Woodland Park Mathematics Curriculum

Mathematics Curriculum Map

3rd Grade

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Course Philosophy and Description

In mathematics, students are engaged through multiple modalities that ensures learning a high quality curriculum and instruction which enables every student to reach their potential understanding. Students will be empowered to succeed with personalized resources that fit each student's interests and growth in the field of mathematics.

Woodland Park's philosophy in mathematics consists of providing hands-on activities, differentiated instruction for conceptual mathematical understanding that supports the New Jersey State Learning Standards for grades k-8, and bridging the properties of mathematics to make real world extensions. Students will learn to address a range of tasks focusing on the application of concepts, skills and understandings. Students will be asked to solve problems involving the key knowledge and skills for their grade level as identified by the NJSLS; express mathematical reasoning and construct a mathematical argument and apply concepts to solve model real world problems. The balanced mathematics instructional model will be used as the basis for all mathematics instruction.

NJSLS Mathematical Practices

Each grade level consists of mathematical standards that were created to balance the procedure and understanding of math topics. The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word "understand" are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. These practices rest on important "proficiencies and processes" that are in alignment to the longstanding mathematical standards in education.

- **Mathematical Practice #1: Make sense of problems and persevere in solving them**. Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution.
- **Mathematical Practice # 2: Reason abstractly and quantitatively.** Mathematically proficient students make sense of quantities and their relationships in problem situations.
- **Mathematical Practice #3: Construct viable arguments and critique the reason for others**. Mathematically proficient students understand and use state assumptions, definitions, and previously established results in constructing arguments.
- **Mathematical Practice #4: Model with mathematics.** Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace.
- **Mathematical Practice #5: Use appropriate tools strategically**. Mathematically proficient students consider the available tools when solving a mathematical problem.
- **Mathematical Practice # 6: Attend to precision**. Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others.
- **Mathematical Practice # 7: Look for and make use of structure**. Mathematically proficient students look closely to discern a pattern or structure.
- **Mathematical Practice #8: Look for and express regularity in repeated reasoning**. Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts.

Woodland Park Grade Level Overview (as per NJSLS Framework)

In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

In Grade 4, instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.

In Grade 8, instructional time should focus on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

3ʳᵈ Grade Overview:

In Grade 3, instructional time should focus on four critical areas:

1. **Developing understanding of multiplication and division and strategies for multiplication and division within 100:**
   a. Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.

2. **Developing understanding of fractions, especially unit fractions (fractions with numerator 1):**
   a. Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, 1/2 of the paint in a small bucket could be less paint than 1/3 of the paint in a larger bucket, but 1/3 of a ribbon is longer than 1/5 of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

3. **Developing understanding of the structure of rectangular arrays and of area:**
   a. Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.

4. **Describing and analyzing two-dimensional shapes:**
   a. Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

Overview of K-8 Mathematics Curriculum Pacing Guide
Titles of Units

Grade	September	October	November	December	January	February	March	April	May	June
Grade K	**Unit 1: Module A and B** Number Concepts and Counting to 10			**Unit 2: Module A, B, and C** Counting to 20, Addition and Subtraction		**Unit 3: Module A, B, and C** Count, Compose and Compare Numbers			**Unit 4: Module A and B** Represent Number Concepts and Model with Shapes	
Grade 1	**Unit 1: Module A and B** Strategies for Addition and Subtraction			**Unit 2: Module A and B** Place Value and More Strategies for Addition and Subtraction			**Unit 3: Module A and B** Place Value and Two-Digit Addition and Subtraction Strategies		**Unit 4: Module A and B** Place Value Strategies and Composite Shapes	
Grade 2	**Unit 1: Module A and B** Place Value and Three-Digit Addition and Subtraction Strategies			**Unit 2: Module A and B** Place Value and Three-Digit Addition and Subtraction Strategies			**Unit 3: Module A and B** Measuring Length		**Unit 4: Module A and B** Measurement Data and Data Representation	
Grade 3	**Unit 1: Module A and B** Introductory Multiplication and Division Concepts			**Unit 2: Module A, B, and C** Relating Area to Multiplication and Addition		**Unit 3: Module A and B** Fraction Concepts			**Unit 4: Module A and B** Representing Data	
Grade 4	**Unit 1: Module A and B** Place Value and Operations with Whole Numbers		**Unit 2: Module A and B** Multi-Digit Multiplication and Division with Fraction Equivalence			**Unit 3: Module A and B** Building Fractions and Decimal Notation			**Unit 4: Module A and B** Geometry and Measurement	
Grade 5	**Unit 1: Module A and B**		**Unit 2: Module A and B**			**Unit 3: Module A and B** Fractions			**Unit 4: Module A and B**	

	September	October	November	December	January	February	March	April	May	June
	Operations on Decimals and Numerical Expressions		Decimal Multiplication and Division and Volume Concepts						The Coordinate System and Classifying 2D Figures	
Grade										
Grade 6	**Unit 1: Module A and B** Quotients of Fractions Ratio and Rate Reasoning		**Unit 4: Module A and B** Integers in the Number System			**Unit 3: Module A, B, and C** Expressions, Equations, and Geometry			**Unit 2: Module A and B** Introductory Statistics	
Grade 7	**Unit 1: Module A and B** Operations on Rational Numbers		**Unit 2: Module A, B, and C** Equations, Inequalities, and Two-Dimensional Geometric Concepts			**Unit 3: Module A, B, and C** Proportionality and Three-Dimensional Geometric Concepts			**Unit 4: Module A and B** Probability and Statistics	
Grade 8	**Unit 1: Module A, B, and C** Exponents, Irrational Numbers and Linear Equations			**Unit 2: Module A and B** Pythagorean Theorem, Congruence and Similarity			**Unit 3: Module A and B** Linear Relationships and Functions		**Unit 4: Module A** Linear Model for Scatter Plots and Two-Way Tables	
Algebra	Solving Equations and Inequalities		Introduction to Functions	Linear Functions/ Inequalities and Systems/Exponential Functions			Polynomials/ Quadratic Functions and Equations		Quadratic Functions and Equations	

3rd Grade Pacing Guide Title of Units	
Unit 1 Module A and B: Introductory to Multiplication and Division Concepts	September- November
Unit 2 Module A, B, and C: Relating Area to Multiplication and Addition	November-January
Unit 3 Module A, B, and C: Fraction Concepts	February - April
Unit 4 Module A, B, and C: Representing Data	May - June

Content Area: Mathematics	Grade Level: Third
Unit 1 Module A and B: Introductory to Multiplication and Division Concepts	**Time Frame: September- November**

Interdisciplinary Connections

NGSS Connection:

Earth's Systems: Processes that Shape the Earth
- 3-LS2-1. Construct an argument that some animals form groups that help members survive.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.

- 3-LS4-1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.5 Use appropriate tools strategically.

- 3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.

- 3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.

Engineering Design
- 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
  - o **Cross cutting concepts to NJSLS math standard(s):** 3-5.OA Operations and Algebraic Thinking.
  - o **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
  - o **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
  - o **Cross cutting concepts to NJSLS math standard(s):** MP.5 Use appropriate tools strategically.

- 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
  - o **Cross cutting concepts to NJSLS math standard(s):** 3-5.OA Operations and Algebraic Thinking.
  - o **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
  - o **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
  - o **Cross cutting concepts to NJSLS math standard(s):** MP.5 Use appropriate tools strategically.

ELA Connection:
Reading Informational Text
- RI.3.1. Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
- RI.3.8. Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence) to support specific points the author makes in a text.

Production and Distribution of Writing
- W.3.8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

Comprehension and Collaboration
- SL.3.1. 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.
  - A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
  - B. Follow agreed-upon 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).
  - C. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.
  - D. Explain their own ideas and understanding in light of the discussion.
- SL.3.6. Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Career Ready Practices

CRP4. Communicate clearly and effectively and with reason.

Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

CRP6. Demonstrate creativity and innovation.

Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

9.1 Personal Financial Literacy: By the end of grade 4, students will be able to…

STRAND B: MONEY MANAGEMENT:
- 9.1.4.B.2 Identify age-appropriate financial goals.
- 9.1.4.B.3 Explain what a budget is and why it is important.

STRAND C: CREDIT AND DEBT MANAGEMENT:

- 9.1.4.C.4 Determine the relationships among income, expenses, and interest

9.2 Career Awareness, Exploration, and Preparation: By the end of grade 4, students will be able to...

STRAND A: CAREER AWARENESS
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Technology Standards (8.1 and 8.2): grades 3-5

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

    A. Technology Operations and Concepts: *Students demonstrate a sound understanding of technology concepts, systems and operations.*

    Understand and use technology systems:
        8.1.5.A.1: Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
    Select and use applications effectively and productively.
        8.1.5.A.3: Use a graphic organizer to organize information about problems or issues.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

    C. Design: *The design process is a systematic approach to solving problems.*
    The application of engineering design.
        8.2.5.C.4: Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

    D. Abilities for a Technological World: *The designed world is the product of a design process that provides the means to convert resources into products and systems.*
    Use and maintain technological products and systems.
        8.2.5.D.3: Follow step by step directions to assemble a product or solve a problem.

Unit 1 Module A and B: Multiplication and Division Concepts
Module A Standards

3.OA.A. Represent and solve problems involving multiplication and division.

- ■ **3.OA.A.1** Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. **For example, describe and/or represent a context in which a total number of objects can be expressed as 5 × 7.**
- ■ **3.OA.A.2** Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 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 ÷ 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.

Key:　■ Major Cluster　　□ Supporting Cluster　　◎ Additional Cluster

Essential Questions:	**Enduring Understanding:**
- How does one use different strategies to identify products and quotients? - How are multiplication and division related? - How can multiplication and division be used to represent and solve problems?	**Learning Goal 1:** Interpret products of whole numbers as repeated addition and as the total number of objects (up to 100) in equal groups or arrays. **Learning Goal 2:** Interpret the quotient as a set of objects (up to 100) partitioned equally into a number of shares and as the number of equal shares. **Learning Goal 3:** Use multiplication and division within 100 to solve word problems by modeling equal groups or arrays and by writing equations to represent equal groups or arrays

Knowledge and Skills:	Demonstration of Learning: *Students are able to: (TLWBAT/SWBAT):*
Concept 1: Multiplication is a means to determine the total number of objects when there are a specific number of groups with the same number of objects in each group. **Concept 2:** Multiplication gives the same result as repeated addition. **Concept 3:** Product of two whole numbers is the total number of objects in a number of equal groups. **Concept 4:** Division is a means to finding equal groups of objects. **Concept 5:** Division gives the same result as repeated subtraction. **Concept 6:** Quotient of two whole numbers is the number of objects in each share when objects are grouped equally into shares. **Concept 7:** Quotient of two whole numbers is the number of shares when objects are grouped into equal shares of objects.	**Objective 1: _(TLWBAT/SWBAT)_** interpret products of whole numbers in terms of the number of groups and objects** **Objective 2: _(TLWBAT/SWBAT)_** interpret whole number quotients of whole numbers as the number of objects in each share (or groups) or as the number of shares (or groups) that result from partitioning a total number of objects.** **Objective 3: _(TLWBAT/SWBAT)_** use multiplication and division within 100 to solve word problems in situations involving: equal groups, arrays and measurement quantities. **Objective 4: _(TLWBAT/SWBAT)_** use drawings and equations with a symbol for the unknown number to represent multiplication and division word problems within 100.

Module B Standards

3.OA.A. Represent and solve problems involving multiplication and division.

■ **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 × ? = 48, 5 = ◆ ÷ 3, 6 × 6 = ?.**

3.OA.B. Understand properties of multiplication and the relationship between multiplication and division.

■ **3.OA.B.5** Apply properties of operations as strategies to multiply and divide. *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property).*

■ **3.OA.B.6** Understand division as an unknown-factor problem. **For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.**

3.OA.C. Multiply and divide within 100.

■ **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 × 5 = 40, one knows 40 ÷ 5 = 8)** or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. ***(benchmarked)**

3.OA.D. Solve problems involving the four operations, and identify and explain patterns in arithmetic.

■ **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.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. ***(benchmarked)**

3.NBT.A. Use place value understanding and properties of operations to perform multi-digit arithmetic.

◎ **3.NBT.A.1** Use place value understanding to round whole numbers to the nearest 10 or 100.

Key: ■ Major Cluster   ☐ Supporting Cluster   ◎ Additional Cluster

Essential Questions:	Enduring Understanding:
- Why does one need to fluently multiply and divide within 100? - How can one use the relationship between multiplication and division to solve for unknowns in number sentences? - How can knowledge of patterns and properties be used to solve problems? - How can multiplication and division be used to represent and solve problems? - Why is place value important? - How does one use place value? - How does one successfully understand and solve a multiple-step word problem?	**Learning Goal 1:** Determine the unknown in a division or multiplication equation relating 3 whole numbers (within 100). **Learning Goal 2:** Multiply one-digit whole numbers by applying the properties of operations (commutative, associative, and distributive properties). **Learning Goal 3:** Fluently multiply and divide within 100 using strategies such as the relationship between multiplication and division. **Learning Goal 4:** Recognize arithmetic patterns, including patterns in addition or multiplication tables, and explain the patterns using properties of operations. **Learning Goal 5:** Solve division of whole numbers by representing the problem as an unknown factor problem. **Learning Goal 6:** Write equations when solving two-step word problems, using a symbol for an unknown; find the value of an unknown in an equation involving any of the four operations and use estimation strategies to assess the reasonableness of answers. **Learning Goal 7:** Round whole numbers to the nearest 10 or 100.
Knowledge and Skills: **Concept 1:** Equal sign indicates that the value of the numerical expressions on each side are the same. **Concept 2:** Unknown in an equation (4 x __ = 20 and 20 = ? x 4) represents a number.	**Demonstration of Learning:** ***Students are able to: (TLWBAT/SWBAT):*** **Objective 1:** *(TLWBAT/SWBAT)* determine the unknown whole number in a multiplication or division equation relating three whole numbers.** **Objective 2:** *(TLWBAT/SWBAT)* apply properties of operations (commutative property) as strategies to multiply.

Concept 3: Unknown can be in different positions.

Concept 4: Letters can represent numbers in equations.

Concept 5: Properties are rules about relationships between numbers.

Concept 6: Changing the order of factors does not change the result of multiplication.

Concept 7: Changing the order of numbers does change the result of division.

Concept 8: Addition and multiplication tables reveal arithmetic patterns.

Concept 9: Patterns may be related to whether a number is even or odd.

Concept 10: Patterns exist in rows, columns and diagonals of addition tables and multiplication tables.

Concept 11: Decomposing numbers into equal addends may reveal patterns.

Concept 12: Division can be represented as a multiplication problem having an unknown factor.

Concept 13: Relationships between factors, products, quotients, divisors and dividends.

Objective 3: *(TLWBAT/SWBAT)* multiply and divide within 100 using strategies such as the relationship between multiplication and division, or properties of operations (working towards accuracy and efficiency). **

Objective 4: *(TLWBAT/SWBAT)* identify arithmetic patterns, including patterns in the addition table or multiplication table, and explain them using properties of operations.

Objective 5: *(TLWBAT/SWBAT)* use a related multiplication problem with an unknown factor can be used to solve a division problem.

Objective 6: *(TLWBAT/SWBAT)* solve simple two-step word problems using the four operations. **

Objective 7: *(TLWBAT/SWBAT)* represent two-step word problems using equations with a letter standing for the unknown quantity. **

Objective 8: *(TLWBAT/SWBAT)* assess the reasonableness of answers in two-step word problems using mental computation and estimation strategies including rounding. **

Objective 9: *(TLWBAT/SWBAT)* round whole numbers to the nearest 10 or 100, using place value understanding.

Core Instructional and Supplemental Materials:
Berkin, Adam, Tripp, Cynthia, Cartwright, Stacie, Halloran, Pam, Kellman, Kathy, Van Wart, Lauren. *Curriculum Associates: Ready grades K-8. Curriculum Associates, LLC, 2020.*

- Ready Teacher Toolbox K-8

Technology Integration:
- www.ixl.com
- www.softschools.com
- www.mathisfun.com

Illustrative Mathematics:
3.OA.A.3 Two Interpretations of Division

3.OA.B.5 Valid Equalities? (Part 2)

- i-Ready Tools for Instruction K-8 - i-Ready Instruction K-8 - Ready K-8 - RTI Differentiated Instruction / ELL Support for each chapter - Laptops - Math centers/stations - Video tutorials for anticipatory set/guided visuals - Anchor charts created by teachers - Reference sheets created by teachers - Vocabulary Activities/Math Word Wall - Problem of the day(s)/Weeks	- www.jmathpage.com - www.illuminations.nctm.org - www.k5mathteachingresources.com - www.k-5learning.com - www.smartexchange.com(interactive smartboard tools) - www.buzzmath.com - www.math-drills.com - www.splashmath.com - https://www.education.com - https://www.khanacademy.org/ - https://www.desmos.com/ - www.aaamath.com - www.xtramath.com - https://www.illustrativemathematics.org/ - http://www.nctm.org/ - http://nlvm.usu.edu/ - http://illuminations.nctm.org/	3.OA.A.3 Two Interpretations of Division 3.OA.C.7 Kiri's Multiplication Matching Game 3.OA.D.8 The Class Trip 3.OA.D.9 Addition Patterns

Suggested Activities:	Making Thinking Visible with Math Journals. http://www.readwritethink.org/classroom-resources/lesson-plans/talking-writing-reasoning-making-820.html	Connect to real world problem solving
Review unit vocabulary		Create two-sided cards for use throughout the unit
Equal grouping of counters into paper plates	Math Buddy Online Question of the Day	
Two- color Counters	Students will learn about recycling and Earth Day. http://www.earthday.org/ or choose a video to	Students utilize the four modalities of reading (reading, writing, listening, and speaking) on a math word problem to bridge the gap between reading and math.
Two- color Tiles		

Division Sentence Cards Cubes Fluency drills/partner activities	watch at http://www.bing.com/videos/search?q=earth+day&qpvt=earth+day&FORM=VDRE Centimeter Grid Paper Scissors/1 inch Paper Strips/Paper Cups	http://www.readwritethink.org/classroom-resources/lesson-plans/solving-math-curse-reading-1123.html Hundred Chart and Place- Value Blocks Fact families to relate multiplication and division

Formative/Summative/Benchmark Assessments:

Diagnostic Assessment (as Pre-Assessment): Assesses a student's strengths, weaknesses, knowledge, and skills prior to instruction.
- iXL Diagnostic, LINKIT Diagnostic, iREADY Learning Path
- Summer packet review
- Daily Problem of the Day

Formative Assessments: Assesses a student's performance during instruction, and usually occurs regularly throughout the instruction process.
- Writing Prompts, Journals, and Portfolios, Do-Now(s), Exit Tickets, iXL (performance assessments), Hands on Labs, Projects, Menu Choice boards, Anticipatory Sets, Problem of the Week

Summative Assessments: Measures a student's achievement at the end of instruction.
- Diagnostic Quizzes, Activities, Tasks, Challenge Problems, Unit Tests, Chapter Tests, End of Unit Writing Submissions, End of Unit Projects, Benchmark Assessments, midterms and finals (if applicable per grade level)
- Benchmarks: LINKIT and iREADY Learning Path
- Chapter Assessments

Criterion-Referenced Assessment: Measures a student's performance against a goal, specific objective, or standard.
Norm-Referenced Assessment: Compares a student's performance against other students (a national group or other "norm")
- Alternate Assessments such as FACEing Math, stations, and/or PBL projects

Interim/Benchmark Assessment
Evaluates student performance at periodic intervals, frequently at the end of a grading period. Can predict student performance on end-of-the-year summative assessments.

Unit 1: Differentiation/Accommodations/Modifications

	Content Curriculum, standards	Process How students make sense or understand information being taught	Product Evidence of Learning
G&T	❖ Compacting ❖ Flexible grouping ❖ Independent study/set own learning goals ❖ Interest/station groups ❖ Varying levels of resources and materials ❖ Use of technology	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and multiple choice, open ended… ❖ Centers/Stations ❖ Use of technology ❖ Journals/Logs	❖ Choice boards ❖ Podcast/blog ❖ Debate ❖ Design and conduct experiments ❖ Formulate & defend theory ❖ Design a game ❖ Rubrics
ELL	❖ Compacting ❖ Flexible grouping ❖ Controlled choice ❖ Multi-sensory learning-auditory, visual, kinesthetic, tactile ❖ Pre-teach vocabulary ❖ Vocabulary lists ❖ Visuals/Modeling ❖ Varying levels of resources and materials ❖ Use of technology	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and choice, open ended… ❖ Centers/Stations ❖ Scaffolding ❖ Chunking ❖ E-Dictionaries, bilingual dictionaries ❖ Extended time ❖ Differentiated instructional outcomes ❖ Use of technology ❖ Frequent checks for understanding	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests with various types of questions ❖ Generate charts or diagrams to show what was learned ❖ Act out or role play
At Risk	❖ Compacting ❖ Flexible grouping ❖ Controlled choice ❖ Multi-sensory learning-auditory, visual, kinesthetic, tactile ❖ Pre-teach vocabulary ❖ Vocabulary lists	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and multiple choice, open ended… ❖ Centers/Stations ❖ Scaffolding ❖ Chunking	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned

	❖ Visuals/Modeling Varying levels of resources and materials ❖ Use of technology	❖ Extended time ❖ Differentiated instructional outcomes ❖ Use of technology ❖ Partner work ❖ Frequent checks for understanding	❖ Act out or role play
IEP/504	❖ Compacting ❖ Flexible grouping ❖ Controlled choice ❖ Multi-sensory learning-auditory, visual, kinesthetic, tactile ❖ Pre-teach vocabulary ❖ Visuals/Modeling Varying levels of resources and materials ❖ Use of technology ❖ Provide word boxes ❖ Use of a calculator ❖ Present fewer multiple choice answers ❖ Acknowledge alternate responses such as pictures and/or verbal instead of written ❖ Teacher may scribe for student ❖ Oral assessment instead of written	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and multiple choice, open ended… ❖ Centers/Stations ❖ Scaffolding ❖ Extended time ❖ Differentiated instructional outcomes ❖ Preferential Seating ❖ Use of technology ❖ Small group/one-to-one instruction ❖ Teach information processing strategies ❖ Chunking ❖ Frequent checks for understanding ❖ Access to teacher created notes ❖ Use of visual and multisensory formats ❖ Use of assistive technology ❖ Use of prompts ❖ Vocabulary walls and anchor charts available ❖ Provide a Study Guide ❖ Graphic organizers ❖ Teacher modeling or anchor charts on board ❖ Provide multi-level reading material ❖ Chunk learning into smaller segments ❖ Small group instruction	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned ❖ Act out or role play

Instructional Routines for Core Instructional Delivery

Collaborative Problem Solving

Connect Previous Knowledge to New Learning

Making Thinking Visible

Develop and Demonstrate Mathematical Practices

Inquiry-Oriented and Exploratory Approach

Multiple Solution Paths and Strategies

Use of Multiple Representations

Explain the Rationale of your Math Work

Quick Writes

Pair/Trio Sharing

Turn and Talk Charting Gallery Walks

Small Group and Whole Class Discussions

Student Modeling

Analyze Student Work

Identify Student's Mathematical Understanding

Identify Student's Mathematical Misunderstandings

Interviews

Role Playing

Diagrams, Charts, Tables, and Graphs

Anticipate Likely and Possible Student Responses

Collect Different Student Approaches

Multiple Response Strategies

Asking Assessing and Advancing Questions

Revoicing

Marking

Recapping

Challenging Pressing for Accuracy and Reasoning

Maintain the Cognitive Demand

Content Area: Mathematics	Grade Level: Third
Unit 2 Module A, B, and C: Relating Area to Multiplication and Addition	**Time Frame: November - January**

Interdisciplinary Connections

NGSS Connection:

Earth's Systems: Processes that Shape the Earth
- 3-LS2-1. Construct an argument that some animals form groups that help members survive.
    - **Cross cutting concepts to NJSLS math standard(s):** 3.NBT Number and Operations in Base Ten.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.

Inheritance and Variation of Traits: Life Cycles and Traits
- 3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
    - **Cross cutting concepts to NJSLS math standard(s):** 3.NBT Number and Operations in Base Ten.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
    - **Cross cutting concepts to NJSLS math standard(s):** 3.NF Number and Operations—Fractions.

Engineering Design
- 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
    - **Cross cutting concepts to NJSLS math standard(s):** 3-5.OA Operations and Algebraic Thinking.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.5 Use appropriate tools strategically.

- 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
    - **Cross cutting concepts to NJSLS math standard(s):** 3-5.OA Operations and Algebraic Thinking.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.5 Use appropriate tools strategically.

ELA Connection:
Reading Informational Text
- RI.3.1. Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
- RI.3.8. Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence) to support specific points the author makes in a text.

Production and Distribution of Writing
- W.3.8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

Comprehension and Collaboration
- SL.3.1. 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.
    - A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
    - B. Follow agreed-upon 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).
    - C. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.
    - D. Explain their own ideas and understanding in light of the discussion.

SL.3.6. Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Career Ready Practices

CRP1. Act as a responsible and contributing citizen and employee
Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.

CRP2. Apply appropriate academic and technical skills.
Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.

CRP11. Use technology to enhance productivity.
Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.

9.1 Personal Financial Literacy: By the end of grade 4, students will be able to...

STRAND B: MONEY MANAGEMENT:
- 9.1.4.B.3 Explain what a budget is and why it is important.
- 9.1.4.B.4 Identify common household expense categories and sources of income.
- 9.1.4.B.5 Identify ways to earn and save.

STRAND D: PLANNING, SAVING, AND INVESTING:
- 9.1.4.D.1 Determine various ways to save.

9.2 Career Awareness, Exploration, and Preparation: By the end of grade 4, students will be able to...

STRAND A: CAREER AWARENESS:
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Technology Standards (8.1 and 8.2): grades 3-5

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

    A. **Technology Operations and Concepts:** *Students demonstrate a sound understanding of technology concepts, systems and operations.*

    Understand and use technology systems:
        8.1.5.A.1: Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
    Select and use applications effectively and productively.
        8.1.5.A.3: Use a graphic organizer to organize information about problem or issue.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

    D. Abilities for a Technological World: *The designed world is the product of a design process that provides the means to convert resources into products and systems.*
    Use and maintain technological products and systems.
        8.2.5.D.3: Follow step by step directions to assemble a product or solve a problem.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

    E. Computational Thinking: Programming: *Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.*
    Computational thinking and computer programming as tools used in design and engineering.
        8.2.2.E.1: List and demonstrate the steps to an everyday task.

Unit 2 Module A, B, and C: Relating Area to Multiplication and Addition

Module A Standards

3.MD.C. Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

- ■ **3.MD.C.5** Recognize area as an attribute of plane figures and understand concepts of area measurement.
    - ■ **3.MD.C.5a** 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.5b** 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 nonstandard units).
- ■ **3.MD.C.7** Relate area to the operations of multiplication and addition.
    - ■ **3.MD.C.7a** 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.7b** 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.7c** 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.OA.C. Multiply and divide within 100.

- ■ **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 × 5 = 40, one knows 40 ÷ 5 = 8)** or properties of operations. **By the end of Grade 3, know from memory all products of two one-digit numbers**. ***(benchmarked)**

3.OA.B. Understand properties of multiplication and the relationship between multiplication and division.

- ■ **3.OA.B.5** Apply properties of operations as strategies to multiply and divide. *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16= 56. (Distributive property.)*

Key: ■ Major Cluster   ☐ Supporting Cluster   ◎ Additional Cluster

Essential Questions:	Enduring Understanding:
- What types of problems involve area? - Why does one need to measure the area of a surface? - How can multiplication and addition be used to understand the concepts of area and its relationships to those two operations?	**Learning Goal 1:** Measure areas by counting unit squares (cm2, m2, in2, ft2, and improvised units). **Learning Goal 2:** Tile a rectangle to find its area and explain the relationship between tiling and multiplying side lengths to find the area of rectangles; solve real world problems by multiplying side lengths to find areas of rectangles. **Learning Goal 3:** Fluently multiply and divide within 100 using strategies such as the relationship between multiplication and division. **Learning Goal 4:** Use tiling and an area model to represent the distributive property. **Learning Goal 5:** Multiply one-digit whole numbers by applying the properties of operations (commutative, associative, and distributive properties).
Knowledge and Skills: **Concept 1:** Area is the amount of space inside the boundary of a (closed) figure. **Concept 2:** 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. **Concept 3:** Plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units. **Concept 4:** Area can be found by covering a figure with unit squares.	**Demonstration of Learning:** ***Students are able to: (TLWBAT/SWBAT):*** **Objective 1:** *(TLWBAT/SWBAT)* identify a square with side length 1 unit, called "a unit square," is said to have 'one square unit of area. **Objective 2:** *(TLWBAT/SWBAT)* identify that a unit square can be used to measure area. **Objective 3:** *(TLWBAT/SWBAT)* explain area is an attribute of a plane figure. **Objective 4:** *(TLWBAT/SWBAT)* reason the number of *n* square units covering a plane figure without gaps or overlaps, determines its area. **Objective 5:** *(TLWBAT/SWBAT)* measure area by counting unit squares including square cm, square m, square in, square ft, and nonstandard units.

Concept 5: Area of a figure can be determined using unit squares of other dimensions.	**Objective 6:** *(TLWBAT/SWBAT)* find the area of a rectangle with whole-number side lengths by tiling it.
Concept 6: Area of a rectangle is found by multiplying the side lengths.	**Objective 7:** *(TLWBAT/SWBAT)* show that a tiled area is the same as can be found by multiplying the side lengths.
Concept 7: Area of a rectangle may be found by tiling.	**Objective 8:** *(TLWBAT/SWBAT)* multiply side lengths of rectangles to find areas in the context of real world and mathematical problems.
Concept 8: Area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c.	**Objective 9:** *(TLWBAT/SWBAT)* represent whole-number products and rectangular areas.
Concept 9: Area models can be used to represent the distributive property.	**Objective 10:** *(TLWBAT/SWBAT)* multiply and divide within 100 using strategies such as the relationship between multiplication and division or properties of operations (working towards accuracy and efficiency).
Concept 10: Properties are rules about relationships between numbers.	
Concept 11: Changing the order of factors does not change the result of multiplication.	**Objective 11:** *(TLWBAT/SWBAT)* use tiling to show the area of a rectangle with whole-number side lengths, *a* and *b + c*, is composed of two additive areas, *a × b* and *a × c*.
Concept 12: Changing the order of numbers does change the result of division.	**Objective 12:** *(TLWBAT/SWBAT)* use area models to represent and explain the distribution property by using mathematical reasoning.
	Objective 13: *(TLWBAT/SWBAT)* apply properties of operations (distributive property) as strategies to multiply.

Module B Standards

3.OA.B. Understand properties of multiplication and the relationship between multiplication and division.

■ **3.OA.B. 5** Apply properties of operations as strategies to multiply and divide. *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*

3.NBT.A. Use place value understanding and properties of operations to perform multi-digit arithmetic.

◎ **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.

3.OA.C. Multiply and divide within 100.

■ **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 × 5 = 40, one knows 40 ÷ 5 = 8)** or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Key:　■ Major Cluster　◻ Supporting Cluster　◎ Additional Cluster

Essential Questions:	Enduring Understanding:
● How does understanding place value and properties of operations help to perform multi-digit arithmetic?	**Learning Goal 1:** Multiply one-digit whole numbers by applying the properties of operations (commutative, associative, and distributive properties). **Learning Goal 2:** Multiply one digit whole numbers by multiples of 10 (10-90). **Learning Goal 3:** Fluently multiply and divide within 100 using strategies such as the relationship between multiplication and division.

Knowledge and Skills:	Demonstration of Learning:
	Students are able to: (TLWBAT/SWBAT):
Concept 1: Properties are rules about relationships between numbers.	**Objective 1:** *(TLWBAT/SWBAT)* apply properties of operations (associative property) as strategies to multiply.
Concept 2: Changing the order of factors does not change the result of multiplication.	**Objective 2:** *(TLWBAT/SWBAT)* multiply one-digit whole numbers by multiples of 10 in the range 10 to 90 using strategies based on place value and properties of operations.
Concept 3: Changing the order of numbers does change the result of division.	**Objective 3:** *(TLWBAT/SWBAT)* multiply and divide within 100 using strategies such as: relationship between multiplication and division or properties of operations (working towards accuracy and efficiency).
Concept 4: Multiples of 10 can be represented as a specific number of groups of ten.	

Module C Standards

3.MD.C. Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
- ■ **3.MD.C.7** Relate area to the operations of multiplication and addition.
    - ■ **3.MD.C.7d** 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. ***benchmarked***

3.NBT.A. Use place value understanding and properties of operations to perform multi-digit arithmetic.
- ◎ **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.

Key: ■ Major Cluster   ☐ Supporting Cluster   ◎ Additional Cluster

Essential Questions:	Enduring Understanding:
● How does place value contribute to successfully finding sums and differences? ● What operations and steps are needed to find the area of a figure?	**Learning Goal 1:** Solve real-world problems involving finding areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts. **Learning Goal 2:** Fluently add and subtract (with regrouping) two 2-digit whole numbers within 1,000.

Knowledge and Skills:	Demonstration of Learning: *Students are able to: (TLWBAT/SWBAT):*
Concept 1: Areas of rectilinear figures can be determined by decomposing them into non-overlapping rectangles and adding the areas of the parts.	**Objective 1:** *(TLWBAT/SWBAT)* recognize area as additive by finding areas of rectangles. **Objective 2:** *(TLWBAT/SWBAT)* recognize area as additive by finding areas of rectilinear figures. ** **Objective 3:** *(TLWBAT/SWBAT)* decompose rectilinear figures into non-overlapping rectangles and find their areas to solve real world problems. **Objective 4:** *(TLWBAT/SWBAT)* add within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction (working towards accuracy and efficiency). **Objective 5:** *(TLWBAT/SWBAT)* subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction (working towards accuracy and efficiency).

Core Instructional and Supplemental Materials:	Technology Integration/ Resources:	Illustrative Mathematics:
Berkin, Adam, Tripp, Cynthia, Cartwright, Stacie, Halloran, Pam, Kellman, Kathy, Van Wart, Lauren. *Curriculum Associates: Ready grades K-8. Curriculum Associates, LLC, 2020.*	● Smart board ● www.edhelper.com ● www.ixl.com	3.OA.B.5 Valid Equalities? (Part 2)

- Ready Teacher Toolbox K-8 - i-Ready Tools for Instruction K-8 - i-Ready Instruction K-8 - Ready K-8 - RTI Differentiated Instruction / ELL Support for each chapter - Laptops - Math centers/stations - Video tutorials for anticipatory set/guided visuals - Anchor charts created by teachers - Reference sheets created by teachers - Vocabulary Activities/Math Word Wall - Problem of the day(s)/Weeks	- www.multiplication.com - www.internet4classrooms.com - www.mathplayground.com - www.softschools.com - www.KhanAcademy.com - www.Superteacherworksheets.com - www.xtramath.org - www.sumdog.com - http://exchange.smarttech.com/ - www.teacherled.com - https://play.prodigygame.com/ - https://www.mrnussbaum.com/ - https://www.abcya.com/ - http://www.mathbuddyonline.com/ - https://www.aaamath.com/ - https://www.math-drills.com/	3.MD.C.7c Introducing the Distributive Property 3.OA.C.7 Kiri's Multiplication Matching Game 3.MD.C.7d Three Hidden Rectangles 3.MD.C.7c Introducing the Distributive Property
Suggested Activities: Making Thinking Visible with Math Journals Students explore how their problem-solving strategies http://www.readwritethink.org/classroom-resources/lesson-plans/talking-writing-reasoning-making-820.html	Problem of the Day Math Buddy Online Question of the Day Fluency drills/partner activity Multiplication Scoot Multiplication Roll Em' with partner Multiplication/Division strategy graphic organizer Cover rectilinear surface with sticky notes to determine area of object	Area Scoot Review unit vocabulary Intro new vocabulary Create foldable Create two-sided cards for use throughout the unit Math Curse Students utilize the four modalities of reading (reading, writing, listening, and speaking) on a math word problem http://www.readwritethink.org/classroom-resources/lesson-plans/solving-math-curse-reading-1123.html

Formative/Summative/Benchmark Assessments:

Diagnostic Assessment (as Pre-Assessment): Assesses a student's strengths, weaknesses, knowledge, and skills prior to instruction.
- iXL Diagnostic, LINKIT Diagnostic, iREADY Learning Path
- Summer packet review
- Daily Problem of the Day

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At Risk	❖ Compacting ❖ Flexible grouping ❖ Controlled choice ❖ Multi-sensory learning-auditory, visual, kinesthetic, tactile ❖ Pre-teach vocabulary ❖ Vocabulary lists	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and multiple choice, open ended… ❖ Centers/Stations ❖ Scaffolding ❖ Chunking ❖ Extended time	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned ❖ Act out or role play

	❖ Visuals/Modeling Varying levels of resources and materials ❖ Use of technology	❖ Differentiated instructional outcomes ❖ Use of technology ❖ Partner work ❖ Frequent checks for understanding	
IEP/504	❖ Compacting ❖ Flexible grouping ❖ Controlled choice ❖ Multi-sensory learning-auditory, visual, kinesthetic, tactile ❖ Pre-teach vocabulary ❖ Visuals/Modeling Varying levels of resources and materials ❖ Use of technology ❖ Provide word boxes ❖ Use of a calculator ❖ Present fewer multiple choice answers ❖ Acknowledge alternate responses such as pictures and/or verbal instead of written ❖ Teacher may scribe for student ❖ Oral assessment instead of written	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and multiple choice, open ended… ❖ Centers/Stations ❖ Scaffolding ❖ Extended time ❖ Differentiated instructional outcomes ❖ Preferential Seating ❖ Use of technology ❖ Small group/one-to-one instruction ❖ Teach information processing strategies ❖ Chunking ❖ Frequent checks for understanding ❖ Access to teacher created notes ❖ Use of visual and multisensory formats ❖ Use of assistive technology ❖ Use of prompts ❖ Vocabulary walls and anchor charts available ❖ Provide a Study Guide ❖ Graphic organizers ❖ Teacher modeling or anchor charts on board ❖ Provide multi-level reading material ❖ Chunk learning into smaller segments ❖ Small group instruction	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned ❖ Act out or role play

Instructional Routines for Core Instructional Delivery

Collaborative Problem Solving
Connect Previous Knowledge to New Learning
Making Thinking Visible
Develop and Demonstrate Mathematical Practices
Inquiry-Oriented and Exploratory Approach
Multiple Solution Paths and Strategies

Use of Multiple Representations
Explain the Rationale of your Math Work
Quick Writes
Pair/Trio Sharing
Turn and Talk Charting Gallery Walks
Small Group and Whole Class Discussions
Student Modeling

Analyze Student Work
Identify Student's Mathematical Understanding
Identify Student's Mathematical Misunderstandings
Interviews
Role Playing
Diagrams, Charts, Tables, and Graphs
Anticipate Likely and Possible Student Responses
Collect Different Student Approaches

Multiple Response Strategies
Asking Assessing and Advancing Questions
Revoicing
Marking
Recapping
Challenging Pressing for Accuracy and Reasoning
Maintain the Cognitive Demand

Content Area: Mathematics	Grade Level: Third
Unit 3 Module A, B, and C: Fraction Concepts	Time Frame: February - April

Interdisciplinary Connections

NGSS Connection:

Forces and Interactions
- 3-PS2-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.5 Use appropriate tools strategically.
  - **Cross cutting concepts to NJSLS math standard(s):** 3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

  - **Cross cutting concepts to NJSLS math standard(s):** 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.

Inheritance and Variation of Traits: Life Cycles and Traits
- 3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
  - **Cross cutting concepts to NJSLS math standard(s):** 3.NF Number and Operations—Fractions.

Weather and Climate
- 3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season
  - **Cross cutting concepts to NJSLS math standard(s):** 3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

- Cross cutting concepts to NJSLS math standard(s): MP.2 Reason abstractly and quantitatively.
- Cross cutting concepts to NJSLS math standard(s): MP.4 Model with mathematics.
- Cross cutting concepts to NJSLS math standard(s): MP.5 Use appropriate tools strategically.

Engineering Design
- 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
  - Cross cutting concepts to NJSLS math standard(s): MP.2 Reason abstractly and quantitatively.
  - Cross cutting concepts to NJSLS math standard(s): MP.4 Model with mathematics.
  - Cross cutting concepts to NJSLS math standard(s): MP.5 Use appropriate tools strategically.

- 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
  - Cross cutting concepts to NJSLS math standard(s): MP.2 Reason abstractly and quantitatively.
  - Cross cutting concepts to NJSLS math standard(s): MP.4 Model with mathematics.
  - Cross cutting concepts to NJSLS math standard(s): MP.5 Use appropriate tools strategically.

ELA Connection:
Reading Informational Text
- RI.3.1. Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
- RI.3.8. Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence) to support specific points the author makes in a text.

Production and Distribution of Writing
- W.3.8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

Comprehension and Collaboration
- SL.3.1. 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.
    - A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
    - B. Follow agreed-upon 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).
    - C. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.
    - D. Explain their own ideas and understanding in light of the discussion.
- SL.3.6. Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Social Studies Connection:
- 6.1.4.D.20: Describe why it is important to understand the perspectives of other cultures in an interconnected world
    - Name of Task: I Like to Move It! Move It! Flags: draw a flag or to create co-operative problem solving tasks. Provide students with a flag template, rulers and colored pencils.

Art Connection:
1.3 Performance: All students will synthesize those skills, media, methods, and technologies appropriate to creating, performing, and/or presenting works of art in dance, music, theatre, and visual art.
- 1.3.2.D.1 Create two- and three-dimensional works of art using the basic elements of color, line, shape, form, texture, and space, as well as a variety of art mediums and application methods.
    - Students can use paint to creatively divide number lines into color-coded fractions with different denominators. Each student can be assigned a different color and denominator combination, and then set to divide the space between 0 and 1 on the number line with only their denominator.

Career Ready Practices

CRP1. Act as a responsible and contributing citizen and employee
Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.

CRP2. Apply appropriate academic and technical skills.
Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.

CRP6. Demonstrate creativity and innovation.
Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

9.1 Personal Financial Literacy: By the end of grade 4, students will be able to...

STRAND E: BECOMING A CRITICAL CONSUMER:
- 9.1.4.E.1 Determine factors that influence consumer decisions related to money.
- 9.1.4.E.2 Apply comparison shopping skills to purchasing decisions.

STRAND F: CIVIC AND FINANCIAL RESPONSIBILITY:
- 9.1.4.F.2 Explain the roles of philanthropy, volunteer service, and charitable contributions, and analyze their impact on community development and quality of living.

9.2 Career Awareness, Exploration, and Preparation: By the end of grade 4, students will be able to...

STRAND A: CAREER AWARENESS:
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.

Technology Standards (8.1 and 8.2): grades 3-5

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

    A. **Technology Operations and Concepts:** *Students demonstrate a sound understanding of technology concepts, systems and operations.*

Understand and use technology systems:

        8.1.5.A.1: Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

Select and use applications effectively and productively.

        8.1.5.A.2: Format a document using a word processing application to enhance text and include graphics, symbols and/ or pictures.

        8.1.5.A.3: Use a graphic organizer to organize information about problem or issue.

        of, relevance to, and appropriateness of using print and non-print electronic information sources to complete a variety of tasks.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

    C. **Design:** *The design process is a systematic approach to solving problems.*

      The attributes of design.

The application of engineering design.

        8.2.5.C.5: Explain the functions of a system and subsystems.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

    D. **Abilities for a Technological World:** *The designed world is the product of a design process that provides the means to convert resources into products and systems.*

Use and maintain technological products and systems.

        8.2.5.D.3: Follow step by step directions to assemble a product or solve a problem.

Unit 3 Module A, B, and C: Fraction Concepts
Modelule A Standards

3.NF.A. Develop understanding of fractions as numbers.
   ■ **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*. ***(benchmarked)***

3.G.A. Reason with shapes and their attributes.
   ☐ **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 ¼ of the area of the shape.***

Key: ■ Major Cluster   ☐ Supporting Cluster   ◎ Additional Cluster

Essential Questions:	Enduring Understanding:
● What is a fraction and what do they represent? ● Why are fractions important?	**Learning Goal 1:** Partition shapes into parts with equal areas and express the area of each part as a unit fraction; interpret the unit fraction 1/b as the quantity formed by 1 of b equal parts of a whole and the fraction a/b as the quantity formed by a parts of size 1/b.
Knowledge and Skills: **Concept 1:** Wholes, when partitioned into equal parts, contain parts representing a unit fraction and each part is the same size. **Concept 2:** Each part has the same name and represents a unit fraction (one-half, one-third, one-fourth, one-sixth, one-eighth). **Concept 3:** The denominator is the total number of parts in the whole.	**Demonstration of Learning:** ***Students are able to: (TLWBAT/SWBAT):*** **Objective 1: (TLWBAT/SWBAT)** partition shapes into parts with equal areas. **Objective 2: (TLWBAT/SWBAT)** express the area of each part as a unit fraction of the whole. **Objective 3: (TLWBAT/SWBAT)** demonstrate that a fraction is a quantity formed when a whole is partitioned into equal parts where a unit fraction (*1/b*) is the quantity formed by 1 part when a whole is partitioned into *b* equal parts. (For example, ¼ is the

	quantity that is formed by 1 part of the 4 total parts when the whole is partitioned into 4 equal parts).
Concept 4: The numerator is the number of parts in a given fraction. **Concept 5:** Fraction 1/b is the quantity formed by 1 part when a whole is partitioned into b equal parts. **Concept 6:** Fraction a/b as the quantity formed by a parts of size 1/b (e.g. 10/2 is 10 parts and each part is of size 1∕2).	**Objective 4:** *(TLWBAT/SWBAT)* a fraction *a/b* as the quantity formed by *a* parts, where each part has a size of *1/b*. (For example, ¾ is the quantity that is formed by 3 parts of the 4 total parts where each part has a size of ¼.).

Module B Standards

3.NF.A. Develop understanding of fractions as numbers.
- ■ **3.NF.A.2** Understand a fraction as a number on the number line; represent fractions on a number line diagram.
  - ■ **3.NF.A.2a**. 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.2b**. 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** Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
  - ■ **3.NF.A.3a**. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
  - ■ **3.NF.A.3b.** 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.3c**. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. ***Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.***
  - ■ **3.NF.A.3d**. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <.

3.MD.B. Represent and interpret data.
- ☐ **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.

Key:　■ Major Cluster　☐ Supporting Cluster　◎ Additional Cluster

Essential Questions:	Enduring Understanding:
- How can one use fractions to get a more specific measurement? - How can two fractions be equivalent? - How can a whole number be represented as a fraction?	**Learning Goal 1:** Draw a number line depicting the position of 1/b **(with b = 2, 3, 4, 6, or 8)**; represent the unit fraction 1⁄4 on the number line by partitioning the number line between 0 and 1 into 4 equal lengths and name the point at the end of the first length as the position of the unit fraction 1⁄4; apply the same method for placing points 1/2, 1/3, 1/6, and 1/8 on the number line. **Learning Goal 2:** Draw a number line depicting the position of fraction a/b **(with b = 2, 4, 3, 6, or 8, and including whole numbers up to 5)**. **Learning Goal 3:** Depict data measured in fourths and halves of an inch with a line plot with scales marked with appropriate units. **Learning Goal 4:** Generate simple equivalent fractions, explain why they are equivalent, and support the explanation with visual fraction models; locate them on the number line. **Learning Goal 5:** Express whole numbers as fractions, identify fractions equivalent to whole numbers and locate them on the number line. **Learning Goal 6:** Compare two fractions having the same numerator; compare two fractions having the same denominator; reason about their size and use the symbols >, =, or < to record the comparison.
Knowledge and Skills: **Concept 1:** Fraction is a number and has its place on the number line. **Concept 2:** When placing unit fractions on a number line, the space between 0 and 1 is the whole and must be partitioned into equal parts.	**Demonstration of Learning:** *Students are able to: (TLWBAT/SWBAT):* **Objective 1:** *(TLWBAT/SWBAT)* reason that fractions are numbers and can be found or represented on the number line. **Objective 2:** *(TLWBAT/SWBAT)* represent and recognize 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*

Concept 3: Each part of a whole has the same size (one-half, one-third, one-fourth, one-sixth or one-eighth). **Concept 4:** Parts of the whole that begin at 0 and ends at 1/b on the number line is the location of fraction 1/b (one-half, one-third, one-fourth, one-sixth, or one-eighth). **Concept 5:** Show measurements on a line plot displays the information in an organized way, including fractions. **Concept 6:** Comparing fractions, each referencing the same whole. **Concept 7:** Fractions are equivalent if they are the same size. **Concept 8:** Fractions are equivalent if they are at the same point on a number line.	equal parts and that the endpoint of the part based at 0 locates the number *1/b* on the number line. **Objective 3:** *(TLWBAT/SWBAT)* represent and recognize a fraction *a/b* on a number line diagram by marking off a length *1/b* from 0 and that its endpoint locates the number *a/b* on the number line. **Objective 4:** *(TLWBAT/SWBAT)* generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. **Objective 5:** *(TLWBAT/SWBAT)* make a line plot showing measurement data, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters. **Objective 6:** *(TLWBAT/SWBAT)* compare fractions by reasoning about their size. **Objective 7:** *(TLWBAT/SWBAT)* recognize that two fractions are equivalent (equal) if they are the same size, or the same point on a number line. **Objective 8:** *(TLWBAT/SWBAT)* recognize and generate simple equivalent fractions. **Objective 9:** *(TLWBAT/SWBAT)* explain why two fractions are equivalent by using a visual fraction model. **Objective 10:** *(TLWBAT/SWBAT)* express whole numbers as fractions. **Objective 11:** *(TLWBAT/SWBAT)* recognize fractions that are equivalent to whole numbers. **Objective 12:** *(TLWBAT/SWBAT)* compare two fractions with the same numerator or the same denominator by reasoning about their size.

Module C Standards

3.MD.A. Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
- 🟩 **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.**

Key:　🟩 Major Cluster　　🔲 Supporting Cluster　　🟡 Additional Cluster

Essential Questions:	Enduring Understanding:
● Why is telling time important? ● How can intervals of time, or lapsed time, be found?	**Learning Goal 1:** Tell and write time to the nearest minute, and solve word problems with addition and subtraction involving time intervals in minutes.

Knowledge and Skills:	Demonstration of Learning: *Students are able to: (TLWBAT/SWBAT):*
Concept 1: Analog clocks represent hours as numbers and minutes are represented as tick marks. **Concept 2:** Number lines are used to identify elapsed time. **Concept 3:** Fractions can be used to describe minutes.	**Objective 1:** *(TLWBAT/SWBAT)* tell and write time to the nearest minute and measure time intervals in minutes. **Objective 2:** *(TLWBAT/SWBAT)* solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram. **Objective 3:** *(TLWBAT/SWBAT)* Tell time using fractional phrases **(e.g. half-past, quarter to)**.

Core Instructional and Supplemental Materials:	Technology Integration/ Resources:	Illustrative Mathematics:
Berkin, Adam, Tripp, Cynthia, Cartwright, Stacie, Halloran, Pam, Kellman, Kathy, Van Wart, Lauren. *Curriculum Associates: Ready grades K-8. Curriculum Associates, LLC, 2020.* ● Ready Teacher Toolbox K-8 ● i-Ready Tools for Instruction K-8 ● i-Ready Instruction K-8	● [Smart board](#) ● [www.edhelper.com](#) ● [www.ixl.com](#) ● [www.multiplication.com](#) ● [www.internet4classrooms.com](#) ● [www.mathplayground.com](#)	[3.NF.A.2 Closest to 1/2](#) [3.NF.A.2 Find 1 Starting from 5/3](#) [3.NF.A.2 Locating Fractions Greater than One on the Number Line](#)

- Ready K-8 - RTI Differentiated Instruction / ELL Support for each chapter - Laptops - Math centers/stations - Video tutorials for anticipatory set/guided visuals - Anchor charts created by teachers - Reference sheets created by teachers - Vocabulary Activities/Math Word Wall - Problem of the day(s)/Weeks	- www.softschools.com - www.KhanAcademy.com - www.Superteacherworksheets.com - www.xtramath.org - www.sumdog.com - http://exchange.smarttech.com/ - www.teacherled.com - https://play.prodigygame.com/ - https://www.mrnussbaum.com/ - https://www.abcya.com/ - http://www.mathbuddyonline.com/ - www.teacherled.com - https://www.aaamath.com/ - https://www.math-drills.com/	3.NF.A.3b, 3.G.A.2, 3.MD.C.6 Halves, thirds, and sixths 3.MD.A.1 Dajuana's Homework 3.NF.A.1 Naming the Whole for a Fraction 3.G.A.2 Representing Half of a Circle
Suggested Activities: Problem of the Day Watch video Math Buddy Online Question of the Day Decorate their number lines with other students' fractions and colors. http://illuminations.nctm.org/Activity.aspx?id=4148 Use manual analog clocks to tell time with partner	Review unit vocabulary Intro new vocabulary Create foldable Create two-sided cards for use throughout the unit Comparing fractions alligator Fraction Kites Create your own flag or research and draw a flag and identify the fractional parts that make up the whole	Skittle activity Real world problem solving Folding paper to partition into equal pieces Use fraction tiles to name fractions Fraction tiles to find equivalent fractions Connect to real world problem solving On-level chapter tests and quizzes

Formative/Summative/Benchmark Assessments:

Diagnostic Assessment (as Pre-Assessment): Assesses a student's strengths, weaknesses, knowledge, and skills prior to instruction.
- iXL Diagnostic, LINKIT Diagnostic, iREADY Learning Path
- Summer packet review
- Daily Problem of the Day

Formative Assessments: Assesses a student's performance during instruction, and usually occurs regularly throughout the instruction process.
- Writing Prompts, Journals, and Portfolios, Do-Now(s), Exit Tickets, iXL (performance assessments), Hands on Labs, Projects, Menu Choice boards, Anticipatory Sets, Problem of the Week

Summative Assessments: Measures a student's achievement at the end of instruction.
- Diagnostic Quizzes, Activities, Tasks, Challenge Problems, Unit Tests, Chapter Tests, End of Unit Writing Submissions, End of Unit Projects, Benchmark Assessments, midterms and finals (if applicable per grade level)
- Benchmarks: LINKIT and iREADY Learning Path
- Chapter Assessments

Criterion-Referenced Assessment: Measures a student's performance against a goal, specific objective, or standard.
Norm-Referenced Assessment: Compares a student's performance against other students (a national group or other "norm")
- Alternate Assessments such as FACEing Math, stations, and/or PBL projects

Interim/Benchmark Assessment
Evaluates student performance at periodic intervals, frequently at the end of a grading period. Can predict student performance on end-of-the-year summative assessments.

Unit 3: Differentiation/Accommodations/Modifications			
	Content Curriculum, standards	**Process** How students make sense or understand information being taught	**Product** Evidence of Learning
G&T	❖ Compacting ❖ Flexible grouping ❖ Independent study/set own learning goals ❖ Interest/station groups ❖ Varying levels of resources and materials ❖ Use of technology	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and multiple choice, open ended… ❖ Centers/Stations ❖ Use of technology ❖ Journals/Logs	❖ Choice boards ❖ Podcast/blog ❖ Debate ❖ Design and conduct experiments ❖ Formulate & defend theory ❖ Design a game ❖ Rubrics
ELL	❖ Compacting ❖ Flexible grouping ❖ Controlled choice ❖ Multi-sensory learning-auditory, visual, kinesthetic, tactile ❖ Pre-teach vocabulary ❖ Vocabulary lists ❖ Visuals/Modeling ❖ Varying levels of resources and materials ❖ Use of technology	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and choice, open ended… ❖ Centers/Stations ❖ Scaffolding ❖ Chunking ❖ E-Dictionaries, bilingual dictionaries ❖ Extended time ❖ Differentiated instructional outcomes ❖ Use of technology ❖ Frequent checks for understanding	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests with various types of questions ❖ Generate charts or diagrams to show what was learned ❖ Act out or role play
At Risk	❖ Compacting ❖ Flexible grouping ❖ Controlled choice ❖ Multi-sensory learning-auditory, visual, kinesthetic, tactile ❖ Pre-teach vocabulary ❖ Vocabulary lists	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and multiple choice, open ended… ❖ Centers/Stations ❖ Scaffolding ❖ Chunking ❖ Extended time	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned ❖ Act out or role play

	❖ Visuals/Modeling Varying levels of resources and materials ❖ Use of technology	❖ Differentiated instructional outcomes ❖ Use of technology ❖ Partner work ❖ Frequent checks for understanding	
IEP/504	❖ Compacting ❖ Flexible grouping ❖ Controlled choice ❖ Multi-sensory learning-auditory, visual, kinesthetic, tactile ❖ Pre-teach vocabulary ❖ Visuals/Modeling Varying levels of resources and materials ❖ Use of technology ❖ Provide word boxes ❖ Use of a calculator ❖ Present fewer multiple choice answers ❖ Acknowledge alternate responses such as pictures and/or verbal instead of written ❖ Teacher may scribe for student ❖ Oral assessment instead of written	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and multiple choice, open ended… ❖ Centers/Stations ❖ Scaffolding ❖ Extended time ❖ Differentiated instructional outcomes ❖ Preferential Seating ❖ Use of technology ❖ Small group/one-to-one instruction ❖ Teach information processing strategies ❖ Chunking ❖ Frequent checks for understanding ❖ Access to teacher created notes ❖ Use of visual and multisensory formats ❖ Use of assistive technology ❖ Use of prompts ❖ Vocabulary walls and anchor charts available ❖ Provide a Study Guide ❖ Graphic organizers ❖ Teacher modeling or anchor charts on board ❖ Provide multi-level reading material ❖ Chunk learning into smaller segments ❖ Small group instruction	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned ❖ Act out or role play

Instructional Routines for Core Instructional Delivery

Collaborative Problem Solving

Connect Previous Knowledge to New Learning

Making Thinking Visible

Develop and Demonstrate Mathematical Practices

Inquiry-Oriented and Exploratory Approach

Multiple Solution Paths and Strategies

Use of Multiple Representations

Explain the Rationale of your Math Work

Quick Writes

Pair/Trio Sharing

Turn and Talk Charting Gallery Walks

Small Group and Whole Class Discussions

Student Modeling

Analyze Student Work

Identify Student's Mathematical Understanding

Identify Student's Mathematical Misunderstandings

Interviews

Role Playing

Diagrams, Charts, Tables, and Graphs

Anticipate Likely and Possible Student Responses

Collect Different Student Approaches

Multiple Response Strategies

Asking Assessing and Advancing Questions

Revoicing

Marking

Recapping

Challenging Pressing for Accuracy and Reasoning

Maintain the Cognitive Demand

Content Area: Mathematics	Grade Level: Third
Unit 4 Module A, B, and C: Representing Data	Time Frame: May - June

Interdisciplinary Connections

NGSS Connection:
Earth's Systems: Processes that Shape the Earth
- 3-LS2-1. Construct an argument that some animals form groups that help members survive.
    - **Cross cutting concepts to NJSLS math standard(s):** 3.NBT Number and Operations in Base Ten.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
- 3-LS4-1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.5 Use appropriate tools strategically.
    - **Cross cutting concepts to NJSLS math standard(s):** 3.NBT Number and Operations in Base Ten.

- 3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
    - **Cross cutting concepts to NJSLS math standard(s):** 3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
- 3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
    - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.

    - **Cross cutting concepts to NJSLS math standard(s):** 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

Inheritance and Variation of Traits: Life Cycles and Traits

- 3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
  - **Cross cutting concepts to NJSLS math standard(s):** 3.NBT Number and Operations in Base Ten.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.

- 3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
  - **Cross cutting concepts to NJSLS math standard(s):** 3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
- 3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
  - **Cross cutting concepts to NJSLS math standard(s):** 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.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
- 3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.
  - **Cross cutting concepts to NJSLS math standard(s):** 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.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.

Weather and Climate
- 3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season
  - **Cross cutting concepts to NJSLS math standard(s):** 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 bar graphs.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.5 Use appropriate tools strategically.

Engineering Design
- 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
  - **Cross cutting concepts to NJSLS math standard(s):** 3.MD. A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).6 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.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.5 Use appropriate tools strategically.

- 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
  - **Cross cutting concepts to NJSLS math standard(s):** 3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.2 Reason abstractly and quantitatively.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.4 Model with mathematics.
  - **Cross cutting concepts to NJSLS math standard(s):** MP.5 Use appropriate tools strategically.

ELA Connection:
Reading Informational Text
- RI.3.1. Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
- RI.3.8. Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence) to support specific points the author makes in a text.

Production and Distribution of Writing
- W.3.8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

Comprehension and Collaboration
- SL.3.1. 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.
  - A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
  - B. Follow agreed-upon 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).
  - C. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.
  - D. Explain their own ideas and understanding in light of the discussion.
- SL.3.6. Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Career Ready Practices

CRP6. Demonstrate creativity and innovation.
Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

CRP12. Work productively in teams while using cultural global competence.
Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

9.1 Personal Financial Literacy: By the end of grade 4, students will be able to…

STRAND B: MONEY MANAGEMENT:
- 9.1.4.B.4 Identify common household expense categories and sources of income.

STRAND G: INSURING AND PROTECTING:
- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.

9.2 Career Awareness, Exploration, and Preparation: By the end of grade 4, students will be able to…

STRAND A: CAREER AWARENESS
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Technology Standards (8.1 and 8.2): grades 3-5

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

    A. Technology Operations and Concepts: *Students demonstrate a sound understanding of technology concepts, systems and operations.*

    Understand and use technology systems:
        8.1.5.A.1: Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
    Select and use applications effectively and productively.
        8.1.5.A.3: Use a graphic organizer to organize information about problem or issue.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

    C. Design: *The design process is a systematic approach to solving problems.*
    The application of engineering design.
        8.2.5.C.4: Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

    D. Abilities for a Technological World: *The designed world is the product of a design process that provides the means to convert resources into products and systems.*
    Use and maintain technological products and systems.
        8.2.5.D.3: Follow step by step directions to assemble a product or solve a problem.

Unit 4 Module A, B, and C: Representing Data

Module A Standards

3.MD.A. Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

■ **3.MD.A.2** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (*l*). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, **e.g., by using drawings (such as a beaker with a measurement scale)** to represent the problem. ***(benchmarked)**

3.OA.D. Solve problems involving the four operations, and identify and explain patterns in arithmetic.

■ **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.***(benchmarked)**

3.NBT.A. Use place value understanding and properties of operations to perform multi-digit arithmetic.

◎ **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.OA.C. Multiply and divide within 100.

■ **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 × 5 = 40, one knows 40 ÷ 5 = 8)** or properties of operations. **By the end of Grade 3, know from memory all products of two one-digit numbers. *(benchmarked)**

Key: ■ Major Cluster   ☐ Supporting Cluster   ◎ Additional Cluster

Essential Questions:	Enduring Understanding:
- Why does one need to measure? - How does one measure liquids? - How does one measure mass?	**Learning Goal 1**: Solve one step word problems by estimating and measuring volume and mass using appropriate tools and standard units of grams, kilograms, and liters.

- How does one obtain useful information from a set of data? - How does understanding place value and properties of operations help to perform multi-digit arithmetic? - How can multiplication and addition be used to understand the concepts of area and its relationships to those two operations?	**Learning Goal 2:** Write equation(s) containing an unknown and find the value of an unknown in an equation that is a representation of a two-step word problem (with any four operations); use estimation strategies to assess the reasonableness of answers. **Learning Goal 3:** Round whole numbers to the nearest 10 or 100. **Learning Goal 4:** 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. **Learning Goal 5:** Fluently multiply and divide within 100 using strategies such as the relationship between multiplication and division.
Knowledge and Skills: **Concept 1:** Mass may be measured in grams and kilograms. **Concept 2:** Mass is measured by weighing. **Concept 3:** Volume may be measured in liters. **Concept 4:** Volume may be measured with instruments such as beakers. **Concept 5:** A letter or variable in an equation represents an unknown quantity. **Concept 6:** Rounding leads to an approximation or estimate.	**Demonstration of Learning:** ***Students are able to: (TLWBAT/SWBAT):*** **Objective 1:** *(TLWBAT/SWBAT)* measure liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (*l*). **Objective 2:** *(TLWBAT/SWBAT)* estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (*l*). **Objective 3:** *(TLWBAT/SWBAT)* add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units.** **Objective 4:** *(TLWBAT/SWBAT)* solve two-step word problems using the four operations. **Objective 5:** *(TLWBAT/SWBAT)* represent two-step word problems using equations with a letter standing for the unknown quantity.

| | **Objective 6:** *(TLWBAT/SWBAT)* assess the reasonableness of answers in two-step word problems using mental computation and estimation strategies including rounding.

Objective 7: round whole numbers to the nearest 10 or 100, using place value understanding.

Objective 8: add within 1000 with accuracy and efficiency by using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Objective 9: subtract within 1000 with accuracy and efficiency by using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Objective 10: multiply and divide within 100 using strategies such as: relationship between multiplication and division or properties of operations with accuracy and efficiency.

Objective 11: know from memory all products of two one-digit numbers. |
|---|---|

Module B Standards

3.G.A. Reason with shapes and their attributes.
   ☐ **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.

3.MD.D. Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.
   ◎ **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.

Key:	■ Major Cluster	☐ Supporting Cluster	◉ Additional Cluster

Essential Questions:	**Enduring Understanding:**
● What characteristics define a polygon? ● How do area and perimeter relate to one another? ● How does one identify the perimeter and side lengths of polygons?	**Learning Goal 1:** Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. **Learning Goal 2:** 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.
Knowledge and Skills: **Concept 1:** Shapes in different categories share attributes. **Concept 2:** Quadrilaterals are closed figures with four sides. **Concept 3:** Rhombuses, rectangles, etc, and other quadrilaterals share attributes. **Concept 4:** Perimeter of a figure is equivalent to the sum of the length of all of the sides. **Concept 5:** Rectangles that have the same perimeter can have different areas. **Concept 6:** Rectangles that have the same area can have different perimeters.	**Demonstration of Learning:** ***Students are able to: (TLWBAT/SWBAT):*** **Objective 1:** *(TLWBAT/SWBAT)* recognize shapes (quadrilaterals) in different categories may share attributes, and that the shared attributes can define a larger category. ** **Objective 2:** *(TLWBAT/SWBAT)* recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. **Objective 3:** *(TLWBAT/SWBAT)* solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths. **Objective 4:** *(TLWBAT/SWBAT)* solve real world and mathematical problems involving perimeters of polygons, including finding unknown side lengths when given the perimeter.

	Objective 5: *(TLWBAT/SWBAT)* solve real world and mathematical problems involving exhibiting rectangles with the same perimeter/different areas or with the same area/different perimeters.

Module C Standards

3.MD.B. Represent and interpret data.

☐ **3.MD.B.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets*

Key: ■ Major Cluster   ☐ Supporting Cluster   ◉ Additional Cluster

Essential Questions:	**Enduring Understanding:**
● How can data be represented and interpreted on scaled graphs? ● How can representing data help one draw conclusions?	**Learning Goal 1:** Draw scaled pictures and scaled bar graphs to represent data with several categories. **Learning Goal 2:** Solve one and two-step word problems using scaled bar graphs.

Knowledge and Skills:	**Demonstration of Learning:** *Students are able to: (TLWBAT/SWBAT):*
Concept 1: Graphs organize information and contain labels. **Concept 2:** Pictures and bars can represent numbers in graphs. **Concept 3:** Different graphs may display different scales.	**Objective 1:** *(TLWBAT/SWBAT)* draw a scaled picture graph to represent a data set with several categories. **Objective 2:** *(TLWBAT/SWBAT)* draw a scaled bar graph to represent a data set with several categories. **Objective 3:** *(TLWBAT/SWBAT)* solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.

Core Instructional and Supplemental Materials:	Technology Integration/ Resources:	Illustrative Mathematics:
Berkin, Adam, Tripp, Cynthia, Cartwright, Stacie, Halloran, Pam, Kellman, Kathy, Van Wart, Lauren. *Curriculum Associates: Ready grades K-8. Curriculum Associates, LLC, 2020.* ● Ready Teacher Toolbox K-8 ● i-Ready Tools for Instruction K-8 ● i-Ready Instruction K-8 ● Ready K-8 ● RTI Differentiated Instruction / ELL Support for each chapter ● Laptops ● Math centers/stations ● Video tutorials for anticipatory set/guided visuals ● Anchor charts created by teachers ● Reference sheets created by teachers ● Vocabulary Activities/Math Word Wall ● Problem of the day(s)/Weeks	● Smart board ● www.edhelper.com ● www.ixl.com ● www.multiplication.com ● www.internet4classrooms.com ● www.mathplayground.com ● www.softschools.com ● www.KhanAcademy.com ● www.Superteacherworksheets.com ● www.xtramath.org ● www.sumdog.com ● http://exchange.smarttech.com/ ● www.teacherled.com ● https://play.prodigygame.com/ ● https://www.mrnussbaum.com/ ● https://www.abcya.com/ ● http://www.mathbuddyonline.com/ ● www.teacherled.com ● https://www.aaamath.com/ ● https://www.math-drills.com/	3.OA.D.8 The Stamp Collection 3.NBT.A.2, 3.MD.B.3, 3.OA.A.3 Classroom Supplies 3.MD.A.2 How Heavy? 3.MD.D Shapes and their Insides

Suggested Activities:		
Problem of the Day; Common Core Quick Check Watch video Math Buddy Online Question of the Day Review unit vocabulary Intro new vocabulary	Students will analyze the collected data to plan and measure garden beds for the 'Healthy Eating Area'. http://questgarden.com/179/70/8/151111161848/task.htm	Record weather data and graph using a variety of graphs Use rulers to find perimeter of everyday objects Connect to real world problem solving Create foldable with different graphs and same set of data

	Create two-sided cards for use throughout the unit Survey results of class data on various graphs/line plot	Use graph paper to represent one set of data in multiple ways

Formative/Summative/Benchmark Assessments:

Diagnostic Assessment (as Pre-Assessment): Assesses a student's strengths, weaknesses, knowledge, and skills prior to instruction.

- iXL Diagnostic, LINKIT Diagnostic, iREADY Learning Path
- Summer packet review
- Daily Problem of the Day

Formative Assessments: Assesses a student's performance during instruction, and usually occurs regularly throughout the instruction process.

- Writing Prompts, Journals, and Portfolios, Do-Now(s), Exit Tickets, iXL (performance assessments), Hands on Labs, Projects, Menu Choice boards, Anticipatory Sets, Problem of the Week

Summative Assessments: Measures a student's achievement at the end of instruction.

- Diagnostic Quizzes, Activities, Tasks, Challenge Problems, Unit Tests, Chapter Tests, End of Unit Writing Submissions, End of Unit Projects, Benchmark Assessments, midterms and finals (if applicable per grade level)
- Benchmarks: LINKIT and iREADY Learning Path
- Chapter Assessments

Criterion-Referenced Assessment: Measures a student's performance against a goal, specific objective, or standard.

Norm-Referenced Assessment: Compares a student's performance against other students (a national group or other "norm")

- Alternate Assessments such as FACEing Math, stations, and/or PBL projects

Interim/Benchmark Assessment

Evaluates student performance at periodic intervals, frequently at the end of a grading period. Can predict student performance on end-of-the-year summative assessments.

Unit 4: Differentiation/Accommodations/Modifications

	Content Curriculum, standards	Process How students make sense or understand information being taught	Product Evidence of Learning
G&T	❖ Compacting ❖ Flexible grouping ❖ Independent study/set own learning goals ❖ Interest/station groups ❖ Varying levels of resources and materials ❖ Use of technology	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and multiple choice, open ended… ❖ Centers/Stations ❖ Use of technology ❖ Journals/Logs	❖ Choice boards ❖ Podcast/blog ❖ Debate ❖ Design and conduct experiments ❖ Formulate & defend theory ❖ Design a game ❖ Rubrics
ELL	❖ Compacting ❖ Flexible grouping ❖ Controlled choice ❖ Multi-sensory learning-auditory, visual, kinesthetic, tactile ❖ Pre-teach vocabulary ❖ Vocabulary lists ❖ Visuals/Modeling ❖ Varying levels of resources and materials ❖ Use of technology	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and choice, open ended… ❖ Centers/Stations ❖ Scaffolding ❖ Chunking ❖ E-Dictionaries, bilingual dictionaries ❖ Extended time ❖ Differentiated instructional outcomes ❖ Use of technology ❖ Frequent checks for understanding	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests with various types of questions ❖ Generate charts or diagrams to show what was learned ❖ Act out or role play
At Risk	❖ Compacting ❖ Flexible grouping ❖ Controlled choice ❖ Multi-sensory learning-auditory, visual, kinesthetic, tactile ❖ Pre-teach vocabulary	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and multiple choice, open ended… ❖ Centers/Stations ❖ Scaffolding ❖ Chunking	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned

	❖ Vocabulary lists ❖ Visuals/Modeling Varying levels of resources and materials ❖ Use of technology	❖ Extended time ❖ Differentiated instructional outcomes ❖ Use of technology ❖ Partner work ❖ Frequent checks for understanding	❖ Act out or role play
IEP/504	❖ Compacting ❖ Flexible grouping ❖ Controlled choice ❖ Multi-sensory learning-auditory, visual, kinesthetic, tactile ❖ Pre-teach vocabulary ❖ Visuals/Modeling Varying levels of resources and materials ❖ Use of technology ❖ Provide word boxes ❖ Use of a calculator ❖ Present fewer multiple choice answers ❖ Acknowledge alternate responses such as pictures and/or verbal instead of written ❖ Teacher may scribe for student ❖ Oral assessment instead of written	❖ Tiered Assignments ❖ Leveled questions- written responses, think-pair-share, and multiple choice, open ended… ❖ Centers/Stations ❖ Scaffolding ❖ Extended time ❖ Differentiated instructional outcomes ❖ Preferential Seating ❖ Use of technology ❖ Small group/one-to-one instruction ❖ Teach information processing strategies ❖ Chunking ❖ Frequent checks for understanding ❖ Access to teacher created notes ❖ Use of visual and multisensory formats ❖ Use of assistive technology ❖ Use of prompts ❖ Vocabulary walls and anchor charts available ❖ Provide a Study Guide ❖ Graphic organizers ❖ Teacher modeling or anchor charts on board ❖ Provide multi-level reading material ❖ Chunk learning into smaller segments ❖ Small group instruction	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned ❖ Act out or role play

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Develop and Demonstrate Mathematical Practices

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Explain the Rationale of your Math Work

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Small Group and Whole Class Discussions

Student Modeling

Analyze Student Work

Identify Student's Mathematical Understanding

Identify Student's Mathematical Misunderstandings

Interviews

Role Playing

Diagrams, Charts, Tables, and Graphs

Anticipate Likely and Possible Student Responses

Collect Different Student Approaches

Multiple Response Strategies

Asking Assessing and Advancing Questions

Revoicing

Marking

Recapping

Challenging Pressing for Accuracy and Reasoning

Maintain the Cognitive Demand