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. Student will be empowered to succeed with personalized resources that fits 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 the 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 preserver in solving them**. Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to the 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 number 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

	September	October	November	December	January	February	March	April	May	June
Grade K	Counting and Cardinality		Counting and Cardinality/ Operations and Algebraic Thinking			Measurement & Data			Geometry	
Grade 1	Addition and Subtraction within 10				Place Value/ Addition & Subtraction through 20		Place Value, Measurement, & Shapes		Reason with Shape and their Attributes	
Grade 2	Add and Subtract within 100 and Understand Place Value to 1000			Place Value Strategies for Addition and Subtraction		Measurement			Reason with Shapes and Represent Data	
Grade 3	Multiplication, Division and Concepts of Area			Modeling Multiplication, Division and Fractions			Fractions as Numbers and Measurement		Representing Data	
Grade 4	Place Value and Operations with Whole Numbers		Multi-digit Arithmetic and Fraction Equivalence			Building Fractions and Decimal Notation			Geometry and Measurement	
Grade 5	Understanding the Place Value System		Understanding Volume and Operations on Fractions			More Operations on Fractions			Coordinate Geometry and Classifying Figures	
Grade 6	Operations and Reasoning about Ratios		Equations, The Rational Number System and 2D Geometry			Equations, The Rational Number System and 2D Geometry			Variability, Distributions, and Relationships between Quantities	
Grade 7	Operations on Rational Numbers and Expressions			Equations, Ratios and Proportions			Drawing Inferences about Populations and Probability Models		Problem Solving with Geometry	
Grade 8	Exponents, Expressions, and Equations		Functions, Equations, and Solutions			Geometry: Pythagorean Theorem, Congruence and Similarity Transformations			Statistics and Probability: Scatterplots and Association	
Algebra	Solving Equations and Inequalities		Introduction to Functions		Linear Functions/ Inequalities and Systems/Exponential Functions			Polynomials/ Quadratic Functions and Equations	Quadratic Functions and Equations	

Third Grade Curriculum Pacing Guide	
Mathematics Unit Title:	
Unit 1: Multiplication, Division and Concepts of Area	September-November
Unit 2: Modeling Multiplication, Division and Fractions	November-January
Unit 3: Fractions as Numbers and Measurement	February - April
Unit 4: Representing Data	May - June

Content Area: Operations and Algebraic Thinking, Measurement/Data	Grade Level : Third
Unit 1: Multiplication, Division, and Concepts of Area	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.
  - o **Cross cutting concepts to NJSLS math standard(s):** 3.NBT Number and Operations in Base Ten.
  - o **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.
  - 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-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.
  - 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.

- 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.
  - 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.

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.
  - o **Cross cutting concepts to NJSLS math standard(s):** 3.NBT Number and Operations in Base Ten.
  - o **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.
  - o A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
  - o 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).
  - o C. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.
  - o 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

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 should be able to…

STRAND A: INCOME AND CAREERS: 9.1.4.A.2 Identify potential sources of income.
STRAND B: MONEY MANAGEMENT: 9.1.4.B.4 Identify common household expense categories and sources of income.

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.
   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: Multiplication, Division, and Concepts of Area

Standards:

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

- ■ 3.OA.A.1. Interpret products of whole numbers, e.g., interpret 5 x 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 x 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. *(benchmarked)

- ■ 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.OB. Understand properties of multiplication and the relationship between multiplication and division.

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

- ◎ 3.NBT.A.1. Round whole numbers to the nearest 10 or 100.

- ◎ 3.NBT.A.3. Multiply one-digit whole numbers by multiples of 10 in the range   10 to 90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

Essential Questions:	Enduring Understanding:
- How can multiplication and division be used to represent and solve problems? - How can knowing the properties of multiplication and the relationship between multiplication and division be used to solve problems? - How can multiplication and addition be used to understand the concepts of area and its relationships to those two operations? - How does understanding place value and properties of operations help to perform multi-digit arithmetic?	**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 **Learning Goal 4:** Determine the unknown in a division or multiplication equation relating 3 whole numbers (within 100). **Learning Goal 5:** Solve division of whole numbers by representing the problem as an unknown factor problem. **Learning Goal 6:** Measure areas by counting unit squares (cm^2, m^2, in^2, ft^2, and improvised units). **Learning Goal 7:** 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 8:** Round whole numbers to the nearest 10 or 100. **Learning Goal 9:** Multiply one digit whole numbers by multiples of 10 (10-90).
Knowledge and Skills: **Concept 1**: Multiplication gives the same result as repeated addition.	**Demonstration of Learning:** *Students are able to: (TLWBAT/SWBAT):* **Objective 1:** interpret products of whole numbers as a total number of objects.

Concept 2: 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.	**Objective 2:** use repeated addition to find the total number of objects arranged in an array and in equal groups and compare to the result of multiplication.
Concept 3: Product of two whole numbers is the total number of objects in a number of equal groups.	**Objective 3:** describe a context in which a total number of objects is represented by a product.
Concept 4: Division is a means to finding equal groups of objects.	**Objective 4:** interpret the product in the context of a real-world problem.
Concept 5: Division gives the same result as repeated subtraction.	**Objective 5:** interpret division of whole numbers as a number of equal shares or the number of groups when objects are divided equally.
Concept 6: Quotient of two whole numbers is the number of objects in each share when objects are grouped equally into shares.	**Objective 6:** use repeated subtraction to find the number of shares or the number of groups and compare to the result of division.
Concept 7: Quotient of two whole numbers is the number of shares when objects are grouped into equal shares of objects.	**Objective 7:** describe a context in which the number of shares or number of groups is represented with division.
Concept 8: Equal sign indicates that the value of the numerical expressions on each side are the same.	**Objective 8:** interpret the quotient in the context of a real-world problem.
Concept 9: Unknown in an equation (4 x ___ = 20 and 20 = ? x 4) represents a number.	**Objective 9:** multiply to solve word problems involving equal groups and arrays.
Concept 10: Unknown can be in different positions.	**Objective 10:** divide to solve word problems involving equal groups and arrays.
Concept 11: Letters can represent numbers in equations.	**Objective 11:** represent a word problem with a drawing showing equal groups, arrays, equal shares, and/or total objects.
Concept 12: Division can be represented as a multiplication problem having an unknown factor.	**Learning Goal 12:** represent a word problem with an equation and determine which operation is needed to find the unknown.
Concept 13: Relationships between factors, products, quotients, divisors and dividends.	**Objective 13:** multiply or divide, within 100, to find the unknown whole number in a multiplication or division equation.

Concept 14: Area is the amount of space inside the boundary of a (closed) figure.

Concept 15: 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 16: Plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units area can be found by covering a figure with unit squares.

Concept 17: Area of a figure can be determined using unit squares of other dimensions.

Concept 18: Area of a rectangle is found by multiplying the side lengths.

Concept 19: Area of a rectangle may be found by tiling.

Concept 20: Rounding leads to an approximation or estimate.

Concept 21: Multiples of 10 can be represented as a specific number of groups of ten. | **Objective 14:** write division number sentences as unknown factor problems in order to solve division of whole numbers by finding the unknown factor.

Objective 15: count unit squares in order to measure the area of a figure.

Objective 16: use unit squares of centimeters, meters, inches, feet, and other units to measure area.

Objective 17: tile a rectangle with unit squares.

Objective 18: multiply side lengths of a rectangle to find its area and compare the result to that found by tiling the rectangle with unit squares.

Objective 19: solve real world and mathematical problems involving measurement.

Objective 20: represent a rectangular area as the product of whole-numbers.

Objective 21: use number lines and a hundreds charts to explain rounding numbers to the nearest 10 and 100.

Objective 22: round a whole number to the nearest 10 and 100.

Objective 23: multiply to determine the total number of groups of ten.

Objective 24: multiply one-digit whole numbers by multiples of 10. |

Core Instructional and Supplemental Materials:	**Technology Integration/ Resources:**	**Illustrative Mathematics:**
Carter, John A., Ph.D., Cuevas, Gilbert Ph.D., Day, Roger Ph.D., Malloy, Carol Ph.D.. *McGraw-Hill Education: My Math grades k-5*. McGraw-Hill Education, 2016. www.connectED.mcgraw-hill.com • "Model the Math" activities in Teacher Edition for each lesson • "Literature Connection" found in Teacher Edition for each lesson • "Real-World Problem Solving Reader"	• www.connectED.mcgraw-hill.com • Smart board • www.edhelper.com • www.ixl.com • www.multiplication.com • www.internet4classrooms.com • www.mathplayground.com	• 3.OA.A.2 Fish Tanks • 3.OA.A.3 Analyzing Word Problems Involving Multiplication • 3.OA.A.4 Finding the unknown in a division equation • 3.MD.C.6 Finding the Area of Polygons

• 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/ • https://www.aaamath.com/ • https://www.math-drills.com/	• 3.MD.C.7a India's Bathroom Tiles • 3.NBT.A.1 Rounding to 50 or 500 • 3.NBT.A.1 Rounding to the Nearest Ten and Hundred • 3.NBT.A.3 How Many Colored Pencils?
Suggested Activities: Review unit vocabulary (My Math Gr. 3) Intro new vocabulary (My Math Gr. 3) Create foldable Complete Am I Ready (My Math Gr. 3) Equal grouping of counters into paper plates Two- color Counters Two- color Tiles Division Sentence Cards Cubes	Making Thinking Visible with Math Journals. http://www.readwritethink.org/classroom-resources/lesson-plans/talking-writing-reasoning-making-820.html Math Buddy Online Question of the Day Students will learn about recycling and Earth Day. http://www.earthday.org/ or choose a video to watch at http://www.bing.com/videos/search?q=earth+day&qpvt=earth+day&FORM=VDRE Centimeter Grid Paper Fraction Strips Scissors 1 inch Paper Strips Paper Cups	Connect to real world problem solving (My Math Gr 3) Cover rectilinear surface with sticky notes to determine area of object 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 to bridge the gap between reading and math. http://www.readwritethink.org/classroom-resources/lesson-plans/solving-math-curse-reading-1123.html Hundred Chart and Place- Value Blocks

Formative/Summative/Benchmark Assessments:

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

- STAR 360, iXL, Pre-assessments per grade level
- Summer packet review
- Daily Problem of the Day
- Diagnostic Pre-Chapter Assessment "Am I Ready" for each chapter

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)
- Assessment Masters – Diagnostic Test for each unit Chapter Test – on level (2A)
- STAR 360 benchmark 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

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 ❖ Visuals/Modeling 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 ❖ Scaffolding ❖ Chunking ❖ Extended time ❖ Differentiated instructional outcomes ❖ Use of technology ❖ Partner work ❖ Frequent checks for understanding	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned ❖ 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	❖ 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	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned ❖ Act out or role play

- 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	- 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

Instructional Routines for Core Instructional Delivery

Collaborative Problem Solving	Use of Multiple Representations	Analyze Student Work	Multiple Response Strategies
Connect Previous Knowledge to New Learning	Explain the Rationale of your Math Work	Identify Student's Mathematical Understanding	Asking Assessing and Advancing Questions
Making Thinking Visible	Quick Writes	Identify Student's Mathematical Misunderstandings	Revoicing
Develop and Demonstrate Mathematical Practices	Pair/Trio Sharing	Interviews	Marking
Inquiry-Oriented and Exploratory Approach	Turn and Talk Charting Gallery Walks	Role Playing	Recapping
Multiple Solution Paths and Strategies	Small Group and Whole Class Discussions	Diagrams, Charts, Tables, and Graphs	Challenging Pressing for Accuracy and Reasoning
	Student Modeling	Anticipate Likely and Possible Student Responses	Maintain the Cognitive Demand
		Collect Different Student Approaches	

Content Area: Operations and Algebraic Thinking, Measurement/Data, Numbers and Operations in Base 10	Grade Level : Third
Unit 2: Modeling Multiplication, Division, and Fractions	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.

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.

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 should be able to…

STRAND A: INCOME AND CAREERS
9.1.4.A.3 Explain how income affects spending and take-home pay.

STRAND B: MONEY MANAGEMENT
9.1.4.B.2 Identify age-appropriate financial goals.

STRAND C: CREDIT AND DEBT MANAGEMENT
9.1.4.C.1 Explain why people borrow money and the relationship between credit and debt.

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.
- 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 2: Modeling Multiplication, Division and Fractions

Standards:

3.OA.A. Represent and solve problems involving multiplication and division.
- 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. ***(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.)*
  - *[Students need not use the formal terms for these properties.]
  - *[Limit to single digit factors and multipliers. 7 x 4 x 5 would exceed grade 3 expectations because it would result in a two-digit multiplier (28 x 5)]

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.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 $a × b$ and $a × c$. Use area models to represent the distributive property in mathematical reasoning.
- 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.

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.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.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.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.
  - *[Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.]

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 having equal area and describe the area of each part as 1/4 of the area of the shape.*

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. ***(benchmarked)**

Essential Questions:	Enduring Understanding:
• How can multiplication and division be used to represent and solve problems? • How can knowing the properties of multiplication and the relationship between multiplication and division be used to solve problems? • How can multiplication and addition be used to understand the concepts of area and its relationships to those two operations? • How can you multiply and divide within 100? • How can you use the four operations to solve problems in arithmetic? • How can you identify and explain patterns in arithmetic? • How can fractions be used to represent numbers and their parts? • How does knowing the attributes of geometric shapes help me solve real-word problems?	**Learning Goal 1:** Use multiplication and division within 100 to solve word problems involving measurement quantities (area) using drawings. **Learning Goal 2:** Multiply one-digit whole numbers by applying the properties of operations (commutative, associative, and distributive properties). **Learning Goal 3:** Use tiling and an area model to represent the distributive property. **Learning Goal 4:** 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 5:** Fluently multiply and divide <u>within 40</u> using strategies such as the relationship between multiplication and division. **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:** Recognize arithmetic patterns, including patterns in addition or multiplication tables, and explain the patterns using properties of operations.

	Learning Goal 8: Fluently add and subtract (with regrouping) two 2-digit whole numbers <u>within 100.</u>
	Learning Goal 9: 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:** Properties are rules about relationships between numbers. **Concept 2:** Changing the order of factors does not change the result of multiplication. **Concept 3:** Changing the order of numbers does change the result of division. **Concept 4:** Area of a rectangle with whole-number side lengths *a* and *b + c* is the sum of a × b and a × c. **Concept 5:** Area models can be used to represent the distributive property. **Concept 6:** Areas of rectilinear figures can be determined by decomposing them into non-overlapping rectangles and adding the areas of the parts. **Concept 7:** Multiply and divide <u>within 40 </u>with accuracy and efficiency. **Concept 8:** Letters or symbols in an equation represent an unknown quantity.	**Demonstration of Learning:** ***Students are able to: (TLWBAT/SWBAT):*** **Objective 1:** multiply to solve word problems involving arrays and measurement quantities (area). **Objective 2:** divide to solve word problems involving arrays and measurement quantities (area). **Objective 3:** represent a word problem with a drawing or array. **Objective 4:** represent a word problem with an equation. **Objective 5:** multiply whole numbers using the commutative property as a strategy. **Objective 6:** multiply whole numbers using the associative property as a strategy. **Objective 7:** use tiling to show that the area of a rectangle with whole-number side lengths *a* and *b + c* is the sum of *a × b* and *a × c.* **Objective 8:** multiply whole numbers using the distributive property as a strategy. **Objective 9:** decompose rectilinear figures into non-overlapping rectangles. **Objective 10:** find areas of non-overlapping rectangles and add to find the area of the rectilinear figure. **Objective 11:** solve real world problems involving area of rectilinear figures.

Concept 9: Addition and multiplication tables reveal arithmetic patterns.	**Objective 12:** multiply and divide <u>within 40</u> with accuracy and efficiency.
Concept 10: Patterns may be related to whether a number is even or odd.	**Objective 13:** represent the solution to two-step word problems with equations.
Concept 11: Patterns exist in rows, columns and diagonals of addition tables and multiplication tables.	**Objective 14:** use a symbol to represent an unknown in an equation.
	Objective 15: use rounding as an estimation strategy.
Concept 12: Decomposing numbers into equal addends may reveal patterns.	**Objective 16:** explain, using an estimation strategy, whether an answer is reasonable.
	Objective 17: explain arithmetic patterns using properties of operations.
Concept 13: Wholes, when partitioned into equal parts, contain parts representing a unit fraction and each part is the same size.	**Objective 18:** add and subtract two 2-digit whole numbers <u>within 100</u> with accuracy and efficiency.
Concept 14: Each part has the same name and represents a unit fraction (one-half, one-third, one-fourth, one-sixth, one-eighth).	**Objective 19:** partition rectangles, and other shapes, into halves, thirds, fourths, sixths and eighths.
Concept 15: The denominator is the total number of parts in the whole.	**Objective 20:** identify the fractional name of each part.
Concept 16: The numerator is the number of parts in a given fraction.	**Objective 21:** model and explain that a fraction a/b is the quantity formed by a parts of size $1/b$ (For example, 10/2 is 10 parts and each part is of size ½).
Concept 17: Fraction $1/b$ is the quantity formed by 1 part when a whole is partitioned into b equal parts.	
Concept 18: 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 ½).	

Core Instructional and Supplemental Materials:	Technology Integration/ Resources:	Illustrative Mathematics:
Carter, John A., Ph.D., Cuevas, Gilbert Ph.D., Day, Roger Ph.D., Malloy, Carol Ph.D.. *McGraw-Hill Education: My Math grades k-5*. McGraw-Hill Education, 2016. www.connectED.mcgraw-hill.com • "Model the Math" activities in Teacher Edition for each lesson • "Literature Connection" found in Teacher Edition for each lesson • "Real-World Problem Solving Reader" • 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.connectED.mcgraw-hill.com • 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/ • https://www.aaamath.com/ • https://www.math-drills.com/	3.OA.A.3 Two Interpretations of Division 3.OA.B.5 Valid Equalities? (Part 2) 3.MD.C.7c Introducing the Distributive Property 3.OA.C.7 Kiri's Multiplication Matching Game 3.OA.D.8 The Class Trip 3.OA.D.9 Addition Patterns 3.NF.A.1 Naming the Whole for a Fraction 3.G.A.2 Representing Half of a Circle

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 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	Complete Am I Ready (My Math Gr. 3) Problem of the Day; Common Core Quick Check (My Math Gr. 3) Math Buddy Online Question of the Day Skittle activity Real world problem solving (My Math Gr 3) Folding paper to partition into equal pieces Use fraction tiles to name fractions	Review unit vocabulary (My Math Gr. 3) Intro new vocabulary (My Math Gr. 3) Create foldable Create two-sided cards for use throughout the unit Use paper plate to draw equal pieces and identify part that is represented Fraction Kites

Formative/Summative/Benchmark Assessments:

Diagnostic Assessment (as Pre-Assessment): Assesses a student's strengths, weaknesses, knowledge, and skills prior to instruction.
- STAR 360**,** iXL, Pre-assessments per grade level
- Summer packet review
- Daily Problem of the Day
- Diagnostic Pre-Chapter Assessment "Am I Ready" for each chapter

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)
- Assessment Masters – Diagnostic Test for each unit Chapter Test – on level (2A)
- STAR 360 benchmark 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

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 2: 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 ❖ Visuals/Modeling 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 ❖ Scaffolding ❖ Chunking ❖ Extended time ❖ Differentiated instructional outcomes ❖ Use of technology ❖ Partner work ❖ Frequent checks for understanding	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned ❖ 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	Use of Multiple Representations	Analyze Student Work	Multiple Response Strategies
Connect Previous Knowledge to New Learning	Explain the Rationale of your Math Work	Identify Student's Mathematical Understanding	Asking Assessing and Advancing Questions
Making Thinking Visible	Quick Writes	Identify Student's Mathematical Misunderstandings	Revoicing
Develop and Demonstrate Mathematical Practices	Pair/Trio Sharing	Interviews	Marking
Inquiry-Oriented and Exploratory Approach	Turn and Talk Charting Gallery Walks	Role Playing	Recapping
Multiple Solution Paths and Strategies	Small Group and Whole Class Discussions	Diagrams, Charts, Tables, and Graphs	Challenging Pressing for Accuracy and Reasoning
	Student Modeling	Anticipate Likely and Possible Student Responses	Maintain the Cognitive Demand
		Collect Different Student Approaches	

Content Area: Numbers and Operations – Fractions/Measurement/Data	Grade Level : Third
Unit 3: Fractions as Numbers and Measurement	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.

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):** 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.
  - 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.
  - o A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
  - o 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).
  - o C. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.
  - o 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
  - o 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.
  - o 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

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 should be able to…

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

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

STRAND E: BECOMING A CRITICAL CONSUMER
9.1.4.E.2 Apply comparison shopping skills to purchasing decisions.

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.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: Fractions as Numbers and Measurement

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.

*[Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.]

3.NF.A. Develop understanding of fractions as numbers.

■ 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 <, and justify the conclusions, e.g., by using a visual fraction model.

*[Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.]

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)

■ 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.

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.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.

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.

Essential Questions:	Enduring Understanding:
- How can fractions be used to represent numbers and their parts? - How does our knowledge of estimation and measurement help us solve problems involving intervals of time, liquid volume, and masses of objects? - How does knowing the attributes of geometric shapes help me solve real-word problems? - How perimeter and area are related and how are they different? - How can you multiply and divide within 100?	**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 ¼ 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 ¼; 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:** 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 4:** Express whole numbers as fractions, identify fractions equivalent to whole numbers and locate them on the number line. **Learning Goal 5:** 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. **Learning Goal 6:** Tell and write time to the nearest minute, and solve word problems with addition and subtraction involving time intervals in minutes.

	Learning Goal 7: Solve one step word problems by estimating and measuring volume and mass using appropriate tools and standard units of grams, kilograms, and liters.
	Learning Goal 8: Fluently multiply and divide <u>within 100</u> using strategies such as the relationship between multiplication and division.
	Learning Goal 9: 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 10: 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:** 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. **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:** Comparing fractions, each referencing the same *whole*. **Concept 6:** Fractions are equivalent if they are the same size.	**Demonstration of Learning:** ***Students are able to: (TLWBAT/SWBAT):*** **Objective 1:** partition a number line into parts of equal sizes between 0 and 1 (halves, thirds, fourths sixths and eighths). **Objective 2:** plot unit fractions on the number line and identify multiple parts (of length 1/b) on the number line. **Objective 3:** plot a fraction on the number line by marking off multiple parts of size 1/b. **Objective 4:** plot fractions equivalent to whole numbers including 0 and up to 5. **Objective 5:** find equivalent fractions (limited to fractions with denominators 2, 3, 4, 6, and 8). **Objective 6:** explain why two fractions are equivalent; use a visual fraction model to support explanation. **Objective 7:** write whole numbers as fractions.

Concept 7: Fractions are equivalent if they are at the same point on a number line.	**Objective 8:** identify fractions that are equivalent to whole numbers.
	Objective 9: compare two fractions having the same numerator by reasoning about their size.
Concept 8: Analog clocks represent hours as numbers and minutes are represented as tick marks.	**Objective 10:** compare two fractions having the same denominator by reasoning about their size.
Concept 9: Mass may be measured in grams and kilograms.	
Concept 10: Mass is measured by weighing.	**Objective 11:** explain why comparing fractions that do not have the same whole is not valid (reason about their size and support reasoning with a model).
Concept 11: Volume may be measured in liters and with instruments such as beakers.	**Objective 12:** use <, =, and > symbols to write comparisons of fractions and justify conclusions with a visual fraction model.
Concept 12: Shapes in different categories share attributes.	**Objective 13:** tell time to the nearest minute using digital and analog clocks and write time to the nearest minute using analog clocks.
Concept 13: Quadrilaterals are closed figures with four sides.	
Concept 14: Rhombuses, rectangles, etc, and other quadrilaterals share attributes.	**Objective 14:** choose appropriate strategies to solve real world problems involving time.
	Objective 15: use the number line as a visual model to determine intervals of time as *jumps* on a number line.
Concept 15: Perimeter of a figure is equivalent to the sum of the length of all of the sides.	**Objective 16:** measure time intervals.
Concept 16: Rectangles that have same perimeter can have different areas.	**Objective 17:** measure and read a scale to estimate volume.
	Objective 18: measure and read a scale to estimate mass.
Concept 17: Rectangles that have same area can have different perimeters.	**Objective 19:** add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes.
Concept 18: multiply and divide <u>within 100</u> with accuracy and efficiency.	**Objective 20:** classify and sort shapes by attributes.
	Objective 21: explain why rhombuses, rectangles, and squares are examples of quadrilaterals.

	Objective 22: draw examples of quadrilaterals.
	Objective 23: determine the perimeter of various plane shapes and irregular shapes given the side lengths.
	Objective 24: determine the unknown side length give the perimeter and other sides.
	Objective 25: show rectangles having the same perimeter and different areas.
	Objective 26: show rectangles having different perimeters and the same area.
	Objective 27: multiply and divide within 100 with accuracy and efficiency.

Core Instructional and Supplemental Materials:	Technology Integration/ Resources:	Illustrative Mathematics:
Carter, John A., Ph.D., Cuevas, Gilbert Ph.D., Day, Roger Ph.D., Malloy, Carol Ph.D.. *McGraw-Hill Education: My Math grades k-5*. McGraw-Hill Education, 2016. www.connectED.mcgraw-hill.com "Model the Math" activities in Teacher Edition for each lesson "Literature Connection" found in Teacher Edition for each lesson "Real-World Problem Solving Reader" - 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.connectED.mcgraw-hill.com - 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	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 3.NF.A.3b, 3.G.A.2, 3.MD.C.6 Halves, thirds, and sixths 3.MD.A.1 Dajuana's Homework 3.MD.A.2 How Heavy? 3.MD.D Shapes and their Insides

	• https://www.aaamath.com/ • https://www.math-drills.com/	
Suggested Activities: Complete Am I Ready (My Math Gr. 3) Problem of the Day; Common Core Quick Check (My Math Gr. 3) Watch video (My Math Gr. 3) 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	Review unit vocabulary (My Math Gr. 3) Intro new vocabulary (My Math Gr. 3) Create foldable Create two-sided cards for use throughout the unit Comparing fractions alligator	Connect to real world problem solving (My Math Gr 3) On-level chapter tests and quizzes Area/perimeter monsters

Formative/Summative/Benchmark Assessments:

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

- STAR 360, iXL, Pre-assessments per grade level
- Summer packet review
- Daily Problem of the Day
- Diagnostic Pre-Chapter Assessment "Am I Ready" for each chapter

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)
- Assessment Masters – Diagnostic Test for each unit Chapter Test – on level (2A)

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

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 ❖ Visuals/Modeling 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 ❖ Scaffolding ❖ Chunking ❖ Extended time ❖ Differentiated instructional outcomes ❖ Use of technology ❖ Partner work ❖ Frequent checks for understanding	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned ❖ 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	Use of Multiple Representations	Analyze Student Work	Multiple Response Strategies
Connect Previous Knowledge to New Learning	Explain the Rationale of your Math Work	Identify Student's Mathematical Understanding	Asking Assessing and Advancing Questions
Making Thinking Visible	Quick Writes	Identify Student's Mathematical Misunderstandings	Revoicing
Develop and Demonstrate Mathematical Practices	Pair/Trio Sharing	Interviews	Marking
Inquiry-Oriented and Exploratory Approach	Turn and Talk Charting Gallery Walks	Role Playing	Recapping
Multiple Solution Paths and Strategies	Small Group and Whole Class Discussions	Diagrams, Charts, Tables, and Graphs	Challenging Pressing for Accuracy and Reasoning
	Student Modeling	Anticipate Likely and Possible Student Responses	Maintain the Cognitive Demand
		Collect Different Student Approaches	

Content Area: Numbers and Operations – Fractions/Measurement/Data	Grade Level : Third
Unit 4: 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.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.
- 3-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.

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):** 3-5.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.
  - 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.
  - o A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
  - o 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).
  - o C. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.
  - o 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.

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

STRAND A: INCOME AND CAREERS
9.1.4.A.2 Identify potential sources of income.
9.1.4.A.3 Explain how income affects spending and take-home pay.

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.
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.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: Representing Data

Standards:

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.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.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.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.*
- ☐ 3.MD.B.4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

3.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. *(benchmarked)*

Essential Questions:	Enduring Understanding:
- How do we obtain useful information from a set of data? - How can you multiply and divide within 100? - How does understanding place value and properties of operations help to perform multi-digit arithmetic?	**Learning Goal 1**: Fluently multiply and divide <u>within 100</u> using strategies such as the relationship between multiplication and division. **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.

• How can multiplication and addition be used to understand the concepts of area and its relationships to those two operations?	**Learning Goal 3**: 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 4**: Draw scaled picture and scaled bar graphs to represent data with several categories. Solve one and two-step word problems using scaled bar graphs. **Learning Goal 5**: Depict data measured in fourths and halves of an inch with a line plot with scales marked with appropriate units. **Learning Goal 6**: Fluently add and subtract <u>within 1000</u> using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
Knowledge and Skills: **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. **Concept 4:** Show measurements on a line plot displays the information in an organized way **Concept 5:** multiply and divide <u>within 100</u> with accuracy and efficiency. **Concept 6:** A letter or variable in an equation represents an unknown quantity. **Concept 7:** Areas of rectilinear figures can be determined decomposing them into non-overlapping rectangles and adding the areas of the parts.	**Demonstration of Learning:** *Students are able to: (TLWBAT/SWBAT):* **Objective 1:** draw scaled picture graphs and scaled bar graphs. **Objective 2:** analyze, interpret and create bar graphs and pictographs in real world situations. **Objective 3:** solve "how many more" and "how many less" problems using scaled bar graphs. **Objective 4:** measure length using rulers marked with inch, quarter inch and half inch **Objective 5:** generate measurement data by measuring length and create a line plot of the data **Objective 6:** accurately measure several small objects using a standard ruler and display findings on a line plot

	Objective 7: display data on line plots with horizontal scales in whole numbers, halves, and quarters
	Objective 8: multiply and divide <u>within 100</u> with accuracy and efficiency.
	Objective 9: represent two-step word problems with equation(s) containing unknowns.
	Objective 10: perform operations in the conventional order (no parentheses).
	Objective 11: use rounding as an estimation strategy.
	Objective 12: explain, using an estimation strategy, whether an answer is reasonable.
	Objective 13: add and subtract <u>within 1000</u> with accuracy and efficiency.
	Objective 14: decompose rectilinear figures into non-overlapping rectangles.
	Objective 15: find areas of non-overlapping rectangles and add to find the area of the rectilinear figure.
	Objective 16: solve real world problems involving area of rectilinear figures.

Core Instructional and Supplemental Materials:	**Technology Integration/ Resources:**	**Illustrative Mathematics:**
Carter, John A., Ph.D., Cuevas, Gilbert Ph.D., Day, Roger Ph.D., Malloy, Carol Ph.D.. *McGraw-Hill Education: My Math grades k-5*. McGraw-Hill Education, 2016. www.connectED.mcgraw-hill.com • "Model the Math" activities in Teacher Edition for each lesson • "Literature Connection" found in Teacher Edition for each lesson • "Real-World Problem Solving Reader" • RTI Differentiated Instruction / ELL Support for each chapter • Laptops • Math centers/stations • Video tutorials for anticipatory set/guided visuals • Anchor charts created by teachers	• www.connectED.mcgraw-hill.com • 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	3.MD.C.7d Three Hidden Rectangles 3.OA.D.8 The Stamp Collection 3.NBT.A.2, 3.MD.B.3, 3.OA.A.3 Classroom Supplies

• Reference sheets created by teachers • Vocabulary Activities/Math Word Wall • Problem of the day(s)/Weeks	• 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/	
Suggested Activities: Complete Am I Ready (My Math Gr. 3) Problem of the Day; Common Core Quick Check (My Math Gr. 3) Watch video (My Math Gr. 3) Math Buddy Online Question of the Day	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 Review unit vocabulary (My Math Gr. 3) Intro new vocabulary (My Math Gr. 3) Create foldable Create two-sided cards for use throughout the unit Survey results of class data on various graphs/line plot	Connect to real world problem solving (My Math Gr 3)

Formative/Summative/Benchmark Assessments:

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

- STAR 360, iXL, Pre-assessments per grade level
- Summer packet review
- Daily Problem of the Day
- Diagnostic Pre-Chapter Assessment "Am I Ready" for each chapter

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)
- Assessment Masters – Diagnostic Test for each unit Chapter Test – on level (2A)
- STAR 360 benchmark 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

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 ❖ Vocabulary lists ❖ Visuals/Modeling 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 ❖ Scaffolding ❖ Chunking ❖ Extended time ❖ Differentiated instructional outcomes ❖ Use of technology ❖ Partner work ❖ Frequent checks for understanding	❖ Rubrics ❖ Simple to complex ❖ Group tasks ❖ Quizzes, tests ❖ Oral Assessments ❖ Generate charts or diagrams to show what was learned ❖ 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