbers when one number is 4 to prepare for using the distributive property in module 3. Students decompose 1 liter by using a number bond to build understanding of part-whole relationships.

Launch: Students use mental math strategies to promote fluency with adding and subtracting.

Learn: Students solve a put together with total unknown problem involving liquid volume by selecting representations and strategies. Students compare solution strategies for problem 1 and reason about their connections. Students solve a take from with change unknown problem involving liquid volume by selecting representations and strategies. Students compare solution strategies for problem 2 and reason about connections. Students solve an equal groups with unknown product word problem and an equal groups with size of groups unknown word problem.

Land/Debrief: Facilitate a discussion about how the Read-Draw-Write process helps to understand the problem and find a solution path.

Daily Exit Ticket: Students use the Read-Draw-Write process to solve problems involving liquid measurement.

Resources: None

Lesson # 7: Solve one-step word problems using metric units.

Mathematical Practice: MP1

Standard: 3.MD.A.2

Target: Solve one-step word problems using metric units.

Learning Activities:

Fluency: Students use the math way to find the product of two one-digit numbers when one number is 3 to prepare for using the distributive property in module 3. Students determine whether an object is best measured in liters or milliliters to develop an understanding and knowledge of metric capacity.

Launch: Students read and compare measurements to prepare for comparison word problems in Learn.

Learn: Students draw two tapes to help solve a compare with difference unknown word problem. Students solve an equal groups with unknown product word problem and an equal groups with number of groups unknown word problem.

Land/Debrief: Facilitate a discussion if the tape diagrams drawn were different from tape diagrams used in previous lessons and how we know when a word problem involves comparing.

Daily Exit Ticket: Use the Read-Draw-Write process to solve a one-step word problem using metric units.

Resources: None

Lesson # 8: Read temperatures on a thermometer using number line concepts.

Mathematical Practice: MP5

Standard: 3.NBT.A.1

Target: Read temperatures on a thermometer using number line concepts.

Learning Activities:

Fluency: Students relate models with a unit of 2, 3, 4, 5, or 10 to build multiplication fluency within 100. Students visualize a number line while counting aloud to maintain fluency with counting by tens. Students determine whether an object is best measured in grams or kilograms and estimate its weight to build fluency with metric measurement concepts from topic A.

Launch: Students make connections between a thermometer and familiar tools such as a platform scale and number line.

Learn: Students learn different characteristics of thermometers and how they can be used to tell temperature. Students participate in a teacher-led demonstration that measure different temperatures of water. Students read the temperature shown on a pictorial thermometer. Students name the temperature shown on a pictorial thermometer to the nearest ten by using the halfway mark.

Land/Debrief: Facilitate a discussion on how a thermometer is like a number line, what part of the scale do we focus on when we read the number line on a thermometer and how you estimate the temperature if a thermometer does not have tick marks for every degree.

Daily Exit Ticket: Students will use a thermometer to complete statements about the thermometer.

Resources: Envelopes (14); Equal Groups Cards, Set A and Set B (in the student book); Demonstration thermometer; Containers, 2 L (2)

Lesson # 9: Round two-digit numbers to the nearest ten on the vertical number line.

Mathematical Practice: MP2

Standard: 3.NBT.A.1

Target: Round two-digit numbers to the nearest ten on the vertical number line.

Learning Activities:

Fluency: Students visualize a number line while counting aloud to maintain fluency with counting by fives. Students rename tens from unit form to standard form to prepare for rounding to the nearest 10. Students identify the number halfway between consecutive units of ten on a number line to prepare for rounding to the nearest 10.

Launch: Students apply the terms halfway and closer to within a context.

Learn: Students conceptualize rounding numbers to the nearest ten. Students represent measurements on a vertical number line and use the vertical number line to help them round the measurements to the nearest ten. Students identify all numbers that round to 70 when rounded to the nearest ten.

Land/Debrief: Facilitate a discussion emphasizing the vertical number line as a tool for rounding.

Daily Exit Ticket: Students will answer questions about rounding two-digit numbers to the nearest ten on a vertical number line.

Resources: Index cards (11); Graduated cylinder, 100 ml

Lesson # 10: Round two- and three-digit numbers to the nearest ten on the vertical number line.

Mathematical Practice: MP8

Standard: 3. NBT.A.1

Target: Round two- and three-digit numbers to the nearest ten on the vertical number line.

Learning Activities:

Fluency: Students relate models with a unit 2, 3, 4, 5, or 10 to build multiplication fluency within 100. Students determine whether the capacity of an object is best measured in milliliters or liters and estimate its capacity to build fluency with metric measurement concepts from topic A.

Launch: Students read and record temperatures and determine which tens the temperatures are between. Students round two-digit numbers with familiar measurement units to the nearest ten by using the vertical number line.

Learn: Students round three-digit numbers with familiar measurement units to the nearest ten by using the vertical number line.

Land/Debrief: Students will turn and talk about renaming numbers in unit form to round numbers to the nearest ten and how knowing halfway between tens help you round a number to the nearest ten.

Daily Exit Ticket: Students will round numbers to the nearest ten and show their thinking.

Resources: Whole number place value cards.

Lesson # 11: Round to the nearest hundred on the vertical number line.

Mathematical Practice: MP7

Standard: 3.NBT.A.1

Target: Round to the nearest hundred on the vertical number line.

Learning Activities:

Fluency: Students visualize a number line while counting aloud to build fluency with counting by threes from module 1. Students rename hundreds from unit form to standard form to prepare for rounding to the nearest hundred. Students identify the number halfway between consecutive units of hundred on a number line to prepare for rounding to the nearest 100.

Launch: Students determine between which hundreds the heights of classmates fall.

Learn: Students round three-digit numbers to the nearest hundred by using the vertical number line. Students round four-digit numbers to the nearest hundred by using the vertical number line. Students round three- and four-digit numbers in context to the nearest hundred.

Land/Debrief: Students will turn and talk to generalize rounding with larger place values.

Daily Exit Ticket: Students will turn and talk to generalize rounding with larger place values.

Resources: Tape measure, Whole number place value cards.

Lesson # 12: Estimate sums and difference by rounding.

Mathematical Practice: MP6

Standard: 3.NBT.A.1; 3.NBT.A.2

Target: Estimate sums and differences by rounding.

Learning Activities:

Fluency: Students visualize a number line while counting aloud to build fluency with counting by fours from module 1. Students complete equations to build fluency with multiplying and dividing by 2 and 4.

Launch: Students estimate the number of objects in a picture.

Learn: Students round addends to the nearest hundred to estimate sums and compare the estimates. Students reason about which benchmark to use to estimate and compare their estimates. Students estimate the solution to a subtraction problem and then assess the reasonableness of their answer.

Land/Debrief: Facilitate a discussion about the usefulness of rounding and estimation.

Daily Exit Ticket: Students will estimate and round to the nearest hundred. Students will explain their answer.

Resources: Multiply and Divide by Two and Four Sprint (in the student book)

Lesson # 13: Collect and represent data in a scaled bar graph and solve related problems.

Mathematical Practice: MP2

Standard: 3.MD.B.3

Target: Collect and represent data in a scaled bar graph and solve related problems.

Learning Activities:

Fluency: Students identify the next ten and the number needed to make the next ten to prepare for using simplifying strategies to find sums and differences.

Launch: Students analyze two scaled bar graphs with different scales.

Learn: Students solve problems by using data from vertical scaled bar graphs. Students create a horizontal scaled bar graph and use the graph to solve problems.

Land/Debrief: Facilitate a discussion about using scaled bar graphs.

Daily Exit Ticket: Students will represent data on a bar graph and solve problems by using data from a bar graph.

Resources: Sticky notes

Lesson # 14: Use place value understanding to add and subtract like units.

Mathematical Practice: MP7

Standard: 3.NBT.A.2

Target: Use place value understanding to add and subtract like units.

Learning Activities:

Fluency: Students use the math way to find the product of two numbers when one number is 10 to prepare for using the distributive property in module 3. Students identify a place value of a digit in a number and then say the number in expanded form to prepare for using place value understanding to find sums and differences. Students identify the next ten and the number needed to make the next ten to prepare for using simplifying strategies to find sums and differences.

Launch: Students use data from a scaled bar graph to add in unit form.

Learn: Students use place value understanding to add without regrouping. Students break apart addends to add like units. Students use place value understanding to subtract numbers in unit form. Students break apart subtrahends to subtract like units.

Land/Debrief: Facilitate a discussion about the role of place value in addition and subtraction.

Daily Exit Ticket: Students will add or subtract, showing their strategy.

Resources: None

Lesson # 15: Use the associative property to make the next ten to add.

Mathematical Practice: MP3

Standard: 3.NBT.A.2

Target: Use the associative property to make the next ten to add.

Learning Activities:

Fluency: Students use the math way to find the product of two one-digit numbers when one number is 5 to prepare for using the distributive property in module 3.

Launch: Students solve addition problems based on data from a scaled bar graph.

Learn: Students analyze an addition problem completed by using the make the next ten strategy. Students make the next ten to add with two-digit addends by using the arrow way and parentheses.

Land/Debrief: Facilitate a discussion about when making the next ten is a useful addition strategy.

Daily Exit Ticket: Students will use the simplifying strategy to add.

Resources: Multiply and Divide by 5 Sprint (in the student book)

Lesson # 16: Use compensation to add.

Mathematical Practice: MP5

Standard: 3.NBT.A.2

Target: Use compensation to add.

Learning Activities:

Fluency: Students use the math way to find the product of two one-digit numbers when one number is 2 to prepare for using the distributive property in module 3. Students subtract a multiple of 10 from a two-digit number to build fluency with simplifying strategies used to find sums and differences. Students identify the next hundred and the number needed to make the next hundred to prepare for using simplifying strategies to find sums and differences.

Launch: Students add by using a self-selected strategy and explain their reasoning.

Learn: Students find related addition problems by using the relationship between the addends. Students add by using the compensation strategy with multiples of 100. Students identify and correct an error in the use of the compensation strategy.

Land/Debrief: Facilitate a discussion about when compensation is a useful addition strategy.

Daily Exit Ticket: Students will use a simplifying strategy to add.

Resources: None

Lesson # 17: Use place value understanding to subtract efficiently using take from a ten.

Mathematical Practice: MP6

Standard: 3.NBT.A.2

Target: Use place value understanding to subtract efficiently using take from a ten.

Learning Activities:

Fluency: Students use the math way to find the product of two one-digit numbers when one number is 4 to prepare for using the distributive property in module 3. Students identify a place value and the value of a digit in a number and then say the number in expanded form to build place value understanding for addition and subtraction.

Launch: Students relate pictorial representations to equations.

Learn: Students subtract two-digit numbers from two- and three- digit numbers by using a number bond to show the decomposition of the total as a multiple of ten and another number. Students use simplifying strategies to solve a word problem.

Land/Debrief: Students will turn and talk about how the take from ten strategy can simplify a problem and when the take from a ten strategy is useful.

Daily Exit Ticket: Students will use the simplifying strategy to subtract.

Resources: None

Lesson # 18: Use place value understanding to subtract efficiently using take from a hundred.

Mathematical Practice: MP7

Standard: 3.NBT.A.2

Target: Use place value understanding to subtract efficiently using take from a hundred.

Learning Activities:

Fluency: Students find the product and say a multiplication equation to build multiplication fluency within 100. Students use the math way to find the product of two one-digit numbers when one number is 4 to prepare for using the distributive property in module 3. Students subtract a multiple of 10 from a number to build fluency with simplifying strategies used to find sums and differences.

Launch: Students solve a subtraction problem with 99 as the subtrahend.

Learn: Students subtract two-digit numbers from three-digit numbers by using a number bond to take out one hundred. Students use what they know about taking from one hundred to take from a hundred as a strategy to subtract.

Land/Debrief: Facilitate a discussion about when take from a hundred is a useful subtraction strategy.

Daily Exit Ticket: Students will use the simplifying strategy to subtract.

Resources: None

Lesson # 19: Use compensation to subtract.

Mathematical Practice:

Standard: 3.NBT.A.2

Target: Use compensation to subtract.

Learning Activities:

Fluency: Students find the product and say a multiplication equation to build multiplication fluency within 100. Students use the math way to find the product of two one-digit numbers when one number is 3 to prepare for using the distributive property in module 3. Students identify a place value and the value of a digit in a number and then say the number in expanded form to build place value understanding for addition and subtraction.

Launch: Given two problems, students select the simpler problem and provide reasoning for their selections.

Learn: Students use a tape diagram to represent making a new subtraction problem by adding 1 or 2 to the subtrahend and minuend. Students subtract by adding 10 or 20 to both the subtrahend and minuend. Students use compensation by subtracting 1 from both the minuend and subtrahend to find the difference without renaming.

Land/Debrief: Facilitate a discussion when compensation is a useful subtraction strategy.

Daily Exit Ticket: Students will use the simplifying strategy to subtract.

Resources: None

Lesson # 20: Add measurements using the standard algorithm to compose larger units once.

Mathematical Practice: MP4

Standard: 3.NBT.A.2

Target: Add measurements using the standard algorithm to compose larger units once.

Learning Activities:

Fluency: Students round a two- or three-digit number to the nearest ten to build fluency with the skill from topic B. Students visualize a number line while counting aloud to maintain fluency with counting by twos from module 1. Students complete a division equation using a related multiplication equation to build fluency with the strategy from module 1.

Launch: Students use data from a scaled bar graph to estimate sums.

Learn: Students use place value disks to add two- and three-digit numbers with one renaming. Students draw dots to represent place value disks and use the standard algorithm to add two- and three- digit numbers with one renaming.

Land/Debrief: Facilitate a discussion about adding by using place value models and the standard algorithm.

Daily Exit Ticket: Students will add, showing their strategy and use the Read-Draw-Write process to solve a problem.

Resources: Place value disks set

Lesson # 21: Add measurements using the standard algorithm to compose larger units twice.

Mathematical Practice: MP5

Standard: 3.NBT.A.2

Target: Add measurements using the standard algorithm to compose larger units twice.

Learning Activities:

Fluency: Students visualize a number line while counting aloud to maintain fluency with counting by twos from module 1. Students complete equations to build fluency with multiplying and dividing by 2.

Launch: Students choose an addition strategy by using place value understanding.

Learn: Students use place value to choose an addition strategy for adding two- and three-digit numbers with two renamings. Students draw on a place value chart and use the standard algorithm to add three-digit numbers with two renamings.

Land – Debrief: Facilitate a discussion how the standard algorithm is a useful addition strategy.

Daily Exit Ticket: Students will add two three-digit numbers showing their strategy.

Resources: Multiply and Divide by 2 Sprint (in the student book)

Lesson # 22: Subtract measurements using the standard algorithm to decompose larger units once.

Mathematical Practice: MP1

Standard: 3.NBT.A.2

Target: Subtract measurements using the standard algorithm to decompose larger units once.

Learning Activities:

Fluency: Students visualize a number line while counting aloud to build fluency with counting by fours from module 1. Students find the total and say an addition equation to prepare for addition within 1,000. Students rename tens to prepare for decomposing larger units while using the standard algorithm for subtraction.

Launch: Students apply place value concepts to name a three-digit number in unit form in multiple ways by unbundling hundreds or tens.

Learn: Students use place value disks and the standard algorithm to subtract two- and three-digit numbers by renaming tens as ones. Students use place value disks and the standard algorithm to subtract two- and three-

digit numbers by renaming hundreds as tens. Students use the standard algorithm to solve a compare with difference unknown word problem involving subtracting three-digit numbers with one renaming.

Land/Debrief: Facilitate a discussion about renaming.

Daily Exit Ticket: Students use the Read-Draw-Write process to solve a problem.

Resources: Place value disks set

Lesson # 23: Subtract measurements using the standard algorithm to decompose larger units twice.

Mathematical Practice: MP6

Standard: 3.NBT.A.2

Target: Subtract measurements using the standard algorithm to decompose larger units twice.

Learning Activities:

Fluency: Students round a three- or four- digit number to the nearest hundred to build fluency with the skill from topic B. Students visualize a number line while counting aloud to build fluency with counting by fours from module 1. Students complete a division equation by using a related multiplication equation to build the strategy from module 1.

Launch: Students use place value to choose a subtraction strategy.

Learn: Students draw to represent disks in a place value chart and use the standard algorithm to subtract two- and three-digit numbers with one renaming. Students draw to represent disks in a place value chart and use the standard algorithm to subtract three-digit numbers with two renamings.

Land/Debrief: Facilitate a discussion on how place value models help us subtract.

Daily Exit Ticket: Students will complete subtractions problems and show their strategy.

Resources: None

Lesson # 24: Subtract measurements using the standard algorithm to decompose larger units across two place values.

Mathematical Practice: MP3

Standard: 3.NBT.A.2

Target: Subtract measurements using the standard algorithm to decompose larger units across two place values.

Learning Activities:

Fluency: Students visualize a number line while counting aloud to build fluency with counting by threes from module 1. Students find the total and say an addition equation to prepare for addition within 1,000. Students rename tens to prepare for decomposing larger units while using the standard algorithm for subtraction.

Launch: Students analyze subtraction problems to determine when using the standard algorithm is an efficient strategy.

Learn: Students draw a place value chart and use the standard algorithm to solve a compare with difference unknown word problem involving renaming across a zero in the tens place. Students solve a compare with smaller unknown word problem involving hundreds in the minuend.

Land/Debrief: Facilitate a discussion about using the standard algorithm for subtraction.

Daily Exit Ticket: Students will use the Read-Draw-Write process to solve a problem.

Resources: None

Lesson # 25: Solve two-step word problems.

Mathematical Practice: MP1

Standard: 3.OA.D.8

Target: Solve two-step word problems.

Learning Activities:

Fluency: Students round a two-or three-digit number to the nearest ten and hundred to build fluency with the skills from topic B. Students visualize a number line while counting aloud to build fluency with counting by threes from module 1. Students complete a division equation by using a related multiplication equation to build fluency with the strategy from module 1.

Launch: Students choose a subtraction strategy by using place value.

Learn: Students solve a two-step addition and subtraction word problem by using self-selected representations and strategies. Students compare solution strategies for problem 1 and reason about connections. Students solve two-step multiplication and addition word problem by using self-selected representations and strategies. Students share and compare solution strategies for problem 2 and reason about connections.

Land/Debrief: Facilitate a discussion focused on the Read-Draw-Write process and how drawings can help students see the solution path.

Daily Exit Ticket: Students will use the Read-Draw-Write strategy to solve a two-step word problem.

Resources: None

****Zearn Math is available for independent digital lessons.**

Unit Modifications for Special Population Students

Advanced Learners	<ul style="list-style-type: none"> • Lesson 1 – Extend student thinking by asking for a multiplication equation to represent each bundling scenario. <ul style="list-style-type: none"> ○ 10 ones = 1 ten $10 \times 1 = 10$ ○ 10 tens = 1 hundred $10 \times 10 = 100$ ○ 10 hundreds = 1 thousand $10 \times 100 = 1000$ • Lesson 21 – As time allows, challenge students to find the sums using a different strategy. Experience with multiple strategies will allow for richer discussion. • Lesson 25 – Differentiate the set by selecting problems for students to finish independently within the timeframe.
Struggling Learners	<ul style="list-style-type: none"> • Lesson 2 – Inviting students to model the procedure and confirm your findings can be good guided practice for students who may struggle when it is time to complete the task on their own. When students confirm your findings, they already know the answer, so they can focus on how it feels to compare the objects to the weight. If students struggle to feel the similarities or differences in the weights between their hands, consider using a pan balance instead. • Lesson 8 – To ensure that students distinguish the small tick marks as you demonstrate, consider providing an enlarged image of a thermometer that has tick marks for every degree. Ask students to point and count with you on their paper thermometer starting at 70. • Lesson 11 – Some students may still need support with drawing number lines. Consider providing number lines that are pre-partitioned or have some of the partitions. Consider making the halfway mark a different color than the bottom and top tick marks. • Lesson 12 – Consider differentiating between estimating and rounding with this quick, helpful activity. Ask each student to grab a handful of interlocking cubes in one hand and then do the following: <ul style="list-style-type: none"> ○ Make an estimate. ○ Count the cubes. ○ Round the count to the nearest ten. • Lesson 14 – Consider showing a picture of each type of scale to clarify the difference between them and differentiate analog from digital.
English Language Learners	<ul style="list-style-type: none"> • Lesson 1 – Consider creating an anchor chart for the weight units and their abbreviations: gram (g) and kilogram (kg). Include a drawing or photograph of a single cube and the bag of 1,000 cubes to illustrate the units. Add to the chart in lesson 2 with examples of classroom objects that weigh approximately 1 gram and 1,000 grams. • Lesson 2 – Consider using a sentence frame paired with a visual for students to use estimate as a verb. I estimate the ____ weights about ____ grams. • Lesson 3 – Consider reinforcing the term <i>operation</i> by having students draw an arrow to the addition, subtraction, multiplication, or division symbols in their equations and write the word <i>operation</i> as part of the discussion of each problem in the lesson. • Lesson 5 – To support the terms <i>vertical</i> and <i>horizontal</i>, invite students to use gestures to model each term. Ask students to stand and hold their arms straight out to their sides. As a class, say, “horizontal”. Ask them to hold their arms straight up in the air by their ears and a class, say, “vertical.” As a support for the remainder of the lesson, consider posting a visual that indicates the direction of each term.

Special Needs Learners	<ul style="list-style-type: none"> • Lesson 1 – Present the information in another format by offering concrete objects for students to manipulate. Provide a 1-gram cube, a 10-gram stick, a 100-gram bag, or a 1-kilogram bag, and allow students to hold and compare the weights of the objects. • Lesson 3 – After prompting students to write an equation and solve the problem, consider providing them with the following guiding questions to encourage strategic planning <ul style="list-style-type: none"> ○ What does my drawing tell me? ○ How have I solved a problem before when the drawing looked like this? ○ What strategies can I use to solve this kind of problem/ • Lesson 5 – To support groups with planning and organization, post a copy of the written directions for groups to refer to as they work. Provide a target completion time for the task and display a visual timer. Suggest that the recorder in each group also assume the role of timekeeper.
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:

- Lesson 3 – 1.2.5.A.2 (Art) Characteristic approaches to content, form, style, and design define art genres. Relate common artistic elements that define distinctive art genres in dance, music, theatre, and visual arts. *Students are asked to view a painting called Woman Holding a Balance, by Johannes Vermeer and notice and wonder elements of the painting. Students will then relate the elements of the concept of balance.*
- Lessons 1, 8, and 10 – NJSLA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will work collaboratively in pairs to explore strategies, analyze problems, and discuss ideas relating to lessons' target.*
- Lessons 10, 11, and 17 – NJSLA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will turn and talk to explore strategies, analyze problems, and discuss ideas relating to lessons' target.*
- Lessons 1 – Lessons 23 – SL.3.1.B – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly. Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). *During the "Land" section of each lesson, students will participate in a discussion to reinforce skills taught in each lesson.*

Integration of 21st Century Skills

Standards:

- Lesson 17 - 9.4.5.CI.3 - Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a) *Students will relate pictorial representations to equations. Students will silently think to determine how each equation is represented by corresponding pictures of rekenrek. Students will discuss their thinking with a partner and then share their thinking with the group.*
- Lesson 8 - 9.4.5.CT.1 – Identify and gather relevant data that will aid in the problem-solving process. *Students will determine whether an object is best measured in grams or kilograms and estimate its weight to build fluency with metric measurement concepts from topic A.*

- Zearn Math - 9.4.5.CT.3 – Describe how digital tools and technology may be used to solve problems. *Students will be using Zearn Math digital learning platform as a supplement to aid in mastering skills.*
- Lesson 10 - 8.1.5.DA.1 – Collect, organize, and display data in order to highlight relationships or support claims. *Students will read and record temperatures and determine which tens the temperatures are between.*
- Lesson 1 - 8.1.5.DA.3 – Organize and present collected data visually to communicate insights gained from different views of the data. *Students will use an unlabeled place value chart to help organize, sort and count cubes.*
- Lesson 19 - 8.1.5.DA.5 – Propose cause and effect relationships, predict outcomes, or communicate ideas using data. *Students will be given two problems. They will select the simpler problem and communicate their ideas and reasoning for their selections.*
- Lesson 6 - 8.1.5.AP.1 – Compare and refine multiple algorithms for the same task and determine which is the most appropriate. *Students will solve a put together with total unknown problem involving liquid volume by selecting representations and strategies.*

Unit Title: Module 3 – Multiplication and Division with Units of 0, 1, 6, 7, 8, and 9

Unit Description: Students will extend their learning of multiplication and division to units of 6, 7, 8, 9, 0, and 1 by applying conceptual understanding and by using the commutative, distributive, and associative properties, as applicable. Students will multiply two-digit multiples of 10 and solve one- and two-step word problems involving the four operations.

Unit Duration: 30 days (23 lessons, 2 optional lessons, 5 Topic quizzes, 1 End of Module 3 Assessment)

Desired Results

Standard(s):

- **3.OA.A.1** Interpret products of whole number, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. *For example, describe and/or represent a context in which a total number of objects can be expressed as 5×7 .*
- **3.OA.A.2** Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe and/or represent a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.*
- **3.OA.A.3** Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- **3.OA.A.4** Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$, $\square \div 3$, $6 \times 6 = ?$*
- **3.OA.B.5** Apply properties of operations as strategies to multiply and divide. *Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$ (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)*
- **3.OA.B.6** Understand division as an unknown-factor problem. *For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.*
- **3.OA.C.7** Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
- **3.OA.D.8** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- **3.OA.D.9** Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*
- **3.NBT.A.3** Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

Understandings:

- I can apply multiplication and division concepts, representations, and strategies to the units of 6 and 8. I can see sixes as 2 threes and eights as 2 fours. I can use the commutative, distributive, and associative properties to help me multiply and divide. I can use more abstract arrays and tape diagrams. I can begin to use a letter to represent an unknown quantity.

Essential Questions:

- How does the size of each group help you count? How can multiplication be helpful when counting? What strategies can be used to multiply and divide by 6 and 8? How can a letter be used to represent the unknown? How can two-factor and three-factor expressions describe the same array? What helps you decide how to break apart a factor? How can facts you know help you divide?

<ul style="list-style-type: none"> I can extend my work with the properties of operations and use different strategies to multiply efficiently, with a focus on 7 as a factor. I can create expressions with known facts to find products and quotients of unfamiliar facts. I can use the distributive property and regroup factors by using the associative property. I can solve one-step word problems. I can explore patterns and identify and apply strategies for multiplying and dividing with 9, 0, and 1. I can look for and generalize patterns in the multiplication table and in input-output tables to solve problems. I can write one-step word problems using multiplication with one-digit factors. I can assess solutions to two-step word problems. I can use place value models, the properties of operations, and familiar facts to multiply multiples of 10 by one-digit numbers. I can solve two-step word problems and share solution strategies. 	<ul style="list-style-type: none"> What are some different strategies that can help you find the answer to multiplication and division facts by using units of 7? How is using the break apart and distribute strategy to break apart a second factor in an expression similar to and different from using the strategy to break apart the first factor? How can we decompose two factors into three factors to simplify multiplication? Why are the parentheses important in an expression or equation? When we choose numbers for division with the break apart and distribute strategy, what do we need to think about? How can the same problem be solved by using different strategies? How do we use tens to help us skip-count by nines? How do patterns help us multiply with units of 9? How do we use 10 to help us multiply units of 9? How can the number of groups in a nines fact help us find the product? How can patterns help us multiply and divide with 1 and 0? How do the patterns we discovered for odd and even products help you when you multiply? How do input-output tables help you see a pattern? How do you decide what question to ask in a word problem? How can familiar strategies be used to estimate? How does knowing your multiplication facts help you multiply the multiples of 10? How does place value help you multiply tens? How can grouping factors help us multiply tens? How do you decide which model to use when solving a two-step word problem? How can multiplication be help us when counting?
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Assessment Evidence

Assessments:

- Topic Quiz A
- Topic Quiz B
- Topic Quiz C
- Topic Quiz D
- End of Module 3 Assessment

Benchmarks:

- Eureka Math Squared Benchmark Assessments are administered three times per year (Optional).**
- The Star Math assessment is administered in the fall, winter, and spring.**

Learning Plan

Lesson # 1: Organize, count, and represent a collection of objects.

Standard: 3.OA.B.5; 3.OA.C.7

Mathematical Practice: MP3

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

Learning Activities:

Fluency: Students interpret a tape diagram modeling measurement division and write an equation to build an understanding of two interpretations of division.

Launch: Students work together to determine which expression does not represent the total in a given image.

Learn: Students use self-selected strategies to organize and count objects and record their process. Students discuss strategies for organizing and multiplying to find the total.

Land/Debrief: Facilitate a discussion about organizing and counting efficiently.

Daily Exit Ticket: Students will identify what unit they used to count a collection and explain why they selected that unit.

Resources: Counting Collections (1 per student pair, in the student book); Organizational tools; Scissors (1 per student pair); Dry-erase marker; Whiteboard; *Learn* book

Lesson # 2: Count by units of 6 to multiply and divide by using arrays.

Standard: 3.OA.A.3; 3.OA.A.4; 3.OA.B.6;

Mathematical Practice: MP2

Target: Count by units of 6 to multiply and divide by using arrays.

Learning Activities:

Fluency: Students interpret a tape diagram modeling partitive division and write an equation to build and understanding of two interpretations of division. Students complete a number bond to prepare for using the distributive property beginning in lesson 5. Students use the math way to find the product of two one-digit numbers when one number is 3 to prepare for using the distributive property beginning in lesson 5.

Launch: Students build their knowledge of threes to see the relationship between 3s and 6s.

Learn: Students relate units of 3 to units of 6 by using an array of cubes and skip-counting. Students use an array, skip-counting, and what they know about 3s to multiply and divide by 6. Students solve a division word problem with units of 6 and use a letter to represent the unknown. Students find the value of the unknown in a multiplication or division equation where the unknown is represented by a letter.

Land/Debrief: Facilitate a discussion about strategies for multiplying and dividing by 6 and using a letter to represent an unknown.

Daily Exit Ticket: Students will use the Read-Draw-Write process to solve a problem.

Resources: Interlocking cubes, 1 cm (60 per student pair)

Lesson # 3: Count by units of 8 to multiply and divide by using arrays.

Standard: 3.OA.A.4; 3.OA.B.5

Mathematical Practice: MP2

Target: Count by units of 8 to multiply and divide by using arrays.

Learning Activities:

Fluency: Students interpret a tape diagram modeling measurement or partitive division and write an equation to build an understanding of two interpretations of division. Students complete a number bond to prepare for using the distributive property beginning in lesson 5. Students count by sixes in unit and standard form to build fluency with using arrays to multiply and divide.

Launch: Students draw and analyze models to show the relationship between 4s and 8s

Learn: Students color a grid to make an array and relate units of 4 to units of 8. Students use an array, skip-counting, and what they know about 4s to multiply and divide by 8. Students find the value of the unknown in a multiplication or division equation where the unknown is represented by a letter.

Land/Debrief: Facilitate a discussion about strategies for multiplying and dividing by 8.

Daily Exit Ticket: Students will draw a model and skip-count to find 6×8 .

Resources: 100-bead rekenrek; Blue colored pencil; Orange colored pencil

Lesson # 4: Decompose pictorial arrays to create expressions with three factors.

Standard: 3.OA.B.5

Mathematical Practice: MP7

Target: Decompose pictorial arrays to create expressions with three factors.

Learning Activities:

Fluency: Students round a two- or three-digit number to the nearest ten to build fluency with the skill from module 2. Students find a product and say an equation to build multiplication fluency within 100. Students construct a number line with their fingers while counting aloud to develop fluency with counting by sixes and maintain a strategy for multiplying.

Launch: Students use familiar groups of language to write an expression with three factors that describes a decomposed array.

Learn: Students describe the equal groups in an array as an expression with parentheses. Students describe the equal groups in arrays as expressions with parentheses. Students locate equal groups in an array and write a three-factor expression to represent the array.

Land/Debrief: Facilitate a discussion about two-factor and three-factor expressions.

Daily Exit Ticket: Students will identify equal groups in an array and use the array to complete a multiplication problem.

Resources: Eureka Math2 Numeral Cards (1 per student pair); Hidden Factor Mat (1 per student pair)

Lesson # 5: Use the break apart and distribute strategy to multiply with units of 6 and 8.

Standard: 3.OA.B.5

Mathematical Practice: MP6

Target: Use the break apart and distribute strategy to multiply with units of 6 and 8.

Learning Activities:

Fluency: Students round two- and three-digit numbers to the nearest ten to build fluency with the skill from module 2. Students count by eights in unit and standard form to build fluency with using arrays to multiply and divide.

Launch: Students determine the total in an array that is composed of smaller arrays.

Learn: Students break apart 8 to find 8×7 by using the break apart and distribute strategy. Students work with a partner to apply the break apart and distribute strategy to multiply by 6. Students analyze how the break apart and distribute strategy is represented in a tape diagram.

Land/Debrief: Facilitate a discussion about when the break apart and distribute strategy help you multiply and what helps you decide how to break apart a factor.

Daily Exit Ticket: Students will use the break apart strategy and distribute strategy to find 6×7 .

Resources: 100-bead rekenrek; Round to the Nearest Ten Sprint (in the student book)

Lesson # 6: Use the break apart and distribute strategy to divide with units of 6 and 8.

Standard: 3.OA.B.5

Mathematical Practice: MP3

Target: Use the break apart and distribute strategy to divide with units of 6 and 8.

Learning Activities:

Fluency: Students round a three- or four-digit number to the nearest hundred to build fluency with the skill from module 2. Students find a product and say an equation to build multiplication fluency within 100. Students construct a number line with their fingers while counting aloud to develop fluency with counting by eights and to maintain a strategy for multiplying.

Launch: Students determine how the total is broken apart in given arrays.

Learn: Students identify and justify how they would use the break apart and distribute strategy to find $48 \div 6$. Students make decisions about how to break apart a total and how to use a number bond to model the break apart and distribute strategy.

Land/Debrief: Facilitate a discussion about the break apart and distribute strategy.

Daily Exit Ticket: Students will use the break apart and distribute strategy to find $48 \div 4$.

Resources: Number Bond Signs (in the teacher edition); Eureka Math Number Cards (1 deck per student pair); Hidden Factor Mat (1 per student pair, in the student book)

Lesson # 7: Count by units of 7 to multiply and divide by using arrays and tape diagrams.

Standard: 3.OA.A.3; 3.OA.A.4; 3.OA.B.6

Mathematical Practice: MP5

Target: Count by units of 7 to multiply and divide by using arrays and tape diagrams.

Learning Activities:

Fluency: Students find a product and say a multiplication or related division equation to build multiplication and division fluency within 100. Students construct a number line with their fingers while counting aloud to build fluency with counting by sixes and eights and maintain a strategy for multiplying.

Launch: Students see units of 7 in a calendar and skip-count by sevens to solve a problem.

Learn: Students use the commutative property and make a ten strategy to skip-count by sevens. Students use an array an unknown factor equation to divide by 7. Students solve division word problems with a unit of 7.

Land – Debrief: Facilitate a discussion about applying previously learned strategies to find products and quotients with 7 as a unit.

Daily Exit Ticket: Students use the Read-Draw-Write process to solve a problem.

Resources: Eureka Math Number Cards (1 deck per student pair); Hidden Factor Mat (1 per student pair, in the student book)

Lesson # 8: Use the break apart and distribute strategy to multiply with units of 7.

Standard: 3.OA.A.3; 3.OA.B.5

Mathematical Practice: MP2

Target: Use the break apart and distribute strategy to multiply with units of 7.

Learning Activities:

Fluency: Students round three- and four-digit numbers to the nearest hundred to build fluency with the skill from module 2. Students count by sevens in unit and standard form to build fluency with using arrays to multiply and divide.

Launch: Students explore arrays showing different ways to break apart 6×7 .

Learn: Students use the break apart and distribute strategy to find 8×7 . Students solve multiplication word problems with 7 as a factor by using the break apart and distribute strategy to multiply.

Land/Debrief: Facilitate a discussion about flexibility in using the break apart and distribute strategy.

Daily Exit Ticket: Students will use an array to help complete an equation using the break apart and distribute strategy with units of 7.

Resources: 100-bead rekenrek; Round to the Nearest Hundred Sprint (in the student book)

Lesson # 9: Model the associative property as a strategy to multiply.

Standard: 3.OA.B.5

Mathematical Practice: MP7

Target: Model the associative property as a strategy to multiply.

Learning Activities:

Fluency: Students estimate a sum or difference by rounding to the nearest ten to build fluency with estimating by rounding from module 2. Students complete number bonds to build fluency with using the distributive property. Students construct a number line with their fingers while counting aloud to develop fluency with counting by sevens and to maintain a strategy for multiplying.

Launch: Students use parentheses to write two three-factor expressions to represent a situation.

Learn: Students analyze pairs of expressions to determine that the position of the parentheses does not change the answer in multiplication problems with three factors. Students decompose one factor and use the associative property to regroup the factors as a simplifying strategy for multiplication.

Land/Debrief: Facilitate a discussion about how the placement of the parentheses in multiplication does not change the product but can be a simplifying strategy.

Daily Exit Ticket: Students will use the associative property as a strategy to complete multiplication problems.

Resources: Colored Pencils (8)

Lesson # 10: Use parentheses in expressions with different operations.

Standard: 3.OA.B.5

Mathematical Practice: MP6

Target: Use parentheses in expressions with different operations.

Learning Activities:

Fluency: Students estimate a sum or difference by rounding to the nearest hundred to build fluency with estimating by rounding from module 2. Students complete number bonds to build fluency with using the distributive property.

Launch: Students recognize factors can be multiplied in any order, with or without parentheses.

Learn: Students identify the equation that represents a situation and justify their choice. Students explore how moving the parentheses changes the value of an expression. Students insert parentheses to make true equations.

Land/Debrief: Facilitate a discussion about the role of parentheses in an equation.

Daily Exit Ticket: Students will use parentheses to make a true equation.

Resources: None

Lesson # 11: Use the break apart and distribute strategy to divide with units of 7.

Standard: 3.OA.B.5

Mathematical Practice: MP3

Target: Use the break apart and distribute strategy to divide with units of 7.

Learning Activities:

Fluency: Students find a product and say a multiplication or related division equation to build multiplication and division fluency within 100. Students construct a number line with their fingers while counting aloud to build fluency with counting by eights, develop fluency with counting by sevens, and maintain a strategy for multiplying.

Launch: Students compare various ways to decompose arrays by using the break apart and distribute strategy.

Learn: Students break a multiple of 7 into parts to simplify division and find the quotient. Students choose how to decompose a total by using the break apart and distribute strategy to divide, and they evaluate their classmates' choices. Students simplify division by decomposing a total by using tens facts.

Land/Debrief: Facilitate a discussion about when the break apart and distribute strategy is useful for division.

Daily Exit Ticket: Students will divide by using the break apart and distribute strategy.

Resources: Eureka Math Numeral Cards (1 deck per student pair); Hidden Factor Mat (1 per student pair, in the student book); Chart paper (1 per student pair); Sticky notes (10 per student pair)

Lesson # 12: Solve one-step word problems involving multiplication and division.

Standard: 3.OA.A.3

Mathematical Practice: MP1

Target: Solve one-step word problems involving multiplication and division.

Learning Activities:

Fluency: Students find a product and say a multiplication or related division equation to build multiplication and division fluency within 100. Students construct a number line with their fingers while counting aloud to build fluency with counting by sixes, develop fluency with counting by sevens, and maintain a strategy for multiplying.

Launch: Students draw representations of equations with a letter for the unknown.

Learn: Students reason about and solve a multiplication word problem by using models and strategies of their choice. Students share solutions for problem 1 and reason about their connections. Students reason about and solve a division word problem by using models and strategies of their choice. Students share solutions for problem 2 and reason about their connections.

Land/Debrief: Facilitate a discussion focused on applying multiplication and division strategies to solve word problems.

Daily Exit Ticket: Students use the Read-Draw-Write process to solve a problem using a letter to represent the unknown.

Resources: Eureka Math Numeral Cards (1 deck per student pair); Hidden Factor Mat (1 per student pair, in the student book)

Lesson # 13: Count by units of 9 to multiply.

Standard: 3.OA.D.9

Mathematical Practice: MP7

Target: Count by units of 9 to multiply.

Learning Activities:

Fluency: Students construct a number line with their fingers while counting aloud to build fluency with counting by eights and sevens and maintain a strategy for multiplying. Students complete a division equation by using a related multiplication equation to build fluency with units of 6, 7, and 8.

Launch: Students use commutativity and the break apart and distribute strategy to multiply with units of 9.

Learn: Students identify that repeatedly adding 10 and subtracting 1, leads to the same result as skip-counting by nines. Students identify patterns in a list of multiples of 9 and use the patterns to multiply with units of 9.

Land/Debrief: Facilitate a discussion about strategies for using 10 to multiply with units of 9

Daily Exit Ticket: Students will use related multiplication equation to build fluency.

Resources: Interlocking cubes, 1 cm (150)

Lesson # 14: Apply strategies and identify patterns to multiply with units of 9.

Standard: 3.OA.B.5; 3.OA.C.7; 3.OA.D.9

Mathematical Practice: MP7

Target: Apply strategies and identify patterns to multiply with units of 9.

Learning Activities:

Fluency: Students match an expression to a word problem to prepare for solving one- and two-step word problems in lesson 19. Students count by nines in unit and standard form to build fluency with using arrays to multiply and divide.

Launch: Students identify and correct an error in using the add 10, subtract 1 strategy to multiply by 9.

Learn: Students use the commutative property and a tens fact to find the product of a number and 9. Students identify a pattern between the number of nines and the digit in the tens place in the multiples of nines.

Land/Debrief: Facilitate a discussion to summarize patterns that can be used as strategies to multiply with units of 9.

Daily Exit Ticket: Students will solve a multiplication problem using two different strategies.

Resources: Envelopes (12); Set of Expression Cards; 100-bead rekenrek

Lesson # 15: Reason about and explain patterns of multiplication and division with units of 1 and 0.

Standard: 3.OA.A.1; 3.OA.A.2; 3.OA.D.9

Mathematical Practice: MP8

Target: Reason about and explain patterns of multiplication and division with units of 1 and 0.

Learning Activities:

Fluency: Students match an expression to a word problem to prepare for solving one- and two-step word problems in lesson 19. Students construct a number line with their fingers while counting aloud to build fluency with counting by nines and to maintain a strategy for multiplying.

Launch: Students write equations to represent problems involving multiplication and division with units of 1.

Learn: Students generalize patterns for multiplying and dividing a unit of 1 and for dividing a number by itself. Students generalize patterns for multiplying by 0 and for dividing 0 by a number.

Land/Debrief: Facilitate a discussion to summarize and apply the patterns for multiplying and dividing with 1 and 0.

Daily Exit Ticket: Student fill in the blanks to make equations true using units of 1 and 0.

Resources: Envelopes (12); Set of Expressions Cards (12, in the teacher edition); Envelope of Expressions Cards (1 per student pair)

Lesson # 16: Identify patterns by using the multiplication table.

Standard: 3.OA.D.9

Mathematical Practice: MP8

Target: Identify patterns by using the multiplication table.

Learning Activities:

Fluency: Students construct a number line with their fingers while counting aloud to build fluency with counting by threes and sixes and to maintain a strategy for multiplying. Students complete equations to build fluency with multiplying and dividing by 3.

Launch: Students explain how to decide whether a number is odd or even.

Learn: Students use a multiplication table to draw conclusions about the factors of odd and even products. Students explore patterns involving rows and columns in the multiplication table. Students find products by using the break apart and distribute strategy and a multiplication table.

Land/Debrief: Facilitate a discussion about how patterns can help when multiplying.

Daily Exit Ticket: Students use the multiplication table to find 8×12 .

Resources: Multiply and Divide by 3 Sprint (in the student book); Orange colored pencil

Lesson # 17: Identify and complete patterns with input-output tables.

Standard: 3.OA.C.7; 3.OA.D.9

Mathematical Practice: MP1

Target: Identify and complete patterns with input-output tables.

Learning Activities:

Fluency: Students construct a number line with their fingers while counting aloud to build fluency with counting by sixes and eights and to maintain a strategy for multiplying. Students complete a division equation by using a related multiplication equation to build fluency with units of 6, 7, and 8.

Launch: Students use multiplication to complete a table to represent quantities.

Learn: Students use real-world context to identify a pattern and complete an input-output table. Students identify a pattern in an input-output table without context, complete the table, and describe the pattern. Students use a table to solve a historical math problem.

Land/Debrief: Facilitate a discussion about using input-output tables to identify, describe, and apply patterns.

Daily Exit Ticket: Students will identify a pattern and complete an input-output table.

Resources: None

Lesson # 18: Create multiplication and division word problems.

Standard: 3.OA.A.1; 3.OA.A.2

Mathematical Practice: MP2

Target: Create multiplication and division word problems.

Learning Activities:

Fluency: Students use parentheses to help find the product of three factors to build fluency with using the associative property from topic B. Students construct a number line with their fingers while counting aloud to build fluency with counting by sevens and nines and maintain a strategy for multiplying.

Launch: Students create word problems by matching pictures, expressions, and statements.

Learn: Students write multiplication word problems to match a given picture and expression. Students write division word problems to match a given picture and expression.

Land/Debrief: Facilitate a discussion about how students wrote their own word problems.

Daily Exit Ticket: Students will write a word problem to represent the expression $18 \div 3$.

Resources: Composing Word Problems (in the student book); Scissors

Lesson # 19: Solve two-step word problems by using the four operations and assess the reasonableness of solutions.

Standard: 3.OA.D.8

Mathematical Practice: MP4

Target: Solve two-step word problems by using the four operations and assess the reasonableness of solutions.

Learning Activities:

Fluency: Students use parentheses to help find the product of three factors to build fluency with using the associative property from topic B. Students construct a number line with their fingers while counting aloud to build fluency with counting by sevens and nines and maintain a strategy for multiplying.

Launch: Students compare rounding strategies for estimating a product.

Learn: Students draw to represent a two-step word problem, estimate the solution, solve the problem, and use their estimate to assess the reasonableness of their solution. Students draw to represent a two-step word problem, estimate the solution, solve the problem, and use their estimate to assess the reasonableness of their solution. Students compare estimation and solution strategies for problem 2 and reason about their connections.

Land/Debrief: Facilitate a discussion about how representations of word problems can help us estimate and what familiar strategies were used to estimate.

Daily Exit Ticket: Students will solve a two-step word problem, using drawings to represent the problem and using a letter for the unknown.

Resources: None

Lesson # 20: Multiply by multiples of 10 by using the place value chart.

Standard: 3.NBT.A.3

Mathematical Practice: MP2

Target: Multiply by multiples of 10 by using the place value chart.

Learning Activities:

Fluency: Students construct a number line with their fingers while counting aloud to build fluency with counting by fours and eights and maintain a strategy for multiplying. Students find the product and say a multiplication equation or related division equation to build multiplication and division fluency within 100.

Launch: Students use an efficient counting strategy to find a total represented in a picture.

Learn: Students use place value disks and unit form to relate multiplying ones to multiplying tens. Students use the place value chart and unit form to relate multiplying ones to multiplying tens. Students use unit form to multiply tens and apply the commutative property.

Land/Debrief: Facilitate a discussion about helpful strategies for multiplying tens.

Daily Exit Ticket: Students will complete the equations using place value chart for assistance.

Resources: Place value disks set

Lesson # 21: Multiply by multiples of 10 by using place value strategies and the associative property.

Standard: 3.OA.B.5; 3.NBT.A.3

Mathematical Practice: MP7

Target: Multiply by multiples of 10 by using place value strategies and the associative property.

Learning Activities:

Fluency: Students complete equations to build fluency with multiplying and dividing by 4.

Launch: Students analyze related place value expressions and representations.

Learn: Students decompose tens and multiply on the place value chart. Students multiply tens by simplifying a related three-factor expression.

Land/Debrief: Facilitate a discussion about grouping factors differently to simplify multiplying tens.

Daily Exit Ticket: Students will place parentheses in an equation to find related fact and then solve the equation.

Resources: Multiply and Divide by 4 Sprint (in student book)

Lesson # 22: Solve two-step word problems involving multiplication of single-digit factors and multiples of 10.

Standard: 3.OA.D.8; 3.NBT.A.3

Mathematical Practice: MP4

Target: Solve two-step word problems involving multiplication of single-digit factors and multiples of 10.

Learning Activities:

Fluency: Students add or subtract within 1,000 to build fluency with the operations.

Launch: Students identify and correct the error in a solution strategy for a two-step word problem that shows operations in an incorrect order.

Learn: Students reason about, represent, and solve a two-step word problem involving an array. Students share solutions for the carpet problem by predicting the next step in the solution process. Students reason about, represent, and solve a two-step word problem involving equal groups. Students share solutions for problem 2 by predicting the next step in the solution process.

Land/Debrief: Facilitate a discussion about strategies for solving two-step problems.

Daily Exit Ticket: Students will use the Read-Draw-Write process to solve a two-step word problem involving multiplication.

Resources: None

Lesson # 23: Identify patterns and apply strategies to multiply with units of 11 and 12. (Optional Lesson)

Standard: 3.OA.B.5; 3.OA.D.9

Mathematical Practice: MP5

Target: Identify patterns and apply strategies to multiply with units of 11 and 12.

Learning Activities:

Fluency: Students write and complete an equation to represent a tape diagram to prepare for solving word problems in lesson 25. Students use the math way to find the product when one factor is 10 or 2 to build multiplication fluency within 100 and prepare for multiplying with units of 11 and 12.

Launch: Students chorally count by elevens and observe patterns.

Learn: Students observe features in a visual pattern of counting by twelves. Students self-select strategies to find 12×8 three different ways.

Land/Debrief: Facilitate a discussion about multiplying with units of 11 and 12.

Daily Exit Ticket: Students will complete multiplication problems and show their work.

Resources: None

Lesson # 24: Organize, count, and represent a collection of objects.

Standard: 3.OA.B.5; 3.OA.C.7

Mathematical Practice: MP5

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

Learning Activities:

Fluency: Students add or subtract within 1,000 to build fluency with the operations.

Launch: Students choose an expression to represent a multiplication problem with a factor larger than 10 and find the product.

Learn: Students use self-selected strategies to organize and count objects and record their strategies for finding the total. Students discuss strategies for organizing and multiplying to find the total.

Land/Debrief: Facilitate a discussion while displaying student work from Share, Compare, and Connect explaining how using multiplication can help you count efficiently.

Daily Exit Ticket: Students will describe new strategies used to count and how the strategies used to count today are more efficient than the strategies used in the pasts.

Resources: Multiplication Counting Collections (1 per student pair, in the student book); Organization tools; Scissors (1 per student pair)

Lesson # 25: Apply multiplication and division concepts to complete a multi-part task. (Optional Lesson)

Standard: 3.OA.A.3; 3.OA.D.8

Mathematical Practice: MP1

Target: Apply multiplication and division concepts to complete a multi-part task.

Learning Activities:

Fluency: Students find the product and say a multiplication equation or related division equation to build multiplication and division fluency within 100. Students write and complete an equation to represent a tape diagram to prepare for solving word problems.

Launch: Student examine sample work to determine that some of the information needed to solve the problem is not given in the word problem.

Learn: Students solve word problems by using the problem and information in a table. Students determine what additional information is needed to solve a problem, find that information, and use it to solve the problem.

Land/Debrief: Facilitate a discussion about finding information needed to solve a problem.

Daily Exit Ticket: Students use information in a table to solve word problems using multiplication.

Resources: None

****Zearn Math is available for independent digital lessons.**

Unit Modifications for Special Population Students

Advanced Learners	<ul style="list-style-type: none"> • Lesson 10 – Ask students to extend their thinking to write equivalent expressions by using parenthesis. A student may write $(3 \times 5) - 2 = 13$ as $(3 \times 5) - 2 = (7 \times 2) - 1$. • Lesson 12 – Consider increasing complexity by displaying a challenge problem that builds on the solution to problem 1. There are 7 packs of 6 juice boxes on the table. How many fewer juice boxes are in the cooler than on the table? • Lesson 17 – Consider providing an opportunity for students to revisit this context at the end of the lesson and create their own input-output table to represent the pattern. • Lesson 23 – Consider asking students to determine what number we would say if we counted by 11 ten times. Ask them to write an equation to describe the count. Encourage students to determine the number we would say if we counted by 11 twelve or fifteen times.
Struggling Learners	<ul style="list-style-type: none"> • Lesson 2 – To support in building confidence and metacognition, consider providing a blank multiplication chart so that they can assess and recognize which facts they know and which facts they still need to learn. • Lesson 4 – Consider using interlocking cubes to create each array. This provides students with a concrete experience before moving to pictorial arrays. • Lesson 6 – Consider providing grid paper for students to model the break apart and distribute strategy by shading the array. The pictorial representation can help support the number bond work. • Lesson 8 – This lesson uses pictorial representations. If your students need a more concrete experience, consider using interlocking cubes and placing them on grid paper to support students to understand more abstract representations. Labeling each side length will build support in understanding the area model used in model 4. • Lesson 10 - Some students may benefit from using familiar factors as they learn the content of the lesson. Consider replacing larger numbers in expressions and equations with numbers that are no greater than 5.
English Language Learners	<ul style="list-style-type: none"> • Lesson 7 – To support the context of the problem, build background knowledge about the calendar format. Ensure students are familiar with the abbreviations for the days of the week and the convention of beginning the week with Sunday. • Lesson 9 – Consider providing sentence frames to support students in interpreting the picture. <ul style="list-style-type: none"> ○ There are _____ shelves. Each shelf has _____ stacks of _____ books. ○ There are _____ shelves of _____ stacks of books. Each stack has _____ books. • Lesson 12 – Consider displaying the options for what the unknown could represent (i.e., total, number of groups and the size of each group) for students to refer to as they discuss the equations with their partner.
Special Needs Learners	<ul style="list-style-type: none"> • Lesson 2 – Consider providing centimeter grid paper for a concrete experience. Students can place the cubes on the grid and color the parts to match their cubes. Students can also cover parts of the array as needed to focus on the portion of the array that represents a particular fact.

	<ul style="list-style-type: none"> • Lesson 3 – Consider providing interlocking cubes and centimeter grid paper for students. As needed, invite students to concretely build the two-color array on top of the grid paper. Then, as they count by fours, students can remove one row of cubes at a time and color each row. • Lesson 4 – Consider highlighting relationships by color coding related parts. For 4×8, have students highlight the first 4 in each expression in one color and the 8 and (4×2) in another color to show the relationship between the three expressions. • Lesson 5 – $8 \times 7 = (4 + 4) \times 7$ – Consider highlighting the 8, 4, and 4 to connect the parts of the equation. • Lesson 10 – Consider presenting the information in another format by representing equations concretely with cubes or pictorially with arrays.
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:

- Lesson 17 - NJSLSA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will think-pair-share about what they notice and wonder about an Egyptian Multiplication Table.*
- Lesson 17 – 6.1.5.HistoryUP.6 – Evaluate the impact of different interpretations of experiences and events by people with different cultural or individual perspectives. *Students will notice and wonder about an Egyptian Multiplication Table and use that strategy to find products. Students will then turn and talk about how Egyptian multiplication is similar to and different from the break apart and distribute strategy.*
- Lessons 1, 2, 4, 6, 7, 11, 12, 15, and 24 – NJSLSA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will work collaboratively in pairs to explore strategies, analyze problems, and discuss ideas relating to lessons' target.*
- Lessons 1 – Lessons 25 – SL.3.1.B – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly. Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). *During the "Land" section of each lesson, students will participate in a discussion to reinforce skills taught in each lesson.*

Integration of 21st Century Skills

Standards:

- Lesson 6 - 9.4.5.CI.3 - Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a) *Students will work with a partner to apply the break apart and distribute strategy to multiply by 6. Students will work and use the following questions to advance student thinking: What are some ways you can break apart 6 groups? What factors do you already know that will help you decide how to break apart 6? How can you use the array to show how to break apart 6 groups? What new expressions can you write to show how you decided to break apart 6?*
- Lesson 1 - 9.4.5.CT.1 – Identify and gather relevant data that will aid in the problem-solving process. *Students work together to determine which expression does not represent the total in a given image.*

Students will study, discuss, and identify how the expressions represent the total number of eggs. Partners will share how the expressions represent the total.

- Zearn Math - 9.4.5.CT.3 – Describe how digital tools and technology may be used to solve problems. *Students will be using Zearn Math digital learning platform as a supplement to aid in mastering skills.*
- Lesson 6 - 8.1.5.DA.1 – Collect, organize, and display data in order to highlight relationships or support claims. *Students will identify and justify how they would use the break apart and distribute strategy to find $48 \div 6$.*
- Lesson 3 - 8.1.5.DA.3 – Organize and present collected data visually to communicate insights gained from different views of the data. *Students will draw and analyze models to show the relationship between 4s and 8s. Students will draw a model to show that the statement, 2 groups of 4 is 8. Students will share their work.*
- Lesson 10 - 8.1.5.DA.5 – Propose cause and effect relationships, predict outcomes, or communicate ideas using data. *Students will identify the equation that represents a situation and justify their choice. Students will decide which solution is correct and communicate their ideas in solving the problem.*
- Lesson 8 - 8.1.5.AP.1 – Compare and refine multiple algorithms for the same task and determine which is the most appropriate. *Students explore arrays showing different ways to break apart 6×7 .*

Unit Title: Module 4 – Multiplication and Area

Unit Description: Students will recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-sized square units required to cover the shape without gaps or overlaps. Students understand that rectangular arrays can be decomposed into identical rows or identical columns. Students connect the number of rows and columns to the side lengths and then connect area to multiplication. Students use multiplication to determine the area of a rectangle and apply area concepts and strategies to mathematical and real-world problems.

Unit Duration: 25 Days (19 lessons; 1 Equip; 4 Topic quizzes; 1 End of Module 4 Assessment)

Desired Results**Standard(s):**

- **3.MD.C.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.**
- 3.MD.C.5.a A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.
- 3.MD.C.5.b A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.
- **3.MD.C.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard units).**
- **3.MD.C.7.a Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.**
- **3.MD.C.7.b Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems and represent whole-number products as rectangular areas in mathematical reasoning.**
- **3.MD.C.7.c Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.**
- **3.MD.C.7.d Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.**
- 3.G.A.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Understandings:

- I can recognize area as an attribute of a polygon. I can tile polygons with square units and count each square or skip-count to find the area of each polygon. I can represent area pictorially on grid paper. I can measure the side lengths of rectangles with a ruler and relate each measurement to the number of tiles that compose that side length.
- I can use multiplication to determine the area of a rectangle. I can complete grids to show the rows and columns of squares within a rectangular array and connect the number of rows and columns to the side lengths. I can use

Essential Questions:

- What are the attributes of a rectangle? How are the lengths of the opposite sides of a rectangle related? What is area? Why is area measured in square units? How can you use tiles to measure area? How can shapes look different but have the same area? What is a square inch and what is a square centimeter? Why is important to precisely name units to measure area? How are side lengths of a rectangle related to the tiles that form that side? How are units used to measure area different from units used to measure length?
- How are the rows and columns in an array related to the side lengths and area of a rectangle? How can we efficiently count to find the area of a rectangle? What information from an array do you need to find the area of the related rectangle?

<p>area models and relate the side lengths to area by writing multiplication equations.</p> <ul style="list-style-type: none"> I can find the areas of rectangles. I can compose and decompose larger rectangles from and into smaller rectangles. I can use the commutative, associative, and distributive properties to multiply side lengths and to find all possible side lengths of rectangles with a given area. I can apply area concepts and strategies to a variety of mathematical and real-world problems. I can compose and decompose rectilinear shapes to find area. I can use the attributes of rectangles to find unknown side lengths. I can use line plots to analyze measurement data based on area. 	<p>Why is it important to label the units on an area model? How do you find the area of a rectangle? What do you need to know to find the area of a rectangle? How does multiplication relate to a rectangle's side lengths and its area?</p> <ul style="list-style-type: none"> How can we use smaller rectangles to find the area of a larger rectangle? How is the break apart and distribute strategy useful for finding the area of a larger rectangle? How do you decide which side length to decompose and how to break it apart? What strategies are helpful for determining whether we found all the possible sets of side lengths for a given area? How do we know that a word problem is about area? What models are helpful to use to represent area problems? How can we use the area of rectangles to find the area of a larger shape? How can we use the area of a larger rectangle to find the area of a smaller shape? How do we select a strategy to find the area of shapes? How can we use what we know about area to find the area of part of a larger shape? How can we find the area of a given space? Why is it important to be precise when you make a line plot? Why does organizing data on a line plot help us understand the data? When do we use area to solve a problem about rectangles? When do we use side lengths to solve a problem about rectangles?
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Assessment Evidence

Assessments:

- Equip – Preassessment for Module 4-5
- Topic Quiz A
- Topic Quiz B
- Topic Quiz C
- Topic Quiz D
- End of Module 4 Assessment

Benchmarks:

- Eureka Math Squared Benchmark Assessments are administered three times per year (Optional).**
- The Star Math assessment is administered in the fall, winter, and spring.**

Learning Plan

Lesson # 1: Explore attributes of squares, rectangles, and trapezoids.

Standard: 3.MD.C.5; 3.G.A.1

Mathematical Practice: MP6

Target: Explore attributes of squares, rectangles, and trapezoids.

Learning Activities:

Fluency: Students find the value of an unknown sum or difference and estimate to assess reasonableness to build fluency with the skills from module 2. Students construct a number line with their fingers while counting aloud to build fluency with counting by sevens and nines and to maintain a strategy for multiplying.

Launch: Students identify attributes of polygons.

Learn: Students identify and name polygons with given attributes. Students identify the attributes of rectangles, with special focus on the equal length of opposite sides.

Land/Debrief: Facilitate a discussion summarizing the attributes of squares, rectangles, and trapezoids.

Daily Exit Ticket: Students will identify attributes of polygons.

Resources: Polygons for Sorting (in student book); Scissors; Highlighters, 2 colors; Index card; Ruler

Lesson # 2: Recognize area as an attribute of polygons.

Standard: 3.MD.C.5; 3.MD.C.5.a; 3.MD.C.5.b; 3.MD.C.6

Mathematical Practice: MP5

Target: Recognize area as an attribute of polygons.

Learning Activities:

Fluency: Students find the value of an unknown sum or difference and estimate to assess reasonableness to build fluency with the skills from module 2. Students construct a number line with their fingers while counting aloud to build fluency with counting by sixes and eights and to maintain a strategy for multiplying.

Launch: Students draw quadrilaterals based on provided attributes.

Learn: Students cover a shape with 1-inch squares to find its area in square units. Students determine that polygons with the same shape can have different areas. Students determine that polygons with different shapes can have the same area.

Land/Debrief: Facilitate a discussion about area as an attribute of polygons.

Daily Exit Ticket: Students find the area of shapes.

Resources: Square-Inch Ties (11, in teacher edition); Colored paper (11 sheets); Color tiles, plastic, 1 inch; Cut-out polygons; Scissors

Lesson # 3: Tile polygons to find their areas.

Standard: 3.MD.C.5; 3.MD.C.5.a; 3.MD.C.5.b; 3.MD.C.6

Mathematical Practice: MP3

Target: Tile polygons to find their areas.

Learning Activities:

Fluency: Students complete equations to build fluency with adding and subtracting within 1,000.

Launch: Students apply attributes of polygons to describe different shapes that have the same area.

Learn: Students determine that different shapes can have the same area. Students find the area of a shape and compose a different shape with the same area. Students identify and correct errors in a sketched shape.

Land/Debrief: Facilitate a discussion about tiling to measure area.

Daily Exit Ticket: Students will use squares to cover a shape and figure out the area of a polygon.

Resources: Add or Subtract Within 1,000 Sprint (in the student book); Cut-out polygons; Color tiles, plastic, 1 inch (20); Square tiles, paper, 1 inch (20)

Lesson # 4: Compose rectangles to compare areas.

Standard: 3.MD.C.5; 3.MD.C.5.a; 3.MD.C.5.b; 3.MD.C.6

Mathematical Practice: MP6

Target: Compose rectangles to compare areas.

Learning Activities:

Fluency: Students sketch a polygon with a given attribute and find other polygons with the same attribute to develop an understanding of polygons and their attributes. Students construct a number line with their fingers while counting aloud to build fluency with counting by sevens and nines and maintain a strategy for multiplying.

Launch: Students build rectangles with inch and centimeter squares to find and compare areas.

Learn: Students measure and classify square tile units as square inches or square centimeters. Students build and trace rectangles with a given area on grid paper.

Land/Debrief: Facilitate a discussion of the importance of naming units precisely and how they can be named precisely.

Daily Exit Ticket: Students compare the area of rectangles

Resources: Color tiles, plastic, 1 inch (24); Centimeter tiles (24); Ruler; Inch and Centimeter Grids (in the student book)

Lesson # 5: Relate side lengths to the number of tiles on a side.

Standard: 3.MD.C.5; 3.MD.C.5.a; 3.MD.C.5.b; 3.MD.C.6; 3.G.A.1

Mathematical Practice: MP8

Target: Relate side lengths to the number of tiles on a side.

Learning Activities:

Fluency: Students sketch a polygon with a given attribute and find other polygons with the same attributes to develop an understanding of polygons and their attributes. Students use the math way to find the product of two one-digit numbers when one number is 6 or 8 to build multiplication fluency within 100.

Launch: Students explore the relationship between length measurements and numbers of tiles and cubes.

Learn: Students relate the side length of square tiles to the side length of a rectangle.

Land/Debrief: Facilitate a discussion to summarize student learning about units, side lengths, and area.

Daily Exit Ticket: Students measure and label the side lengths of rectangles and find the area of the rectangles.

Resources: Color tiles, plastic, 1 inch (20); Ruler; Centimeter tiles (30); Inch Grid (in the student book); Centimeter Grid (in the student book)

Lesson # 6: Tile rectangles with squares to make arrays and relate the side lengths to area.

Standard: 3.MD.C.6; 3.MD.C.7.a

Mathematical Practice: MP3

Target: Tile rectangles with squares to make arrays and relate the side lengths to areas.

Learning Activities:

Fluency: Students match a picture with a time shown on an analog clock and write the time by using a.m. or p.m. to maintain work with time from grade 2. Students multiply a one-digit number by a multiple of 10 in unit and standard form to build fluency with the skill from module 3.

Launch: Students reason about how to find an exact measurement for area.

Learn: Students use inch tiles to tile the side lengths of a rectangle and find its area. Students use side lengths to draw and find the area of a rectangle.

Land/Debrief: Facilitate a discussion that emphasizes how to find an area of a rectangle.

Daily Exit Ticket: Students will measure an unknown side length, write an equation to show how to find an area of the rectangle and solve the equation.

Resources: Envelopes (12); Match Time Cards (1 set per student pair, in student book); Color tiles, plastic, 1 inch (18); Ruler; Rectangle Outlines (in the student book)

Lesson # 7: Draw rows and columns to complete a rectangular array and determine its area.

Standard: 3.MD.C.6; 3.MD.C.7.a

Mathematical Practice: MP1

Target: Draw rows and columns to complete a rectangular array and determine its area.

Learning Activities:

Fluency: Students multiply a one-digit number by a multiple of 10 to build fluency with the skill from module 3. Students use the math way to find the product of two one-digit numbers when one number is 6 or 8 to build fluency with using the distributive property as a strategy to multiply.

Launch: Students examine an array with some square units covered and reason about how to find the area.

Learn: Students complete an array to find its area. Students find the area of a rectangle by completing the first row and column of an array. Students apply strategies to find the area of incomplete arrays so they can find the number of tiles in a room.

Land/Debrief: Facilitate a discussion about how Zara's work and Casey's work are similar and different.

Daily Exit Ticket: Students will complete a rectangular array to determine the number of tiles.

Resources: Incomplete Arrays (in the student book); Ruler

Lesson # 8: Determine the area of a rectangle by using side lengths.

Standard: 3.MD.C.7.a; 3.MD.C.7.b

Mathematical Practice: MP6

Target: Determine the area of a rectangle by using side lengths.

Learning Activities:

Fluency: Students complete equations to build fluency with multiplying single-digit numbers by multiples of 10. Students use the math way to find the product of two one-digit numbers when one number is 7 or 9 to build fluency with using the distributive property as a strategy to multiply.

Launch: Students consider finding the area of a rectangle with and without grid paper.

Learn: Students use various side lengths to draw a rectangle with a given area. Students use units of different sizes to see the importance of labeling units. Students label side lengths and find the area of a rectangle.

Land/Debrief: Facilitate a discussion about how the side lengths of an area model can be used to help find the area of a rectangle.

Daily Exit Ticket: Students will label the side lengths of a rectangle and complete an equation to find an area.

Resources: Mixed Grid (in the teacher edition); Ruler; Meter Stick; Square sticky notes; Multiply by Multiples of 10 Sprint (in the student book)

Lesson # 9: Multiply side lengths to find the area of a rectangle.

Standard: 3.MD.C.7.b

Mathematical Practice: MP5

Target: Multiply side lengths to find the area of a rectangle.

Learning Activities:

Fluency: Students match a picture with a time shown on an analog clock and write the time by using a.m. or p.m. to maintain work with time from grade 2. Students use the math way to find the product of two one-digit numbers when one number is 6 or 8 to build fluency with using the distributive property as a strategy to multiply.

Launch: Students identify a variety of strategies for finding the area of a shape.

Learn: Students determine the side lengths of a rectangle from a skip-count, draw the rectangle, and find its area. Students identify the length and width of a rectangle from an incomplete array model and multiply the side lengths to find the area of the rectangle. Students multiply side lengths to find the area of a rectangle. Students use the area of a rectangle and one side length to find an unknown side length.

Land/Debrief: Facilitate a discussion about using multiplication to find the area of rectangles.

Daily Exit Ticket: Students will write multiplication equations to find the area of rectangles.

Resources: Envelope of Match Time Cards (1 per student pair); Sticky notes (5 per student pair)

Lesson # 10: Compose large rectangles and reason about their areas.

Standard: 3.MD.C.7.c; 3.MD.C.7.d

Mathematical Practice: MP7

Target: Compose large rectangles and reason about their areas.

Learning Activities:

Fluency: Student read a measurement scale to determine the weight of an object in grams to build fluency with the skill from module 2. Students use the math way to find the product of two one-digit numbers when one number is 6 or 9 to build fluency with using the distributive property as a strategy to multiply. Students count by a unit of 500 grams and relate grams to kilograms to build fluency with the skill from module 2.

Launch: Students develop strategies for finding the area of a larger rectangle shown as an array model.

Learn: Students compose the areas of two similar rectangles to find the area of a large rectangle. Students compose the areas of two smaller rectangles to solve a word problem.

Land/Debrief: Facilitate a discussion about composing the areas of smaller rectangles to find the area of a larger rectangle.

Daily Exit Ticket: Students will label side lengths of rectangles, write an equation to find the areas of rectangles and solve the equation.

Resources: Centimeter Grid (in the student book)

Lesson # 11: Decompose to find the total area of a rectangle.

Standard: 3.MD.C.7.b; 3.MD.C.7.c; 3.MD.C.7.d

Mathematical Practice: MP4

Target: Decompose to find the total area of a rectangle.

Learning Activities:

Fluency: Students read a measurement scale to determine the amount of a liquid in milliliters to build fluency with the skill from module 2. Students count by a unit of 500 milliliters and relate milliliters to liters to build fluency with the skill from module 2. Students use the math way to find the product of two one-digit numbers when one number is 7 or 8 to build fluency with using the distributive property as a strategy to multiply.

Launch: Students reason about ways to break apart an array.

Learn: Students break apart the rows in a rectangular array to find area. Students break apart the columns in an array model of a rectangle to find its area.

Land/Debrief: Facilitate a discussion about breaking apart a large rectangle into smaller rectangles to find the large rectangle's area.

Daily Exit Ticket: Students will label the side lengths of a rectangle and then use the break apart and distribute strategy to find the area of the rectangle.

Resources: None

Lesson # 12: Find all possible side lengths of rectangles with a given area.

Standard: 3.MD.C.7.a; 3.MD.C.7.b

Mathematical Practice: MP3

Target: Find all possible side lengths of rectangles with a given area.

Learning Activities:

Fluency: Students complete equations to build fluency with multiplying and dividing by 6.

Launch: Students build multiple rectangles with the same area.

Learn: Students use the associative and commutative properties of multiplication to identify all the rectangles with an area of 24 square centimeters. Students create a display showing the possible side lengths of rectangles with a given area.

Land/Debrief: Facilitate a discussion about strategically finding all possible side lengths of rectangles with a given area.

Daily Exit Ticket: Students will find the area of a rectangle and then draw two other rectangles with the same area.

Resources: Multiply and Divide by 6 Sprint (in the student book); Interlocking cubes, 1 cm (24); Centimeter Grid (in student book); Chart paper, sheet (1 per student group)

Lesson # 13: Apply area understanding to real-world situations.

Standard: 3.MD.C.7.b; 3.MD.C.7.c

Mathematical Practice: MP5

Target: Apply area understanding to real-world situations.

Learning Activities:

Fluency: Students find polygons with a given attribute to build an understanding of polygons and their attributes from topic A. Students visualize a number line while counting aloud to build fluency with counting by sixes from module 3.

Launch: Students solve an area word problem with an unknown side length.

Learn: Students reason about and solve an area word problem. Students reason about, represent, and solve a one-step area word problem. Students share solutions for Mia's carpet problem and reason about their connections. Students reason about, represent, and solve a two-step area word problem. Students share solutions for Ivan's windows problem and reason about their connections.

Land/Debrief: Facilitate a discussion about representing and solving area word problems.

Daily Exit Ticket: Students will find the area of rectangles based on real-world situations.

Resources: None

Lesson # 14: Reason to find the area of composite shapes by using grids.

Standard: 3.MD.C.7.b; 3.MD.C.7.d

Mathematical Practice: MP2

Target: Reason to find the area of composite shapes by using grids.

Learning Activities:

Fluency: Students find polygons with a given attribute to build an understanding of polygons and their attributes from topic A. Students visualize a number line while counting aloud to build fluency with counting by eights from module 3. Students complete a division equation by using a related multiplication equation to build fluency with the strategy from module 1.

Launch: Students use the area of two rectangles to find the area of related composite shapes.

Learn: Students find the area of a composite shape by breaking it apart into smaller rectangles. Students find the area of a composite shape by subtracting the area of a smaller rectangle from the area of a larger rectangle. Students find the area of a composite shape by using a strategy they self-select.

Land/Debrief: Facilitate a discussion on different ways students can decompose the shape into rectangles G and H.

Daily Exit Ticket: Students explain the different ways a shape is decomposed to find the area of the shape.

Resources: Colored pencil set

Lesson # 15: Reason to find the area of composite shapes by using rectangles.

Standard: 3.MD.C.7.b; 3.MD.C.7.d

Mathematical Practice: MP7

Target: Reason to find the area of composite shapes by using rectangles.

Learning Activities:

Fluency: Students find the area of a rectangle in square units to build fluency with the skill from topic A. Students visualize a number line while counting aloud to build fluency with counting by sevens. Students complete a division equation by using a related multiplication equation to build fluency with the strategy from module 1.

Launch: Students relate composite shapes with and without a grid inside them.

Learn: Students use attributes of rectangles to find unknown side lengths of a shape. Students self-select a strategy to use to find the area of a shaded shape. Students apply their understanding of area concepts to solve an area word problem. **Land – Debrief:** Facilitate a discussion about the area of the shapes from problems 1 and 2.

Daily Exit Ticket: Students will decompose a shape to find the area of a rectangle.

Resources: Labeling Shapes (in the student book)

Lesson # 16: Solve historical math problems involving area.

Standard: 3.MD.C.5; 3.MD.C.5.a; 3.MD.C.5.b; 3.MD.C.6

Mathematical Practice: MP1

Target: Solve historical math problems involving area.

Learning Activities:

Fluency: Students find the area of a composite figure in square units to build fluency with the skill from topic A. Students use the math way to find the product of two one-digit numbers when one number is 9 to build multiplication fluency within 100. Students find a product and say related multiplication equations to build multiplication fluency within 100.

Launch: Students analyze math problems that are represented in a historical image.

Learn: Students decompose a square into equal parts and find the area of the parts. Students find the area of part of a composite shape. Students decompose a known area into smaller parts to find an unknown area.

Land/Debrief: Facilitate a discussion about finding areas of shapes inside composite figures.

Daily Exit Ticket: Students will find the area of the shaded part of a shape. Students will use words and an equation to explain their work.

Resources: *Eureka Math* Numeral Cards (1 deck per student pair); Hidden Factor Mat (1 per student pair, in the student book); Area Grids (in the student book); Scissors; Ruler

Lesson # 17: Apply area concepts to a real-world context.

Standard: 3.MD.C.7.b; 3.MD.C.7.d

Mathematical Practice: MP4

Target: Apply area concepts to a real-world context.

Learning Activities:

Fluency: Students find the area of a figure in square units to build fluency with the skill from topic A. Students use the math way to find the product of two one-digit numbers when one number is 8 to build multiplication fluency within 100. Students find a product and say related multiplication equations to build multiplication fluency within 100.

Launch: Students analyze a floor plan and identify key features.

Learn: Students design a floor plan for their dream home. Students examine various strategies for constructing floor plans and compare those strategies to their own.

Land/Debrief: Facilitate a discussion about area in floor plans.

Daily Exit Ticket: Students will find the area of objects on a floor plan by writing and solving equations.

Resources: *Eureka Math* Numeral Cards (1 deck per student pair); Hidden Factor Mat (1 per student pair, in the student book); Colored pencil set; Floor Plan Grid (in the student book)

Lesson # 18: Find the area of shapes and represent area data on a line plot.

Standard: 3.MD.C.6; 3.MD.C.7.b; 3.MD.C.7.d

Mathematical Practice: MP6

Target: Find the area of shapes and represent area data on a line plot.

Learning Activities:

Fluency: Students complete equations to build fluency with multiplying and dividing by 8.

Launch: Students analyze the components of and interpret a completed line plot.

Learn: Students find the areas of rectangles and plot them on a line plot. Students independently find and plot the areas of shapes on a line plot. Students reason about where to plot non-whole number data on a line plot.

Land/Debrief: Facilitate a discussion on how to fix a line plot.

Daily Exit Ticket: Students interpret data on a line plot.

Resources: Multiply and Divide by 8 Sprint (in the student book); Blank Line Plot with Grid (in the student book); Areas for Line Plots (in the student book); Ruler

Lesson # 19: Apply area concepts to complete a multi-part task.

Standard: 3.MD.C.7.b; 3.MD.C.7.d

Mathematical Practice: MP1

Target: Apply area concepts to complete a multi-part task.

Learning Activities:

Fluency: Students complete a division equation by using a related multiplication equation to build fluency with strategy from module 1. Students find the area of a rectangle in square units to prepare for applying area concepts to complete a multi-part task.

Launch: Students use the area of a rectangle to solve a real-world problem.

Learn: Students use the lengths and widths of rectangles to solve a real-world problem. Students decompose area to solve a real-world problem. Students share solutions for problem 3 and reason about their connections. Students make assumptions to solve a real-world problem involving area.

Land/Debrief: Facilitate a discussion about applying area concepts to solve problems.

Daily Exit Ticket: Students will apply area concepts to complete a multi-part task.

Resources: None

****Zearn Math is available for independent digital lessons.**

Unit Modifications for Special Population Students

Advanced Learners	<ul style="list-style-type: none"> • Lesson 3 – Consider inviting some students to create shapes with a specific area by using a combination of half-squares and whole squares, or by using only half-squares. Discuss student strategies and extend student thinking with advancing questions such as the following: <ul style="list-style-type: none"> ○ Build a shape with an area of 10 square units by using more half-squares than whole squares. How did you find how many halves to use? Do all the combinations of whole squares and half-squares to make 10 have an even number of half-squares? Why is that? ○ Build a shape with an area of 10 square units by using only half-squares. How many halves make 1 square unit? How many halves make 10 square units? • Lesson 12 – Consider assigning odd-numbered areas such as 45 square centimeters or 75 square centimeters. Invite students to find all possible rectangles. Prompt students to identify their strategy and compare it to the strategy they used to find all possible rectangles for even-numbered areas. • Lesson 16 – Consider providing 4-inch squares without grids on them and asking students to complete the activity without the assistance of grids.
Struggling Learners	<ul style="list-style-type: none"> • Lesson 2 - Some students may need support describing quadrilaterals with precise mathematical language. Consider referring students to the anchor chart, if one was created in lesson 1, or display terms and phrases for reference (e.g., right angles, opposite sides, parallel sides). Instead of drawing, consider providing some partners a sheet of quadrilaterals and a list of their attributes as a reference. • Lesson 6 – Some students may benefit from a tactile experience with which to compare using circles and squares to find the area of a rectangle. Consider supporting students by providing manipulatives to show the similarities and differences between the two attempts to find area. • Lesson 9 – Consider creating a visual to support students in using the term <i>length</i> and <i>width</i> appropriately. The terms are familiar but are used more formally in this lesson.
English Language Learners	<ul style="list-style-type: none"> • Lesson 1 – This segment introduces observe. Consider previewing the term before asking students to observe the drawings. Facilitate a class discussion about what students see when they look carefully around the classroom, or connect the term to actions in a subject such as science. • Lesson 4 – Consider supporting students in using the term side length by drawing a picture of a tile and labeling one side as Side Length: 1 inch. • Lesson 7 – Consider providing a visual to accompany the introduction of unit squares. A unit square is a square with sides that are each 1 unit. A square unit is a unit of measurement that describes the space inside a unit square.
Special Needs Learners	<ul style="list-style-type: none"> • Lesson 3 – Model for students how to make a sketch of a shape by tracing tiles to form the outline. Consider offering students the option to glue paper tiles to a piece of paper to represent the new shape as an alternative to sketching their shape. Shading squares on grid paper is reserved until students find area on a grid in lesson 4.

	<ul style="list-style-type: none"> • Lesson 5 – Consider highlighting the relationship between units used to measure length and units used to measure area. Add to the poster created in lesson 4 to define each measurement unit. Organize the information to show the relationship. • Lesson 8 – Consider creating visuals to emphasize the importance of labeling units and the relative size of different units. For example, cut out 1 square meter, 1 square foot, and 1 square centimeter of bulletin board paper (or something similar). Post the squares and label them for students to refer to during the lesson. Alternatively, create each visual by using masking tape on the floor.
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:

- Lesson 17 - NJSLSA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will think-pair-share about what they notice and wonder about an ancient Babylonian math book area problem.*
- Lesson 17 – 6.1.5.HistoryUP.6 – Evaluate the impact of different interpretations of experiences and events by people with different cultural or individual perspectives. *Students will notice and wonder about an ancient Babylonian clay tablet presenting an area problem and use that strategy to decompose figures to find the area. Students will then turn and talk about the kind of area problems the ancient Babylonians solved and what mathematicians do when they do not have all of the information they need to solve a problem.*
- Lessons 6, 9, 16, and 17– NJSLSA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will work collaboratively in pairs to explore strategies, analyze problems, and discuss ideas relating to lessons' target.*
- Lessons 1 – Lessons 19 – SL.3.1.B – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly. Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). *During the "Land" section of each lesson, students will participate in a discussion to reinforce skills taught in each lesson.*

Integration of 21st Century Skills

Standards:

- Lesson 16 - 9.4.5.CI.3 - Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a) *Students will analyze math problems that are represented in a historical image. Students will notice and wonder and record their wonderings. Students will think-pair-share about what the problems might have asked.*
- Lesson 3 - 9.4.5.CT.1 – Identify and gather relevant data that will aid in the problem-solving process. *Students will apply attributes of polygons to describe different shapes that have the same area. Students will look at 4 pictures and find a category in which three of the items belong, but a fourth item does not. Students will be invited to explain their chosen categories and justify why one item does not fit.*
- Zearn Math - 9.4.5.CT.3 – Describe how digital tools and technology may be used to solve problems. *Students will be using Zearn Math digital learning platform as a supplement to aid in mastering skills.*
- Lesson 13 - 8.1.5.DA.1 – Collect, organize, and display data in order to highlight relationships or support claims. *Students reason about and solve an area word problem. Students will discuss their*

thinking with a partner and share their thinking with the group to facilitate a discussion about connections between strategies.

- Lesson 1 - 8.1.5.DA.3 – Organize and present collected data visually to communicate insights gained from different views of the data. *Students will complete a table to identify, and sketch attributes of given quadrilaterals.*
- Lesson 18 - 8.1.5.DA.5 – Propose cause and effect relationships, predict outcomes, or communicate ideas using data. *Students will analyze the components of and interpret a completed line plot and communicate ideas using the data in the line plot.*
- Lesson 15 - 8.1.5.AP.1 – Compare and refine multiple algorithms for the same task and determine which is the most appropriate. *Students will self-select a strategy to use to find the area of a shaded shape.*

Unit Title: Module 5 – Fractions as Numbers	
Unit Description: Students will develop an understanding of fractions as numbers. Students partition a whole into equal parts and recognize 1 of a fractional unit as a unit fraction. Students compose non-unit fractions from unit fractions and use visual fraction models and written fractions to represent parts of a whole. Students will use fractions to represent numbers equal to, less than, and greater than 1. Students compare fractions by using visual fraction models and by reasoning about the size of fractions that have the same numerator or denominator. Students identify equivalent fractions and apply fraction concepts by using rulers to measure to the nearest quarter inch and by plotting fractional length data on line plots.	
Unit Duration: 33 Days (26 Lessons; 1 Optional Lesson; 5 Topic Quizzes; 1 End of Module 5 Assessment)	
Desired Results	
Standard(s): <ul style="list-style-type: none"> • 3.NF.A.1 Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$. • 3.NF.A.2.a Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line. • 3.NF.A.2.b Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line. • 3.NF.A.3.a Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. • 3.NF.A.3.b Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$, $4/6 = 2/3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model. • 3.NF.A.3.c Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. <i>Examples: Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram.</i> • 3.NF.a.3.d Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model. • 3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. • 3.G.A.2 – Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as $1/4$ of the area of the shape. 	
Understandings: <ul style="list-style-type: none"> • I can partition and recognize fractional parts of concrete objects and pictorial models. I can understand fractions as numbers. I can name the fractional parts of the whole in unit form and describe the relationship between the number of fractional parts and the size of each part. I can define 1 of a fractional unit as a unit fraction. I can identify the number of unit fractions needed to make 1 whole. I can name unit fractions in fraction forms. 	Essential Questions: <ul style="list-style-type: none"> • How many equal parts is a shape or object partitioned into with halves? Thirds? Fourths? Sixths? Do equal parts have to be the same size? Why? What is important about the size of the parts when we partition an object into fractional units? Does splitting an object into four parts always mean that there are fourths? What relationship do you notice between fractional units? How do you partition a whole into equal parts? What is the difference between a fractional unit and a unit fraction? What are two ways we can represent 1 out of 2 equal parts in writing? Where do you see unit fractions in a fraction model?

<ul style="list-style-type: none"> • I can repeat unit fractions to create non-unit fractions concretely, pictorially, and numerically in unit form and fraction form. I can compose and decompose wholes with unit and non-unit fractions by using number bonds and tape diagrams. I can compare unit fractions with the same numerator concretely and pictorially by reasoning about the size of the parts. • I can represent fractions from 0 to 1 on a number line. I can partition number lines with fraction tiles. I can compose and decompose 1 whole by using strategies similar to those used with number bonds and tape diagrams. I can relate a fraction's value to its size, its location on a number line, and its distance from 0 to find pairs of equivalent fractions. I can measure lengths within fractions of an inch and create line plots representing fractional length data. • I can extend a number line to include fractions greater than 1 by drawing and partitioning number lines that represent specified intervals. I can count and skip-count by fractional units to name fractions greater than 1. I can recognize fractions that are equivalent to whole numbers. I can use a number line to compare fractions. • I can use one or two number lines to find pairs of equivalent fractions greater than 1. I can identify fractions equivalent to whole numbers and express whole numbers as fractions with a denominator of 1 (e.g., $4 \frac{1}{1}$). 	<ul style="list-style-type: none"> • How is a unit fraction related to other fractions? How do number bonds and tape diagrams show the parts and the total? How can we use models to show a whole decomposed into a unit fraction and another fraction? What are some different ways to decompose 1? How can we represent different ways to decompose 1? Is it important to use wholes of the same size when comparing fractions? Why? How can we compare unit fractions? How does the size of the fractional unit help us compare fractions? How can we compare fractions with the same number of parts but different-size parts? • How are fraction tiles a helpful tool to use when labeling fractions on a number line? How do fraction tiles relate to number lines? How are number lines and number bonds for whole numbers like number bonds for fractions? How are number lines and number bonds similar and different? How do we know that two fractions are equivalent? How can we represent equivalent fractions? Why is it important for the wholes to be the same when we are finding equivalent fractions? How can we find equivalent fractions on a number line? Are fractions numbers? How is it helpful to label the tick marks on a ruler or number line? How can number lines with fractional units help us make line plots? • How can a fraction greater than 1 be represented on a number line? What do we need to think about when placing fractions on a number line that does not start at 0? How does thinking about fractions that are equivalent to whole numbers help you place other fractions on a number line? How can we compare fractions with the same units? How do position and distance help you compare fractions on number lines? How can you use number lines to compare fractions that have different units? How can you use number lines to compare fractions that have related units? How do you determine when to use one number line or two number lines to compare fractions? • When are two fractions equivalent? How can fractions be equivalent to whole numbers? How can we efficiently find fractions that are equivalent to whole numbers? Why are the starting and ending tick marks important when you are making a number line? How does thinking about fractions equivalent to whole numbers help you determine what interval to represent? What does the unit fraction $\frac{1}{1}$ mean? Where are the ways we know to rename whole numbers? How can we create a
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precise ruler of any length? How can we precisely partition a strip into a fraction unit?

Assessment Evidence

Assessments:

- Topic Quiz A
- Topic Quiz B
- Topic Quiz C
- Topic Quiz D
- Topic Quiz E
- End of Module 5 Assessment

Benchmarks:

- **Eureka Math Squared Benchmark Assessments are administered three times per year (Optional).**
- **The Star Math assessment is administered in the fall, winter, and spring.**

Learning Plan

Lesson # 1: Partition a whole into equal parts and name the fractional parts.

Standard: 3.G.A.2

Mathematical Practice: MP6

Target: Partition a whole into equal parts and name the fractional parts.

Learning Activities:

Fluency: Students use the math way to find the product of two one-digit numbers when one number is 6 to build multiplication fluency within 100. Students count by fives or tens on a clock to maintain work with time from grade 2.

Launch: Students identify shapes that are partitioned into equal parts and name the fractional unit.

Learn: Students explore an equal-parts situation involving more than one object where the solution involves a fractional unit. Students solve an equal-parts word problem where more than one object is shared and where the solution involves a fractional unit. Students solve an equal-parts word problem where 1 object is shared and where the solution involves a fractional unit.

Land/Debrief: Facilitate a discussion about equal sharing and fractional units.

Daily Exit Ticket: Students will identify shapes partitioned into equal groups and partition a shape into equal groups.

Resources: Analog clock; Paper rectangles, 2" x 4" (7 per student pair)

Lesson # 2: Partition different wholes into fractional units concretely.

Standard: 3.G.A.2

Mathematical Practice: MP2

Target: Partition different wholes into fractional units concretely.

Learning Activities:

Fluency: Students use the math way to find the product of two one-digit numbers when one number is 7 to build multiplication fluency within 100. Students count by half or quarter hours on a clock to maintain work with time from grade 2.

Launch: Students identify the number of equal parts in a shape or object and name the fractional unit for the shape or object.

Learn: Students describe similarities and differences between halves of different wholes. Students create a display of various wholes partitioned into specified fractional units. Students describe relationships between fractional units and the number and size of the equal parts.

Land/Debrief: Facilitate a discussion about partitioning wholes into equal parts.

Daily Exit Ticket: Students will partition shapes into equal groups.

Resources: Analog clock; Clear plastic cups, about 150 ml (55); Clay (2 ounces per student group); Construction paper, brown, 2" x 6" (1 per student group); Construction paper, yellow, 1 " x 12" (1 per student group); Water (1 cup per student group); Wax craft stick, 12 inches (1 per student group)

Lesson # 3: Partition a whole into fractional units by folding fraction strips.

Standard: 3.G.A.2

Mathematical Practice: MP6

Target: Partition a whole into fractional units by folding fraction strips.

Learning Activities:

Fluency: Students complete equations to build fluency with multiplying and dividing by 7.

Launch: Students draw to partition a whole into 6 equal parts.

Learn: Students fold to partition paper strips into halves, fourths, and eighths. Students measure to partition paper strips into thirds and sixths. Student estimate to partition paper strips into tenths and fifths.

Land/Debrief: Facilitate a discussion about the relationship between fractional units.

Daily Exit Ticket: Students will use fraction strips to answer questions about fractional units.

Resources: Paper strips, 1' x 6' (8); Multiply and Divide by 7 Sprint (in the student book)

Lesson # 4: Partition a whole into fractional units pictorially and identify the unit fraction.

Standard: 3.NF.A.1; 3.G.A.2

Mathematical Practice: MP7

Target: Partition a whole into fractional units pictorially and identify the unit fraction.

Learning Activities:

Fluency: Students write a pattern and complete a table to build fluency with arithmetic patterns. Students count by halves, thirds, or fourths shown on a fraction strip to develop fluency with fractions and fraction notation. Students identify the number of equal parts, the fractional unit, and the name for one unit to develop fluency with fractions, fraction notation, and associated terminology.

Launch: Students identify numbers of equal parts and relate them to fractional units.

Learn: Through teacher demonstration, students identify whether a shape is partitioned into equal parts and name the shaded fraction. Students name shaded fractions of shapes that have been partitioned. Students partition shapes into equal parts and name the shaded fraction.

Land/Debrief: Facilitate a discussion about partitioning a whole and naming fractions.

Daily Exit Ticket: Students will name a fractional unit and the fractional unit of the rectangle that is shaded.

Resources: Paper rectangles, 9"x12" (2); Paper circles, 9" diameter (2); Partitioning Shapes; Horizontal Input-Output Table (in the student book); Straightedge

Lesson # 5: Partition a whole into fractional units and write fractions in fraction form.

Standard: 3.NF.A.1; 3.G.A.2

Mathematical Practice: MP6

Target: Partition a whole into fractional units and write fractions in fraction form.

Learning Activities:

Fluency: Students write a pattern and complete a table to build fluency with arithmetic patterns. Students count by halves, thirds or fourths shown on a fraction strip to develop fluency with fractions and fraction notation. Students identify the number of equal parts, the fractional units, and the unit fraction to develop fluency with fractions, fraction notation, and associated terminology.

Launch: Students reason about parts of different wholes and describe equal parts as fractional units.

Learn: Students partition a whole into halves, fourths, and eighths and label the parts in fraction form. Students partition a whole into thirds and sixths and label the parts in fraction form. Students partition a whole to solve a word problem involving fractions.

Land/Debrief: Facilitate a discussion about partitioning a whole into equal parts and naming the parts with fraction form.

Daily Exit Ticket: Students will complete a vertical input-output table writing fractions in fraction form.

Resources: Vertical Input-Output Table (in the student book)

Lesson # 6: Build non-unit fractions less than 1 from unit fractions concretely.

Standard: 3.NF.A.1; 3.G.A.2

Mathematical Practice: MP7

Target: Build non-unit fractions less than 1 from unit fractions concretely.

Learning Activities:

Fluency: Students use a number bond to decompose a whole number into two parts multiple ways to prepare for similar work with fractions beginning in lesson 7. Students determine whether a shape is partitioned into equal parts and, if so, the number of its equal parts and its fractional unit, to build an understanding of fractions. Students count by halves, thirds, or sixths shown on a fraction strip and identify the fraction shaded to develop fluency with fractions and fraction notation.

Launch: Students represent fractional units in a context and drawing.

Learn: Students use fraction strips to create unit fraction tiles. Students iterate, or duplicate, unit fractions to create non-unit fractions. Students record non-unit fractions in fraction form.

Land/Debrief: Facilitate a discussion unit fractions and non-unit fractions.

Daily Exit Ticket: On a partitioned rectangle, students will write the unit fraction, shade four units, identify how much of the rectangle is shaded, and write your answer in fraction form.

Resources: Fraction Strips; Paper strips, 1"x6" (5); Scissors

Lesson # 7: Identify and represent a whole as two parts: a unit fraction and a non-unit fraction.

Standard: 3.NF.A.1; 3.G.A.2

Mathematical Practice: MP2

Target: Identify and represent a whole as two parts; a unit fraction and a non-unit fraction.

Learning Activities:

Fluency: Students determine whether a shape is partitioned into equal parts and, if so, the number of its equal parts and its fractional unit, to build an understanding of fractions. Students count by halves, fourths, or eighths shown on a fraction strip and identify the fraction shaded to develop fluency with fractions and fraction notation. Students use a number bond to decompose a whole number into three- or four-parts multiple ways to prepare for similar work with fractions.

Launch: Students apply part-total thinking to identify the two parts of a whole.

Learn: Students decompose a rectangular strip into parts and represent the parts with a number bond. Students label the shaded and unshaded parts of a tape diagram and relate it to a number bond. Students use 1 to represent the total in a number bond, tape diagram, and word problem.

Land/Debrief: Facilitate a discussion of how number bonds and tape diagrams show the parts and the total, what the difference between using a number bond and using a tape diagram to represent parts and the total, and how we can use models to show 1 decomposed into two parts.

Daily Exit Ticket: Student will use a number bond and a tape diagram to represent the shaded and unshaded parts of a rectangle.

Resources: Sentence strip

Lesson # 8: Identify and represent a whole as two non-unit fractions.

Standard: 3.NF.A.1; 3.NF.A.3.c; 3.G.A.2

Mathematical Practice: MP7

Target: Identify and represent a whole as two non-unit fractions.

Learning Activities:

Fluency: Students use the math way to find the product of two one-digit numbers when one number is 8 to build multiplication fluency within 100. Students identify and sort figures with the same area and record the area in square units to build fluency with the skill from module 4. Students add or subtract within 1,000 to build fluency with the operations.

Launch: Students represent the decomposition of a whole in different ways.

Learn: Students create number bonds to decompose 1 into fourths with unit fraction tiles. Students create number bonds and tape diagrams to decompose 1 into sixths with unit fraction tiles. Students decompose 1 into eighths multiple ways with number bonds and tape diagrams.

Land/Debrief: Facilitate a discussion that emphasizes different ways to represent and use fractions to decompose.

Daily Exit Ticket: Students will complete number bonds to represent the fractional parts of a rectangle.

Resources: Finding Area Cards (1 per student pair); Sticky notes (6 per student pair); Fraction strips; Unit fraction tiles

Lesson # 9: Compare unit fractions by reasoning about their size concretely.

Standard: 3.NF.A.3.d; 3.G.A.2

Mathematical Practice: MP3

Target: Compare unit fractions by reasoning about their size concretely.

Learning Activities:

Fluency: Students use the math way to find the product of two one-digit numbers when one number is 9 to build multiplication fluency within 100. Students identify and sort figures with the same area and record the area in square units to build fluency with the skill from module 4.

Launch: Students refine an explanation about why wholes need to be the same size for fractions to be compared.

Learn: Students use unit fraction tiles to decide which unit fractions are larger or smaller than others. Students use a shaded model to complete comparison statements. Students partition and shade tape diagrams to compare unit fractions.

Land/Debrief: Facilitate a discussion determining if it is important to use wholes that are the same size when comparing fractions, how we can compare unit fractions, and how we can think about the size of a fraction without looking at or drawing a picture.

Daily Exit Ticket: Students use a tape diagram to help answer questions comparing fractions.

Resources: Finding Area cards (1 per student pair); Sticky notes (6 per student pair); Fraction strip, 1 whole; Paper strip, 1" x 11"; Unit fraction tiles; Comparing Unit fractions (in the student book)

Lesson # 10: Compare non-unit fractions less than 1 with the same numerator by using tape diagrams.

Standard: 3.NF.A.3.d; 3.G.A.2

Mathematical Practice: MP6

Target: Compare non-unit fractions less than 1 with the same numerator by using tape diagrams.

Learning Activities:

Fluency: Students add or subtract within 1,000 to build fluency with the operations. Students complete equations to build fluency with multiplying and dividing by 9.

Launch: Students analyze familiar units to recognize that the value of the unit is important when fractions are being compared.

Learn: Students draw to compare the size of two fractions in context. Students reason about the size of the unit when considering two fractions.

Land/Debrief: Facilitate a discussion about what is important to remember when drawing a picture to compare two fractions, how the size of the fractional units help us compare fractions, and how we can compare fractions with the same number of parts but different-size parts.

Daily Exit Ticket: Students will shade tape diagrams to represent a fraction, then use the fraction to make true comparison statements.

Resources: Multiply and Divide by 9 Sprint (in the student book); Blank Tape Diagrams (in the student book)

Lesson # 11: Locate fractions from 0 to 1 on a number line by using fraction tiles.

Standard: 3.NF.A.2.a; 3.NF.A.2.b

Mathematical Practice: MP2

Target: Locate fractions from 0 to 1 on a number line by using fraction tiles.

Learning Activities:

Fluency: Students use the term half past as they count by half hours on a clock to maintain work with time from grade 2. Students count by halves, fourths, or sixths on a tape diagram and identify the fraction shaded to develop fluency with fractions and fraction notation. Students partition a rectangle into equal parts and then shade and identify parts of the rectangle to develop fluency with fractions, fraction notation, and associated terminology.

Launch: Students draw and label a fraction model to show parts of a whole.

Learn: Students create and label a number line from 0 to 1. Students create and label number lines by using the mark-and move-forward strategy. Students draw a number bond to represent a partitioned number line.

Land/Debrief: Facilitate a discussion about partitioning a number line into fractional units.

Daily Exit Ticket: Students will partition a fraction strip into sixths, then mark and label the fractions on the number line.

Resources: Analog clock; Number Lines (in the teacher edition and student edition); fraction strip, 1 whole; Equal Parts (in the student book); Unit fraction tiles

Lesson # 12: Represent fractions from 0 to 1 on a number line.

Standard: 3.NF.A.2.a; 3.NF.A.2.b

Mathematical Practice: MP8

Target: Represent fractions from 0 to 1 on a number line.

Learning Activities:

Fluency: Students identify and sort models that represent the same multiplication equation and record the equation to build multiplication fluency within 100. Students use the terms quarter past, half past, and quarter to as they count by quarter hours on a clock to maintain work with time from grade 2. Students partition a rectangle into equal parts and then shade and identify parts of the rectangle to develop fluency with fractions, fraction notation, and associated terminology.

Launch: Students analyze number lines that represent a word problem to identify errors.

Learn: Students plot fractions on number lines and draw number bonds to show the parts of 1. Students partition and label number lines to show fractional parts.

Land/Debrief: Facilitate a discussion about representing fractions on a number line.

Daily Exit Ticket: Students will partition the interval into equal parts, label the fractions at 0 and 1, plot the given fraction on the number line, and complete the number bond to match.

Resources: Equal Group Cards, Set C and Set D (in the student book); Envelopes (13); Analog clock; Highlighters (2); Sticky notes (6 per student pair); Equal parts (in student book)

Lesson # 13: Identify equivalent fractions from 0 to 1 with tape diagrams and on number lines.

Standard: 3.NF.A.3.a; 3.NF.A.3.b

Mathematical Practice: MP2

Target: Identify equivalent fractions from 0 to 1 with tape diagrams and on number lines.

Learning Activities:

Fluency: Students identify and sort models that represent the same multiplication equation and record the equation to build multiplication fluency within 100. Students count by halves, thirds, sixths, or eighths on a tape diagram and identify the fraction shaded to develop fluency with fractions and fraction notation.

Launch: Students identify unlabeled fractions on a number line.

Learn: Students use fraction strips and tape diagrams to identify equivalent fractions. Students use number lines to identify equivalent fractions.

Land/Debrief: Facilitate a discussion about equivalent fractions.

Daily Exit Ticket: Using a number line, students will draw a model to show equivalent fractions.

Resources: Fraction strips; Envelope of Equal Groups Cards, Set C or Set D (1 per student pair); Sticky notes (6 per student pair); Colored pencils (5)

Lesson # 14: Recognize that equivalent fractions share the same location on a number line.

Standard: 3.NF.A.3.a; 3.NF.A.3.b

Mathematical Practice: MP7

Target: Recognize that equivalent fractions share the same location on a number line.

Learning Activities:

Fluency: Students multiply a one-digit number by a multiple of 10 to build fluency with the skill from module 3.

Launch: Students relate halves to quarters and identify ways to get the same amount.

Learn: Students use two number lines to show equivalent fractions for related units, such as halves and fourths. Students partition and label one number line with two different fractional units to show equivalent fractions.

Land/Debrief: Facilitate a discussion about using a number line to find equivalent fractions on a number line.

Daily Exit Ticket: Use a number line to identify equivalent fractions, showing they share the same location on a number line.

Resources: *Eureka Math* Numeral Cards; Envelope of Multiples of 10 cards (1 per student pair); Hidden Factor Mat (1 per student pair, in the student book)

Lesson # 15: Identify fractions on a ruler as numbers on a number line.

Standard: 3.NF.A.2.a; 3.NF.A.2.b

Mathematical Practice: MP6

Target: Identify fractions on a ruler as numbers on a number line.

Learning Activities:

Fluency: Students identify what fraction of a tape diagram is shaded to build fluency with fractions and fraction notation.

Launch: Students measure fractional lengths with a whole-number ruler to establish the need for a more precise measurement.

Learn: Students draw tick marks at half-inch intervals on the ruler and count half inches. Students draw tick marks at quarter-inch intervals on the ruler and count quarter inches.

Land/Debrief: Facilitate a discussion that relates representing fractions on the ruler to representing fractions on the number line.

Daily Exit Ticket: Students will measure the length of objects to the nearest quarter inch.

Resources: Write the Fraction Sprint (in the student book); Paper ruler; Straws (75) cut into various lengths

Lesson # 16: Measure lengths and record data on a line plot.

Standard: 3.NF.A.3.a; 3.NF.A.3.b; 3.MD.B.4

Mathematical Practice: MP8

Target: Measure lengths and record data on a line plot.

Learning Activities:

Fluency: Students multiply a one-digit number by a multiple of 10 to build fluency with the skill from module 3. Students identify a fractional unit and count to 2 by halves, thirds, or fourths to develop fluency with fraction notation.

Launch: Students fluently count by halves and fourths on a ruler.

Learn: Students identify and label halves and fourths on a ruler. Students create a line plot showing fractional lengths.

Land/Debrief: Facilitate a discussion connecting fractional number lines and line plots.

Daily Exit Ticket: Students will label a partitioned paper strips into wholes, halves, and quarters. Students will then compare lengths.

Resources: *Eureka Math* Numeral Cards (1 per student pair), Envelopes of Multiples of 10 cards (1 per student pair); Envelopes of Multiples of 10 cards; Hidden Factor Mat (1 per student pair, in the student book); Grid for Line Plot (in the student book); Paper ruler; Glue; Crayon

Lesson # 17: Represent fractions greater than 1 on a number line and identify fractions equivalent to whole numbers.

Standard: 3.NF.A.3.a; 3.NF.A.3.b; 3.NF.A.3.c

Mathematical Practice: MP7

Target: Represent fractions greater than 1 on a number line and identify fractions equivalent to whole numbers.

Learning Activities:

Fluency: Students find a product or unknown factor to build multiplication and division fluency within 100. Students use a number bond to decompose a fraction equal to one into two parts with the like units to build fluency with the skill from topic B. Students identify a fractional unit and count to 3 by halves, thirds, or fourths to develop fluency with fractions and fraction notation.

Launch: Students draw a number line to represent a context.

Learn: Students use fraction strips and unit fraction tiles to create and label a number line with fractions greater than 1. Students draw and label number lines that do not start at zero.

Land/Debrief: Facilitate a discussion about fractions equivalent to whole numbers and labeling a number line with fractions greater than 1.

Daily Exit Ticket: Students will partition each whole number interval into fourths, label all the fourths, and draw a box around each fourth that is equivalent to a whole number.

Resources: *Eureka Math* Numeral Cards (1 per student group); Blank Number Line (in student book); Sentence strip, 1 whole; Unit fraction tiles

Lesson # 18: Compare fractions with like units by using a number line.

Standard: 3.NF.A.2.b; 3.NF.A.3.d

Mathematical Practice: MP3

Target: Compare fractions with like units by using a number line.

Learning Activities:

Fluency: Students identify a fractional unit and count to 1 by sixths or eighths to develop fluency with fractions and fraction notation. Students identify the fractional unit and the value shaded in a given tape diagram to develop fluency with recognizing fractions as whole numbers. Students analyze tape diagrams to compare fractions less than or equal to 1 with like denominators to prepare for similar work on the number line.

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

Learn: Students use the position of a fraction on the interactive number line to compare it with other fractions. Students locate the positions of fractions on a number line and use the positions to compare the fractions. Students play a game to practice locating and comparing fractions on a number line.

Land/Debrief: Facilitate a discussion that emphasizes correct location and comparison of fractions on the number line.

Daily Exit Ticket: Students will partition a number line into thirds and label fractions on the number line.

Resources: String, 8 feet; Index cards (22); Comparison Cards (in the teacher edition); Sentence strip (1 per student pair); Fraction Cards (1 per student pair, in the student book)

Lesson # 19: Compare fractions with unlike units but the same numerator by using number lines.

Standard: 3.NF.A.3.d

Mathematical Practice: MP1

Target: Compare fractions with unlike units but the same numerator by using number lines.

Learning Activities:

Fluency: Students use a number bond to decompose 1 into two parts with like units to build fluency with the skill from topic B. Students identify a fractional unit and count to 2 by sixths or eighths to develop fluency with fractions and fraction notation. Students use tape diagrams to compare fractions less than or equal to 1 with like numerators to prepare for similar work on the number line.

Launch: Students partition the interval from 0 to 1 into different fractional units on the same number line.

Learn: Students use distance and position to compare fractions on two number lines. Students use two number lines to compare fractions and write related comparison statements. Students draw number lines to solve comparison problems in context.

Land/Debrief: Facilitate a discussion about using number lines to compare fractions with the same numerator.

Daily Exit Ticket: Students will partition the intervals on number lines and label each fraction. Students will then compare fractions.

Resources: Comparison Word Problems (in the teacher edition); Blank sheet of paper (1 per student group)

Lesson # 20: Compare fractions with related units by using a number line.

Standard: 3.NF.A.3.d

Mathematical Practice: MP5

Target: Compare fractions with related units by using a number line.

Learning Activities:

Fluency: Students find a product or unknown factor to build multiplication and division fluency within 100. Students identify the fractional unit and the value shaded in a given tape diagram to develop fluency with recognizing whole numbers as fractions.

Launch: Students fold a paper strip to determine relationships between fractional units.

Learn: Students create one number line with thirds and sixths to compare fractions. Students solve a comparison problem with the familiar context of length. Students write a comparison problem with a given pair of related fractions.

Land – Debrief: Facilitate a discussion about using one number line to compare fractions with related units.

Daily Exit Ticket: Students use a number line to compare fractions.

Resources: Fraction Comparison Cards (in the teacher edition); *Eureka Math* Numeral Cards; Paper strip, 1" x 6"; Blank sheet of paper (1 per student pair)

Lesson # 21: Compare various fractions by representing them on number lines.

Standard: 3.NF.A.3.d

Mathematical Practice: MP6

Target: Compare various fractions by representing them on number lines.

Learning Activities:

Fluency: Students identify the fraction that is one fractional unit more to build an understanding of fractions as numbers.

Launch: Students toss paper balls on a number line to compare fractions with like and related units. Students decide how to represent and compare fractions on number lines. Students use what they know about distance and position to compare points on number lines.

Land/Debrief: Facilitate a discussion about how students determine when to use one or two number lines to compare fractions.

Daily Exit Ticket: Students partition and label fractions on a number line. Students use the number line to compare fractions.

Resources: One Fractional Unit More Sprint (in the student book)

Lesson # 22: Identify fractions equivalent to whole numbers by using number lines.

Standard: 3.NF.A.3.a; 3.NF.A.3.b; 3.NF.A.3.c

Mathematical Practice: MP2

Target: Identify fractions equivalent to whole numbers by using number lines.

Learning Activities:

Fluency: Students complete a division equation by using a related multiplication equation to build multiplication and division fluency within 100. Students partition a number line into 2, 3, or 4 equal parts and identify the fractional unit, unit fraction, and non-unit fractions to build fluency with the skills from topic C. Students visualize a number line while counting aloud to build fluency with counting by halves.

Launch: Students name fractions equivalent to a whole number in a real-world situation.

Learn: Students use three number lines to show equivalent fractions with halves, fourths, and eighths from 0 to 2. Students use three number lines to show equivalent fractions with halves, fourths, and eighths from 3 to 5.

Land/Debrief: Facilitate a discussion about ways to show the same number by using different units on a number line.

Daily Exit Ticket: Students will use a number line to compare fractions.

Resources: Three Number Lines (in the student book)

Lesson # 23: Reason to find fractions equivalent to whole numbers by using patterns and number lines.

Standard: 3.NF.A.3.a; 3.NF.A.3.b; 3.NF.A.3.c

Mathematical Practice: MP5

Target: Reason to find fractions equivalent to whole numbers by using patterns and number lines.

Learning Activities:

Fluency: Students visualize a number line while counting aloud to build fluency with counting by thirds. Students identify and count by a fractional unit and recognize specific fractions as whole numbers on a number line to build fluency with the skills from topic D. Students use symbols to compare fractions less than or equal to 1 with like denominators to build fluency with the skill from topic D.

Launch: Students use fractions that are equivalent to whole numbers to solve a real-world problem.

Learn: Students draw two number lines to find fractions equivalent to whole numbers. Students draw one number line to find equivalent fractions greater than 1.

Land/Debrief: Facilitate a discussion about using patterns to find equivalent fractions.

Daily Exit Ticket: Students will use a number line to complete fractional equivalent equations.

Resources: Straightedge

Lesson # 24: Generate equivalent fractions greater than 1 by using a number line.

Standard: 3.NF.A.3.b; 3.NF.A.3.c

Mathematical Practice: MP2

Target: Generate equivalent fractions greater than 1 by using a number line.

Learning Activities:

Fluency: Students complete a division equation by using a related multiplication equation to build multiplication and division fluency within 100. Students partition a number line into 6 or 8 equal parts and identify the fractional unit, unit fraction, and non-unit fractions to build fluency with the skills from topic C. Students visualize a number line while counting aloud to build fluency with counting by thirds.

Launch: Students build a human number line to show equivalent fractions greater than 1.

Learn: Students create number lines for given fractional units and intervals to find pairs of equivalent fractions. Students combine two number lines to represent two fractional units on one number line.

Land/Debrief: Facilitate a discussion about intervals on a number line.

Daily Exit Ticket: Students will write equivalent fractions for a given point a number line.

Resources: Single Number Line (in the student book); Sentence Strips (2 per student pair); Straightedge (1 per student pair); Chart paper sheet (1 per student group); Glue (1 per student group); Index cards; Interval Task Cards (in the teacher edition)

Lesson # 25: Express whole numbers as fractions with a denominator of 1.

Standard: 3.NF.A.3.c

Mathematical Practice: MP4

Target: Express whole numbers as fractions with a denominator of 1.

Learning Activities:

Fluency: Students visualize a number line while counting aloud to build fluency with counting aloud to build fluency with counting by fourths. Students count by a fractional unit and recognize fractions as whole numbers on a number line to build fluency with the skills from topic D. Students use symbols to compare a fraction greater than 1 either to another fraction with the same denominator or to a whole number, to build fluency with the skill from topic D.

Launch: Students partition wholes and represent wholes with fractions.

Learn: Students represent 1 whole with the fraction $\frac{1}{1}$. Students use unit fractions to write whole numbers as fractions.

Land/Debrief: Facilitate a discussion about writing whole numbers as fractions with a unit of 1.

Daily Exit Ticket: Students will rename whole numbers as fractions.

Resources: None

Lesson # 26: Create a ruler with 1-inch, half-inch, and quarter-inch intervals.

Standard: 3.NF.A.2.b; 3.NF.A.3.b

Mathematical Practice: MP7

Target: Create a ruler with 1-inch, half-inch, and quarter-inch intervals.

Learning Activities:

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

Launch: Students summarize the characteristics of various fraction models.

Learn: Students use lined paper to create a ruler marked in inch, half-inch, and quarter-inch intervals. Students use the rulers they created to identify fractional measurements.

Land/Debrief: Facilitate a discussion about applying the method of making a ruler to other situations.

Daily Exit Ticket: Students will use a ruler to identify fractional measurements.

Resources: Paper strip, 1" x 6", Lined Paper (in the teacher edition and in the student book); Compare Fractions Sprint (in the student book); Ruler

Lesson # 27: Apply fraction concepts to complete a multi-part task. (Optional Lesson)

Standard: 3.NF.A.1; 3.NF.A.2.b; 3.NF.A.3.d

Mathematical Practice: MP4

Target: Apply fraction concepts to complete a multi-part task.

Learning Activities:

Fluency: Students visualize a number line while counting aloud to build fluency with counting by fourths.

Students use symbols to compare a fraction to either another fraction with the same numerator or to a whole number to build fluency with the skill from topic D. Students count by a fractional unit and recognize fractions as whole numbers on a number line to build fluency with the skills from topic D.

Launch: Students represent equivalent fractions in multiple ways.

Learn: Students draw to represent and compare fractions to solve real-world problems. Students draw to represent and compare fractional distances. Students share their solutions for problem 4 and reason about their connections.

Land/Debrief: Facilitate a discussion about applying fraction concepts to complete a multi-part task.

Daily Exit Ticket: Students will partition rectangles and complete a multi-part task identify fractions and comparing fractions.

Resources: None

****Zearn Math is available for independent digital lessons.**

Unit Modifications for Special Population Students

Advanced Learners	<ul style="list-style-type: none"> • Lesson 8 – Challenge students with an extension question such as the following: Did Mr. Endo spend more or less than 1 half of the money in his wallet? How do you know? • Lesson 16 – After counting up by halves and fourths, consider counting down, and include opportunities to alternate the counting directions between counting up and counting down to increase fluency with the units. Continue sliding your finger to each tick mark while counting. • Lesson 25 – Consider asking students to reason about whether there is another unit fraction that is equivalent to 1, other than $\frac{1}{11}$.
Struggling Learners	<ul style="list-style-type: none"> • Lesson 7 – Consider using color coding to help students recognize the corresponding parts of the two representations. In one color, highlight the unit fraction in the number bond and in the tape diagram. In a different color, do the same with the fraction that represents the unshaded parts. Then physically point to the total tape diagram and relate it to the total shown in the number bond. • Lesson 8 – Activate prior knowledge of decomposing a number. Relate students' experience with decomposing whole numbers in different ways to decomposing 1 into fractional units. Consider guiding students in creating number bonds with a think-aloud such as the following: Just as I can decompose 4 in different ways, I can decompose 4 fourths in different ways. Knowing my partners to 4 helps me show all the possible ways. • Lesson 10 – Consider allowing students to use their fraction strips or unit fraction tiles to represent the fractions being compared
English Language Learners	<ul style="list-style-type: none"> • Lesson 2 – Students may need support explaining their reasoning or understanding the reasoning of other group members as they explore different strategies for partitioning the wholes. Refer them to the Share Your Thinking and Ask for Reasoning sections of Talking Tool. Prompt students to use fractional unit in their explanation. • Lesson 6 – Consider supporting students in distinguishing a unit fraction from a non-unit fraction with a labeled visual such as the following: $\frac{1}{5}$ – Unit Fraction $\frac{2}{5}$, $\frac{3}{5}$, $\frac{4}{5}$ – Non-unit Fraction • Lesson 9 – Encourage students to use the Talking Tool, where the Agree or Disagree section can help guide their discussions. Consider providing specific sentence frames such as the following to help students give feedback: I like that you wrote _____. I think you could add _____.
Special Needs Learners	<ul style="list-style-type: none"> • Lesson 1 – Consider highlighting the relationship between equal parts and unequal parts by displaying two same-size shapes that are partitioned differently. Discuss how you know the parts are equal or unequal. • Lesson 3 – Consider providing alternate materials to lessen the fine motor demands of the task. Provide prefolded strips for some or all of the fractional units. Invite students to refold the strips and complete the labeling. For thirds and sixths, invite students to measure the prefolded sections to confirm the measurements before labeling. • Lesson 5 – Consider providing a verbal description of the printed or drawn images throughout this lesson to support students in understanding the nuances of the fraction models. For example, explain that the pizza shows fourths if students focus only on the horizontal and vertical cuts. Consider drawing a vertical line and a

	horizontal line to highlight the fourths. Point to the features as you describe them.
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:

- Lesson 17 - NJSLSA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will think-pair-share about what they notice and wonder about the bar we use to write a fraction and the many forms it has taken over the past 2,000 years.*
- Lesson 17 – 6.1.5.HistoryUP.6 – Evaluate the impact of different interpretations of experiences and events by people with different cultural or individual perspectives. *Students will notice and wonder about the bar we use to write a fraction and the many forms it has taken over 2,000 years.*
- Lessons 10, 11, and 17 – NJSLSA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will turn and talk to explore strategies, analyze problems, and discuss ideas relating to lessons' target.*
- Lessons 2 and 19– NJSLSA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will work collaboratively in groups to explore strategies, analyze problems, and discuss ideas relating to lessons' target.*
- Lessons 1 – Lessons 27 – SL.3.1.B – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly. Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). *During the "Land" section of each lesson, students will participate in a discussion to reinforce skills taught in each lesson.*

Integration of 21st Century Skills

Standards:

- Lesson 9 - 9.4.5.CI.3 - Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a) *Students will refine an explanation about why sholes need to be the same size for fractions to be compared. Students will explain their thinking and draw a model to support their response.*
- Lesson 2 - 9.4.5.CT.1 – Identify and gather relevant data that will aid in the problem-solving process. *Students describe similarities and differences between halves of different wholes. Students will discuss their thinking with a partner and share it with the group.*
- Zearn Math - 9.4.5.CT.3 – Describe how digital tools and technology may be used to solve problems. *Students will be using Zearn Math digital learning platform as a supplement to aid in mastering skills.*
- Lesson 5 - 8.1.5.DA.1 – Collect, organize, and display data in order to highlight relationships or support claims. *Students will reason about parts of different wholes and describe equal parts as fractional units. Students will view a collection of items and find a category in which three of the items belong but the fourth does not. Students will explain their chosen category and justify why one item does not fit.*
- Lesson 10 - 8.1.5.DA.3 – Organize and present collected data visually to communicate insights gained from different views of the data. *Students will analyze familiar units to recognize the value of the unit is important when factions are being compared. Students will decide: Is 3 the same as 2? What is similar? What is different? Students will think-pair-share*
- Lesson 22 - 8.1.5.DA.5 – Propose cause and effect relationships, predict outcomes, or communicate ideas using data. *Students use three number lines o show equivalent fractions with halves, fourths,*

and eighths from 3 to 5. Students will predict how many halves, fourths, and eighths would be equivalent to 4? To 5?

Unit Title: Module 6 – Geometry, Measurement, and Data

Unit Description: Students will tell time to the nearest minute and use linear models to solve and represent elapsed time word problems. Students describe, analyze, and compare properties of two-dimensional shapes. Students compare and classify shapes by the number of sides and angles and make connections to the attributes of shapes. Students recognize perimeter as an attribute of plane figures and solve real-world and mathematical problems involving perimeter. Students represent and interpret data by using scaled picture graphs, scaled bar graphs, and line plots.

Unit Duration: 32 Days (24 Lessons; 2 Optional Lessons; 1 Equip; 4 Topic Quizzes; 1 End of Module 6 Assessment)

Desired Results**Standard(s):**

- 3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
- 3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- 3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
- **3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.**
- **3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one-and two-step “how many more” and “how many less” problems using information presented in s called bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.***
- **3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.**
- **3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.**
- **3.G.A.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.**

Understandings:

- I can use a number line to represent the scale of a clock. I can count by fives or tens and then by ones to tell time to the nearest minute. I can solve time interval word problems where the unknown is the finish time, the start time, or the elapsed time. I can count coins and create money word problems.

Essential Questions:

- How is telling time on a clock like our work with number lines? How does multiplication with units of 5 help tell time? How do you read a clock to the nearest minute? How can thinking about fives and ones help you tell time? What models and strategies can we use to find an unknown finish time in a word problem? How does finding an unknown start time compare to finding an unknown finish time? How does finding elapsed time compare to finding start and finish times? What strategies can be used to solve different

<ul style="list-style-type: none"> • I can describe, define, and sort quadrilaterals by using attributes such as pairs of parallel sides, sides that have the same length, and right angles. I can determine attributes that are important for defining a shape. I can describe and sort polygons and recognize that polygons with the same name can look different based on their other attributes. I can draw polygons to match a list of attributes. I can compose polygons to make other polygons. I can relate the attributes of the composed polygons to the attributes of the individual polygon. • I can define perimeter and understand it as an attribute of two-dimensional shapes. I can find the perimeter of a polygon by measuring the side lengths with a ruler and find the sum. I can use known attributes to find unknown side lengths and perimeters of polygons, including regular polygons. I can reason about the relationship between area and perimeter and determine the perimeter of rectangles with the same area and the area of rectangles with the same perimeter. I can solve real-world problems involving perimeter and unknown measurements. • I can collect measurement data involving fractional lengths by measuring the perimeter of circles to the nearest quarter inch. I can represent fractional data on line plots. I can represent categorical data by using scaled picture graphs and scaled bar graphs. I can identify place value patterns to name units up to 1 million by organizing, counting, and representing a collection with a total value greater than 1,000. I can name and count numbers greater than 1,000. I can self-assess my fluency with multiplication and division within 100 and addition and subtraction within 1,000. 	<p>types of time problems? What is an efficient way to find the value of a collection of coins?</p> <ul style="list-style-type: none"> • What attributes tell us a shape is a parallelogram? What attributes do all quadrilaterals have in common? How can polygons that look different share the same name? How do you know a polygon is a regular polygon? Why do some combinations of attributes create many possible polygons, but others create only 1 possible polygon or no possible polygons? Is it possible to draw a polygon with a different number of sides than it has angles? Why? What attributes does a rectangle composed of tetrominoes have? How can polygons be used in different ways to compose a larger polygon? What attributes can be used to describe the polygons you compose? • What is perimeter? How can you show the perimeter of a shape? How are perimeter and length related? How can you determine the perimeter of a shape? How can the attributes of shapes help us find their perimeters? How can we efficiently find the perimeter of a shape? Why are perimeter and area measure in different units? How can rectangles with the same area have different perimeters? How can we find possible rectangles efficiently when we know the perimeter? How can rectangles with the same perimeter have different areas? How does the way we decompose a shape change the way we find its unknown side lengths and perimeter? How can attributes of polygons help us find the unknown side lengths of a polygon? • How can we find the perimeter of a circle? How is finding the perimeter of a circle different from finding the perimeter of a polygon? How are fractional data shown in a line plot? What makes a context reasonable or unreasonable for a certain set of data? When would you use a table or tally chart and when would you use a scaled picture graph? Why do scaled picture graphs have keys? How do you choose the scale for a scaled picture graph or a scaled bar graph? How are scaled picture graphs and scaled bar graphs similar and different? How does organizing help you count? How do patterns between place value units help us to name and count to numbers beyond 1,000? Which multiplication facts do I know from memory? Which addition and subtraction strategies do I use efficiently and accurately?
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Assessment Evidence

Assessments:

- Equip – Preassessment for Module 6
- Topic Quiz A
- Topic Quiz B
- Topic Quiz C
- Topic Quiz D
- End of Module 6 Assessment

Benchmarks:

- **Eureka Math Squared Benchmark Assessments are administered three times per year.**
- **The Star Math assessment is administered in the fall, winter, and spring.**

Learning Plan**Lesson # 1: Relate skip-counting by fives on the clock to telling time on the number line.**

Standard: 3.MD.A.1

Mathematical Practice: MP7

Target: Relate skip-counting by fives on the clock to telling time on the number line.

Learning Activities:

Fluency: Students add or subtract within 1,000 to build fluency with the operations. Students use the term quarter past, half past, and quarter to as they count by 5-minute intervals on a clock to prepare for reading and measuring time. Students count and tell time on an analog clock to the nearest 5 minutes to prepare for reading and measuring time to the nearest minute beginning in lesson 2.

Launch: Students describe different kinds of clocks to activate prior knowledge.

Learn: Students relate an analog clock to a number line. Students read the time from a clock, skip-count by fives, and plot times to the nearest 5 minutes on the number line. Students draw their own number line showing 5-minute intervals and plot times from a clock.

Land/Debrief: Facilitate a discussion on how telling time on a clock is like our work with number lines and how multiplication with units of 5 help you tell time.

Daily Exit Ticket: Students will tell time to the nearest 5 minutes.

Resources: Analog Clock, String, Clock and Number Line (in the teacher edition and in the student book)

Lesson # 2: Count by fives and ones on the number line as a strategy for telling time to the nearest minute on the clock.

Standard: 3.MD.A.1

Mathematical Practice: MP3

Target: Count by fives and ones on the number line as a strategy for telling time to the nearest minute on the clock.

Learning Activities:

Fluency: Students decompose a total number of minutes by using a number bond and complete addition and subtraction equations to prepare for solving word problems involving time intervals beginning in lesson 3. Students use the term quarter past, half past, and quarter to as they count by 5-minute intervals on a clock to prepare for reading and measuring time. Students count and tell time on an analog clock to the nearest 5 minutes to prepare for reading and measuring time to the nearest minute.

Launch: Students justify the placement of a given time on a number line.

Learn: Students use fives and ones to plot a time to the nearest minute on the number line. Students read a clock to the nearest minute and plot the time on a number line.

Land/Debrief: Facilitate a discussion about telling time to the nearest minute.

Daily Exit Ticket: Students will tell time to the nearest minute.

Resources: Analog clock; Number Bonds (in the student book); Clock with Minutes and Number Lines (in the student book)

Lesson # 3: Solve time word problems where the end time is unknown.

Standard: 3.MD.A.1

Mathematical Practice: MP4

Target: Solve time word problems where the end time is unknown.

Learning Activities:

Fluency: Students count by 5-minute intervals within an hour to develop strategies for telling time and solving problems involving timer intervals. Students tell time on an analog clock to the nearest minute to develop fluency with reading and measuring time.

Launch: Students identify important information in a time context.

Learn: Students use a number line with 5-minute intervals and find an unknown finish time. Students analyze the use of benchmark times on an open number line to solve a word problem. Students choose a strategy to find the finish time.

Land/Debrief: Facilitate a discussion on what models and strategies we use to find an unknown finish time and how we can benchmark times with fives and fifteens help us find an unknown finish time.

Daily Exit Ticket: Students will use benchmark times on an open number line to solve a word problem where the end time is unknown.

Resources: Time Problem Solving Tools (in the student book)

Lesson # 4: Solve time word problems where the start time is unknown.

Standard: 3.MD.A.1

Mathematical Practice: MP5

Target: Solve time word problems where the start time is unknown.

Learning Activities:

Fluency: Students decompose a total number of minutes by using a number bond and complete addition and subtraction equations to develop strategies for solving word problems involving time intervals. Students count by 5-minute intervals crossing an hour to develop strategies for telling time and solving problems involving time intervals. Students identify a time on the number line within an hour to develop strategies for solving problems involving time intervals.

Launch: Students reason about start and finish times to estimate placement on a number line.

Learn: Students use benchmark times on a clock and a partitioned number line to find an unknown start time. Students use an open number line to find an unknown start time. Students choose a strategy to find an unknown start time.

Land/Debrief: Facilitate a discussion about finding an unknown start time.

Daily Exit Ticket: Students will use benchmark times on an open number line to solve a word problem where the start time is unknown.

Resources: Labeled index cards (7); String, 8 feet; Time Problem Solving Tools (in the teacher edition and in the student book); Number Bonds (in the student book)

Lesson # 5: Solve time word problems where the change in time is unknown.

Standard: 3.MD.A.1

Mathematical Practice: MP7

Target: Solve time word problems where the change in time is unknown.

Learning Activities:

Fluency: Students add or subtract within 1,000 to build fluency with the operations. Students count by 5- and 1-minute intervals crossing an hour to develop strategies for telling time and solving problems involving time intervals. Students identify a time on the number line crossing an hour to develop strategies for solving problems involving time intervals.

Launch: Students play, I Have, Who Has with time intervals.

Learn: Students read two clocks and use them to find elapsed time. Students identify the start and finish times in a word problem and share solution strategies for solving it. Students identify the start and finish times in a word problem and then try to solve it using the arrow way.

Land/Debrief: Facilitate a discussion that emphasizes how start, finish, and elapsed times relate to problem solving.

Daily Exit Ticket: Students solve word problem where the change in time is unknown.

Resources: I Have, Who Has Time Cards (in teacher edition)

Lesson # 6: Solve time word problems and use time data to create a line plot.

Standard: 3.MD.A.1

Mathematical Practice: MP4

Target: Solve time word problems and use time data to create a line plot.

Learning Activities:

Fluency: Students complete addition and subtraction equations to develop strategies for solving word problems involving time intervals.

Launch: Students construct a word problem to represent a given time interval.

Learn: Students solve time word problems and compare solution strategies. Students plot fractional time data on a line plot and use the line plot to answer questions about the data.

Land/Debrief: Facilitate a discussion about solving time word problems.

Daily Exit Ticket: Students will solve a word problem by using time data to create a line plot.

Resources: Add or Subtract Minutes Sprint (in the student book)

Lesson # 7: Count coins and create money word problems. (Optional Lesson)

Standard: 3.OA.D.8

Mathematical Practice: MP2

Target: Count coins and create money word problems.

Learning Activities:

Fluency: Students decompose a total number of cents by using a number bond and complete addition and subtraction equations to prepare for solving problems involving money. Students identify the value of a collection of coins to prepare for solving problems involving money.

Launch: Students engage in mathematical discourse to compare coin collections.

Learn: Students watch a video to co-construct and solve a money word problem. Students write a word problem with the start unknown or the result unknown.

Land/Debrief: Facilitate a discussion that emphasizes different ways to write, represent, and solve word problems with a context of money.

Daily Exit Ticket: Students will solve a two-step word problem by counting coins.

Resources: Coin Collections (in the teacher edition); Number bonds (in the student book)

Lesson # 8: Compare and classify quadrilaterals.

Standard: 3.G.A.1

Mathematical Practice: MP3

Target: Compare and classify quadrilaterals.

Learning Activities:

Fluency: Students count by half inches and measure lines to the nearest half inch to prepare for measuring side lengths of polygons beginning in lesson 9. Students name the polygon use to form a composite figure to prepare for decomposing and identifying polygons. Students sketch a quadrilateral with a specified attribute and select quadrilaterals with the same attribute, to prepare for classifying quadrilaterals.

Launch: Students identify a quadrilateral based on its attributes.

Learn: Students classify quadrilaterals based on their attributes. Students decompose quadrilaterals into 2 triangles by drawing a diagonal. Students evaluate statements about relationships between quadrilaterals.

Land/Debrief: Facilitate a discussion about the attributes of quadrilaterals.

Daily Exit Ticket: Students will identify quadrilaterals and the attributes of quadrilaterals.

Resources: Highlighters (2); Ruler; Index card

Lesson # 9: Compare and classify other polygons.

Standard: 3.G.A.1

Mathematical Practice: MP6

Target: Compare and classify other polygons.

Learning Activities:

Fluency: Students count by fourth inches and measure lines to the nearest quarter inch to prepare for measuring side lengths of polygons. Students name the polygons used to form a composite figure to prepare for decomposing and identifying polygons. Students sketch a polygon with a specified number of sides and angles and select shapes with given attributes to prepare for classifying polygons.

Launch: Students identify polygon-shaped items with given attributes in the classroom.

Learn: Students sort polygons by attributes of side length, number of right angles, and number of pairs of parallel sides. Students identify regular polygons. Students use attributes to compare and classify polygons.

Land/Debrief: Facilitate a discussion about using attributes to classify polygons.

Daily Exit Ticket: Students answer questions about the attributes of a polygon.

Resources: Polygon Sort (in the teacher edition and in the student book); Ruler; Scissors; Index card; Highlighters (6)

Lesson # 10: Draw polygons with specified attributes.

Standard: 3.G.A.1

Mathematical Practice: MP5

Target: Draw polygons with specified attributes.

Learning Activities:

Fluency: Students count by halves to build an understanding of fractions as numbers and to build fluency with expressing fractions as whole numbers. Students complete a division equation by using a related multiplication equation to build multiplication and division fluency within 100. Students identify the number of sides or angles of and name for a given polygon to develop fluency with classifying polygons.

Launch: Students list the attributes of a given polygon.

Learn: Students identify angles in a polygon as larger than a right angle or smaller than a right angle. Students draw polygons with given attributes and verify the accuracy of their partner's drawing. Students draw or explain why it is not possible to draw polygons with randomly generated attributes.

Land/Debrief: Facilitate a discussion about drawing polygons with specified attributes.

Daily Exit Ticket: Students will draw a quadrilateral based on specific attributes.

Resources: Highlighter; Index card; Ruler; Attribute Cards (in the student book); Scissors

Lesson # 11: Reason about composing polygons by using tetrominoes.

Standard: 3.G.A.1

Mathematical Practice: MP8

Target: Reason about composing polygons by using tetrominoes

Learning Activities:

Fluency: Students count by fourths to build an understanding of fractions as numbers and to build fluency with expressing fractions as whole numbers. Students complete a division equation by using a related multiplication equation to build multiplication and division fluency within 100. Students identify the number of sides or angles of and name for a given polygon to develop fluency with classifying polygons.

Launch: Students explore the attributes of tetrominoes.

Learn: Students use tetrominoes to build and shade rectangles. Students use tetrominoes to build and shade rectangles with a given area.

Land/Debrief: Facilitate a discussion that emphasizes the attributes and area of tetrominoes and the rectangles they compose.

Daily Exit Ticket: Students use tetrominoes to make a rectangle with an area of 20 square units.

Resources: Tetrominoes (in the teacher edition and in the student edition); Scissors; Colored pencil set

Lesson # 12: Reason about composing polygons by using tangrams.

Standard: 3.G.A.1

Mathematical Practice: MP1

Target: Reason about composing polygons by using tangrams.

Learning Activities:

Fluency: Students write the unknown number in a sequence to build an understanding of fractions as numbers and to build fluency with expressing fractions as whole numbers.

Launch: Students use attributes to compare polygons composed of other polygons.

Learn: Students identify attributes of tangram pieces and composed shapes. Students compose quadrilaterals with given attributes. Students use all the tangram pieces to compose a square.

Land/Debrief: Facilitate a discussion about the attributes of shapes.

Daily Exit Ticket: Students will use at least 4 tangrams to make a trapezoid.

Resources: Tangrams (in the teacher edition and in the student edition); Count by Fourths and Halves Sprint (in the student book); Scissors, Ruler, Colored pencil set

Lesson # 13: Decompose quadrilaterals to understand perimeter as the boundary of a shape.

Standard: 3.MD.D.8

Mathematical Practice: MP5

Target: Decompose quadrilaterals to understand perimeter as the boundary of a shape.

Learning Activities:

Fluency: Students use symbols to compare a fraction to either another fraction with the same denominator or to a whole number to build fluency with the skill from module 5. Students count by thirds to build an understanding of fractions as numbers and to build fluency with expressing fractions as whole numbers. Students measure the side length of a polygon to the nearest inch to prepare for determining perimeter beginning in lesson 14.

Launch: Students reason about side lengths. Students find the distance around a square.

Learn: Students compare the lengths around three different shapes. Students define the perimeter of a shape and find examples of perimeter.

Land/Debrief: Facilitate a discussion about perimeter.

Daily Exit Ticket: Students will identify the perimeter of a rectangle.

Resources: 3-inch Squares (in the student book); Scissors; Colored pencil; Ruler; String, 20-25 inches (1 per student pair)

Lesson # 14: Measure side lengths in whole number units to determine the perimeters of polygons.

Standard: 3.MD.D.8

Mathematical Practice: MP7

Target: Measure side lengths in whole number units to determine the perimeter of polygons.

Learning Activities:

Fluency: Students use symbols to compare a fraction to either another fraction with the same numerator or to a whole number to build fluency with the skill from module 5. Students count by sixths to build an understanding of fractions as numbers and to build fluency with expressing fractions as whole numbers. Students measure the side length of a polygon to the nearest centimeter to prepare for determining perimeter.

Launch: Students relate perimeter of a rectangle to a length measurement.

Learn: Students measure and add the side lengths of a rectangle to find perimeter. Students analyze two multiplication strategies for finding the perimeter of a quadrilateral. Students calculate to find the perimeter of a pentagon.

Land/Debrief: Facilitate a discussion of how perimeter and length are related and how you can determine the perimeter of a shape.

Daily Exit Ticket: Students will find the perimeter of a shape.

Resources: Perimeter Shapes (in the teacher edition and in the student book); Ruler

Lesson # 15: Recognize perimeter as an attribute of shapes and solve problems with unknown measurements.

Standard: 3.MD.D.8

Mathematical Practice: MP7

Target: Recognize perimeter as an attribute of shapes and solve problems with unknown measurements.

Learning Activities:

Fluency: Students use symbols to compare a fraction to either another fraction with the same numerator or to a whole number to build fluency with the skill from module 5.

Launch: Students compose rectangles and find the perimeter.

Learn: Students use the attributes of a rectangle to find the perimeter. Students use the attributes of a regular polygon to find the perimeter. Students find the perimeter of various shapes and compare strategies with a partner.

Land/Debrief: Facilitate a discussion that emphasizes strategies for finding the perimeter of a shape.

Daily Exit Ticket: Students will find the perimeter of shapes.

Resources: Perimeter Trade Cards (in the teacher edition); Compare Fraction Sprint (in the student book); Index card, 3"x5"; Ruler

Lesson # 16: Solve problems to determine the perimeters of rectangles with the same area.

Standard: 3.MD.D.8

Mathematical Practice: MP2

Target: Solve problems to determine the perimeters of rectangles with the same area.

Learning Activities:

Fluency: Students round a two- or three-digit number to the nearest ten and hundred to build fluency with the skills from module 2. Students complete a number sequence to build fluency with multiples of 2, 5, and 4. Students write an equation to represent the area of a rectangle on grid paper to build fluency with the skill from module 4 and prepare for reasoning about perimeter and area of rectangles.

Launch: Students draw rectangles with a given area and relate the rectangles to the factors of the area.

Learn: Students discover that rectangles with the same area can have different perimeters. Students explore the relationship between perimeters of rectangles with the same area.

Land/Debrief: Facilitate a discussion about the relationship between perimeter and area.

Daily Exit Ticket: Students will find the area of three rectangles.

Resources: Small Grid Paper (in the teacher edition and in the student book)

Lesson # 17: Solve problems to determine the areas of rectangles with the same perimeter.

Standard: 3.MD.D.8

Mathematical Practice: MP8

Target: Solve problems to determine the areas of rectangles with the same perimeter.

Learning Activities:

Fluency: Students write an equation to represent the area of a rectangle with specified side lengths to build fluency with the skill from module 4 and prepare for reasoning about perimeter and area of rectangles. Students write an equation to represent the perimeter of a rectangle to develop fluency with finding perimeter.

Launch: Students find possible rectangles with a given perimeter.

Learn: Students use patterns to develop an efficient strategy for finding the length and width of rectangles that have a given perimeter. Students identify that rectangles with the same perimeter can have different areas.

Land/Debrief: Facilitate a discussion about the relationship between perimeter and the length and width of rectangles.

Daily Exit Ticket: Students will find the area and perimeter of rectangles.

Resources: Inch Grid Paper (in the student book); Ruler; Wax craft stick, 12 inches

Lesson # 18: Solve real-world problems involving perimeter and unknown measurements by using all four operations.

Standard: 3.MD.D.8

Mathematical Practice: MP1

Target: Solve real-world problems involving perimeter and unknown measurements by using all four operations.

Learning Activities:

Fluency: Students round a three- or four-digit number to the nearest ten and hundred to build fluency with the skills from module 2. Students complete a number sequence to build fluency with multiples of 2, 3, and 6. Students write an equation to represent the perimeter of a polygon to develop fluency with finding perimeter.

Launch: Students solve a real-world problem by finding the perimeter of a rectangle.

Learn: Students identify how to apply attributes of regular polygons to find unknown side lengths. Students use attributes of rectangles to find the unknown side lengths and perimeter of a composite figure.

Land/Debrief: Facilitate a discussion about using what is known about a polygon to find unknown measurements and perimeters.

Daily Exit Ticket: Students will label all sides of lengths and then find the perimeter of a rectangle.

Resources: None

Lesson # 19: Measure the perimeter of various circles to the nearest quarter inch by using string.

Standard: 3.MD.D.8

Mathematical Practice: MP6

Target: Measure the perimeter of various circles to the nearest quarter inch by using string.

Learning Activities:

Fluency: Students find an unknown finish time to build fluency with the skill from topic A. Students complete a number sequence to build fluency with counting by halves and fourths and with expressing fractions as whole numbers. Students measure the side of a polygon to the nearest quarter inch to prepare for determining the perimeter of a circle.

Launch: Students use dimensions to find the perimeter of large objects.

Learn: Students reason about how to use a string to measure the perimeter of a circle to the nearest quarter inch. Students measure and record the perimeters of various circles to the nearest quarter inch.

Land/Debrief: Facilitate a discussion about finding the perimeter of circles.

Daily Exit Ticket: Students will find the perimeter of the circle to the nearest quarter inch.

Resources: Circles A-B (in the teacher edition); Circles A-N (in the student book); Ruler; String, 24 inches

Lesson # 20: Record measurement data in a line plot.

Standard: 3.MD.B.4

Mathematical Practice: MP6

Target: Record measurement data in a line plot

Learning Activities:

Fluency: Students find an unknown start time to build fluency with the skill from topic A. Students round a number to the nearest ten or hundred to build fluency with the skill from module 2. Students measure the side of a polygon to the nearest quarter inch to build fluency with the skill from topic B.

Launch: Students order fractional data on a number line.

Learn: Students represent data to the nearest half foot and quarter foot in a line plot. Students create a line plot of measurement data.

Land/Debrief: Facilitate a discussion about what you look for in the data to determine the scale for a line plot, how you use what you know about halves and fourths to help create the line plots, and how fractional data is shown in a line plot.

Daily Exit Ticket: Students will create a line plot using fractional lengths.

Resources: Envelope of Rounding Cards (1 per student pair); Blank Fraction Line Plot with Grid (in the student book); String, 8 feet; Index cards (9)

Lesson # 21: Create and analyze a line plot for measurement data to the nearest half unit and quarter unit.

Standard: 3.MD.B.4

Mathematical Practice: MP3

Target: Create and analyze a line plot for measurement data to the nearest half unit and quarter unit.

Learning Activities:

Fluency: Students find an unknown elapsed time to build fluency with the skill from topic A. Students round a number to the nearest ten or hundred to build fluency with the skill from module 2. Students complete a number sequence to build fluency with counting by thirds and sixths and with expressing fractions as whole numbers.

Launch: Students reason about a realistic context for an untitled line plot.

Learn: Students create a line plot with a set of measurement data. Students reason about the similarities and differences between two line plots.

Land/Debrief: Facilitate a discussion about what key features should be included on a line plot, what features of a line plot should be thoughtfully planned out before creating a line plot, and what makes a context reasonable or unreasonable for a certain set of data.

Daily Exit Ticket: Students will create a line plot using fractional lengths.

Resources: Fractional Data Sets (in the teacher edition); Envelopes of Rounding Cards (1 per student pair); Black Line Plot (in the student book)

Lesson # 22: Generate categorical data and represent it by using a scaled picture graph.

Standard: 3.MD.B.3

Mathematical Practice: MP1

Target: Generate categorical data and represent it by using a scaled picture graph.

Learning Activities:

Fluency: Students find an unknown finish, start, or elapsed time to build fluency with the skill from topic A.

Launch: Students complete a data table by solving problems based on the data.

Learn: Students interpret a scaled picture graph and use the data to solve problems. Students collect categorical data, organize the data in a tally chart, and represent the data in a scaled picture graph.

Land/Debrief: Facilitate a discussion about the advantages and disadvantages of scaled picture graphs.

Daily Exit Ticket: Students will answer questions from a scaled picture graph.

Resources: Unknown Finish, Start, or Elapsed Time Sprint (in the student book); Sticky notes

Lesson # 23: Solve problems by creating scaled picture graphs and scaled bar graphs.

Standard: 3.MD.B.3

Mathematical Practice: MP7

Target: Solve problems by creating scaled picture graphs and scaled bar graphs.

Learning Activities:

Fluency: Students label number lines with units of halves, fourths, or eighths and identify equivalent fractions to build fluency with the skills from module 5. Students complete a number sequence to build fluency with counting by halves and eighths and with expressing fractions as whole numbers. Students construct a number line with their fingers while counting aloud and model compositions to prepare for extending work with the place value system beginning in lesson 24.

Launch: Students use a scaled bar graph to identify an error in the scale for a scaled picture graph.

Learn: Students determine appropriate scales and create scaled picture and scaled bar graphs to represent the data. Students use scaled picture and scaled bar graphs to solve problems and evaluate when each type of graph is useful.

Land/Debrief: Facilitate a discussion about characteristics of scaled picture graphs and scaled bar graphs.

Daily Exit Ticket: Students will solve problems by using a scaled picture graph.

Resources: Data Tables (2, in the teacher edition); Scaled Picture and Scaled Bar Graphs (in the teacher edition and in the student book); Three Number Lines: Set 1 (in the student book)

Lesson # 24: Organize, count, and represent a collection of objects.

Standard: 3.MD.B.3

Mathematical Practice: MP5

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

Learning Activities:

Fluency: Students label number lines with units of halves, thirds, or sixths and identify equivalent fractions to build fluency with the skills from module 5.

Launch: Students identify patterns in place value units.

Learn: Students use self-selected strategies to organize and count objects and record their process. Students discuss strategies for organizing and compare the efficiency of the strategies. Students use place value patterns to name new place value units.

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

Daily Exit Ticket: Students will answer questions about representing a collection of objects.

Resources: Seven-Column Place Value Chart (in the teacher edition and the student book); Bills and Disks Counting Collection (in the teacher edition and in the student book); Three Number Lines: Set 2 (in the student book)

Lesson # 25: Name and count numbers greater than 1,000 (Optional Lesson)

Standard: 3.NBT.A

Mathematical Practice: MP8

Target: Name and Count numbers greater than 1,000.

Learning Activities:

Fluency: Students label number lines with units of fourths, sixths, or eighths and identify equivalent fractions to build fluency with the skills from module 5. Students complete a number sequence to build fluency with counting by fourths and sixths and with expressing fractions as whole numbers. Students construct a number line with their fingers while counting aloud and model compositions to develop fluency with the place value system through the millions.

Launch: Students engage in discussion about large numbers.

Learn: Students chorally count by fours and four thousands to identify patterns and relationships. Students use place value understanding to count and exchange bills with values between \$1,000 and \$1,000,000.

Land/Debrief: Facilitate a discussion about relationships between place value units.

Daily Exit Ticket: Students will complete a pattern in numbers greater than 1,000.

Resources: Unlabeled Seven-Column Chart (in the teacher addition); Large Value Bills (in the teacher edition); Three Number Lines: Set 3 (in the student book)

Lesson # 26: Fluently multiply and divide within 100 and add and subtract within 1,000.

Standard: 3.OA.C.7; 3.NBT.A.2

Mathematical Practice: MP3

Target: Fluently multiply and divide within 100 and add and subtract within 1,000.

Learning Activities:

Fluency: None

Launch: Students create multiplication expressions and find products.

Learn: Students sort division expressions by their quotients. Students create multiplication equations and identify products and unknown factors. Students create addition and subtraction equations within 1,000 and find the sums or differences. Students create addition and subtraction equations within 1,000 with a goal sum or difference.

Land/Debrief: Facilitate a discussion for students to reflect and self-assess their fluency with multiplication and division facts and with addition and subtraction strategies.

Daily Exit Ticket: Students will reflect on skills they learned in third grade and what was challenging for them.

Resources: Division Expression Cards (in the teacher edition); Addition and Subtraction Cards (in the student addition; Scissors)

****Zearn Math is available for independent digital lessons.**

Unit Modifications for Special Population Students

Advanced Learners	<ul style="list-style-type: none"> Lesson 4 – Consider repeating the interactive number line activity but with a finish time of 9:00. Provide prompts such as the following that engage students in crossing the hour. <ul style="list-style-type: none"> Start at 7:50. What time is 15 minutes later? Start at 7:45. What time is 30 minutes later? Start at 7:40. What time is 45 minutes later? Finish at 8:30. What time is 50 minutes earlier? Lesson 8 – Challenge students to determine what happens to other polygons when a diagonal line is drawn inside of them. Is there a pattern? Lesson 17 – Consider extending student thinking to abstract reasoning about including fractions to generate other possible combinations that make 6. Lesson 18 – As students become familiar with the routine, consider counting without telling them the unit.
Struggling Learners	<ul style="list-style-type: none"> Lesson 1 – The phrases <i>quarter past</i>, <i>half past</i>, and <i>quarter to</i> are familiar from grade 2. Consider posting an anchor chart that visually supports how each phrase relates to the location of the minute hand on the clock. Lesson 6 – Consider providing sample contexts to support students in writing their problems. Possible contexts include a movie schedule, the length of an airplane flight, and waiting in line for a ride at an amusement park. As students choose a context, consider asking questions such as the following to help them decide if their context is reasonable. <ul style="list-style-type: none"> Is it reasonable that someone would for 92 minutes? Is it reasonable that someone would at about 11:00 am? Lesson 10 – Consider offering alternative options for creating polygons by providing materials such as geoboards or wax craft sticks.
English Language Learners	<ul style="list-style-type: none"> Lesson 8 – Terms such as <i>parallelogram</i> and <i>rhombus</i> are familiar from grade 2 and are used extensively throughout this topic. Consider creating an anchor chart with definitions and examples of the terms for students to refer to. Lesson 11 – To support student understanding of the prefix tetra-, consider relating it to the prefix quad-. Tetra- is from Greek and means four, and quad- is from Latin and also means four. Just as quadrilateral has four sides, a tetromino is composed of four squares. Lesson 13 – Consider having students record the term <i>perimeter</i> with the shapes they traced in their books.
Special Needs Learners	<ul style="list-style-type: none"> Lesson 2 – Consider promoting relevance or value by attaching a meaningful context to the times shown on the clock. Choose a familiar context that is part of the school day, such as lunch. Or choose something related to a high-interest activity, such as the showtime of a new movie. Lesson 3 – Consider allowing students to use the clock provided on Time Problem Solving Tools to support the number line work. Lesson 7 – Consider offering students actual coins, real or pretend, instead of the pictures of the coin collections. Lesson 8 – Consider providing a hands-on experience: Have students cut the shapes apart and manipulate them as they check attributes. Copy the shapes onto another sheet of paper and enlarge the images to make them easier to cut and manipulate.
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:

- Lessons 13, 20, 21, and 23 – NJSLSA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will work collaboratively in pairs to explore strategies, analyze problems, and discuss ideas relating to lessons' target.*
- Lessons 10 and 15 – NJSLSA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will turn and talk to explore strategies, analyze problems, and discuss ideas relating to lessons' target.*
- Lessons 26 – NJSLSA.SL.1 – Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others' ideas and expressing their own clearly and persuasively. *Students will work collaboratively in groups to explore strategies, analyze problems, and discuss ideas relating to lessons' target.*
- Lessons 1 – Lessons 26 – SL.3.1.B – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly. Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). *During the "Land" section of each lesson, students will participate in a discussion to reinforce skills taught in each lesson.*
- Lessons 24 – NJSLSA.W.1 – Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. *Students will write to answer questions regarding strategies they used to count collections. Students will use evidence to support their answers.*
- Lessons 26 – NJSLSA.W.1 – Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. *Students will write to answer questions about their learning in third grade and what was challenging for them. Students will use evidence to support their answers.*

Integration of 21st Century Skills

Standards:

- Lesson 6 - 9.4.5.CI.3 - Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a) *Students will be in pairs and use the co-construction routine to have partners create a context that could apply to the times in the table. Students will write a problem featuring their context. Students will share their ideas and explain the relationship to the times in the table with the class.*
- Lesson 1 - 9.4.5.CT.1 – Identify and gather relevant data that will aid in the problem-solving process. *Students will observe a display of four clocks and study the pictures. Students will find a category in which three of the items belong, but a fourth item does not. Students will explain their chosen categories and justify why one item does not fit.*
- Zearn Math - 9.4.5.CT.3 – Describe how digital tools and technology may be used to solve problems. *Students will be using Zearn Math digital learning platform as a supplement to aid in mastering skills.*
- Lesson 2 - 8.1.5.DA.1 – Collect, organize, and display data in order to highlight relationships or support claims. *Students will justify the placement of a given time on a number line.*
- Lesson 2 - 8.1.5.DA.3 – Organize and present collected data visually to communicate insights gained from different views of the data. *Students will use fives and ones to plot a time to the nearest minute on the number line.*
- Lesson 24 - 8.1.5.DA.5 – Propose cause and effect relationships, predict outcomes, or communicate ideas using data. *Students will discuss strategies for organizing and compare the efficiency of the strategies.*