Math 3

Semester A Summary:

In Math 3 A, the student will learn mathematical concepts related to multiplication and division, patterns, rounding, and mental math. Concepts are developed using mathematical processes of problem-solving, reasoning, communicating, representing, and making connections. Building both conceptual knowledge and procedural fluency supports the student's development of mathematical thinking and reasoning in solving various problems of authentic contexts.

Semester A Outline

1. **Welcome to Math 3**
    1. Welcome to Math 3
        - Meet Clara the cat, your learning buddy for the course
        - Describe the different parts of a lesson
        - Describe the different types of assessments
        - Locate and describe lesson icons and assets
2. **Whole Number Multiplication and Division**
    1. Multiplication as Repeated Addition
        - Use repeated addition to show the relationship between multiplication and addition
    2. Multiplication on the Number Line
        - Use number lines to join equal groups
    3. Arrays and Multiplication
        - Use arrays as one way to think about and understand multiplication
    4. The Commutative Property
        - Understand and use the Commutative Property of Multiplication
    5. Division as Sharing
        - Use sharing to separate equal groups and to think about division
    6. Division as Repeated Subtraction
        - Use repeated subtraction to show the relationship between division and subtraction
    7. Math Practices: Use Appropriate Tools
        - Think strategically about available tools that can be used to solve problems
    8. Whole Number Multiplication and Division Unit Test
3. **Multiplication Facts: Use Patterns**
    1. 2 and 5 as Factors
        - Gain fluency in multiplication when using 2 and 5 as factors
    2. 9 as a Factor
        - Gain fluency in multiplication when using 9 as a factor
    3. Apply Properties: Multiply by 0 and 1
        - Gain fluency in multiplication when multiplying by 0 or 1
    4. Multiply by 10
        - Gain fluency in multiplication when multiplying by 10

5. Multiplication Facts: 0, 1, 2, 5, 9, and 10
    - Students will use number relationships and patterns to develop reasoning strategies to support their recall of the basic multiplication facts
6. Math Practices: Model with Math
    - Use previously learned concepts and skills to represent and solve problems
7. Multiplication Facts: Use Patterns Unit Test

4. **Apply Properties of Multiplication**
    1. The Distributive Property
        - Use the Distributive Property to solve problems involving multiplication within 100
    2. Apply Properties: 3 and 4 as Factors
        - Use appropriate tools and the Distributive Property to break apart unknown facts with 3 as a factor
        - Use the Distributive Property to break apart unknown facts with 4 as a factor
    3. Apply Properties: 6 and 7 as Factors
        - Use the Distributive Property to break apart unknown facts with 6 or 7 as a factor
    4. Apply Properties: 8 as a Factor
        - Use the Distributive Property and known facts to break apart unknown facts with 8 as a factor
    5. Practice Multiplication Facts
        - Use strategies such as bar diagrams and arrays with known facts to solve multiplication problems
    6. The Associative Property: Multiply with 3 Factors
        - Use the Associative Property of Multiplication to group 3 factors and multiply
    7. Math Practices: Repeated Reasoning
        - Use repeated reasoning with known facts to make generalizations when multiplying
    8. Apply Properties of Multiplication Unit Test
5. **Division Facts: Use Multiplication**
    1. Relate Multiplication and Division
        - Use multiplication facts to divide
    2. Use Multiplication to Divide With 2, 3, 4, and 5
        - Use multiplication facts to find related division facts
    3. Use Multiplication to Divide with 6 and 7
        - Use multiplication facts to find related division facts
    4. Use Multiplication to Divide with 8 and 9
        - Use multiplication facts to find related division facts
    5. Multiplication Patterns: Even and Odd Numbers
        - Use knowledge of even and odd numbers to identify multiplication patterns
    6. Division Involving 0 and 1
        - Use properties to understand division involving 0 and 1
    7. Practice Multiplication and Division Facts
        - Use patterns and known facts to find unknown multiplication facts
        - Use multiplication facts to find related division facts
    8. Solve Multiplication and Division Equations
        - Use multiplication and division facts to find unknown values in equations
    9. Math Practices: Make Sense and Persevere
        - Use previously learned concepts to find and answer hidden questions to solve problems
    10. Division Facts: Use Multiplication Unit Test

6. **Fluently Multiply and Divide Within 100**
    1. Patterns for Multiplication Facts
        - Use the multiplication table and Distributive Property to find patterns in factors and products
    2. Use a Multiplication Table
        - Use the multiplication table to find the missing factor in a division problem
    3. Find Missing Numbers in a Multiplication Table
        - Use number sense and reasoning while practicing multiplication and division basic facts
    4. Use Strategies to Multiply
        - Use strategies such as skip counting and properties of operations to multiply
    5. Word Problems: Multiplication and Division Facts
        - Solve multiplication and division problems that involve different strategies and representations
    6. Write Math Stories: Multiplication and Division
        - Use multiplication to write and solve real-world problems involving equal groups
        - Use division to write and solve real-world problems involving equal groups
    7. Math Practices: Look for and Use Structure
        - Use the structures of multiplication and division to compare expressions
    8. Fluently Multiply and Divide within 100 Unit Test
7. **Multiply by Multiples of 10**
    1. Use an Open Number Line to Multiply
        - Use an open number line to find products when one factor is a multiple of 10
    2. Use Properties to Multiply
        - Use properties of multiplication to find products when one factor is a multiple of 10
    3. Multiply by Multiples of 10
        - Use different strategies to find products when one factor is a multiple of 10
    4. Math Practices: Look for and Use Structure
        - Use the structure of multiplication and place value to find products when one factor is a multiple of 10
    5. Multiply by Multiples of 10 Unit Test
8. **Strategies to Add and Subtract**
    1. Addition Properties
        - Solve real-world problems using properties of addition
    2. Algebra: Addition Patterns
        - Identify patterns in the addition table and explain them using algebraic thinking
    3. Round Whole Numbers
        - Use place value and a number line to round numbers
    4. Mental Math: Addition and Subtraction
        - Use mental math to add
        - Use mental math to subtract
    5. Estimate Sums and Differences
        - Use rounding or compatible numbers to estimate a sum
        - Use rounding or compatible numbers to estimate a difference
    6. Relate Addition and Subtraction
        - Solve one-step and multi-step problems using strategies based on the relationship between addition and subtraction
    7. Math Practices: Model with Math

        - Solve one-step and multi-step problems by modeling with math
    8. Strategies to Add and Subtract Unit Test
9. **Fluently Add and Subtract within 1,000**
    1. Use Partial Sums to Add
        - Add two three-digit numbers by breaking apart problems into simpler problems
    2. Add 3-Digit Numbers
        - Add three-digit numbers using the standard algorithm
    3. Add 3 or More Numbers
        - Add three or more numbers using the standard algorithm
    4. Use Partial Differences to Subtract
        - Subtract multi-digit numbers using the expanded algorithm
    5. Subtract 3-Digit Numbers
        - Subtract three-digit numbers using the standard algorithm
    6. Math Practices: Construct Arguments
        - Use addition and subtraction to justify a conjecture
    7. Fluently Add and Subtract within 1,000 Unit Test

Semester B Summary:

In Math 3 B, the student will learn mathematical concepts related to 2-D shapes, area, perimeter, fractions, interpreting data, time, mass, and capacity. Concepts are developed using mathematical processes of problem-solving, reasoning, communicating, representing, and making connections. Building both conceptual knowledge and procedural fluency supports the student's development of mathematical thinking and reasoning in solving various problems of authentic contexts.

Semester B Outline

1. **Welcome to Math 3**
    1. Welcome to Math 3
        - Meet Clara the cat, your learning buddy for the course
        - Describe the different parts of a lesson
        - Describe the different types of assessments
        - Locate and describe lesson icons and assets
2. **Attributes of Two-Dimensional Shapes**
    1. Describe Quadrilaterals
        - Identify quadrilaterals and use attributes to describe them
    2. Classify Shapes
        - Classify shapes according to their attributes
        - Explain that 3- and 4-sided polygons can be combined or separated to make other polygons
    3. Analyze and Compare Quadrilaterals
        - Analyze and compare quadrilaterals and group them by their attributes
    4. Math Practices: Precision
        - Solve math problems precisely, efficiently, and accurately by using appropriate tools and mathematics vocabulary
    5. Attributes of Two-Dimensional Shapes Unit Test
3. **Connect Area to Multiplication and Addition**
    1. Cover Regions

- Use unit squares to find the area of a shape

2. Area: Nonstandard Units
    - Use unit squares to find the area of a figure
3. Area: Standard Units
    - Use standard units to measure the area of a shape
4. Area of Squares and Rectangles
    - Use unit squares and multiplication to find the areas of squares and rectangles
5. Area and the Distributive Property
    - Use areas of rectangles to model the Distributive Property of Multiplication
6. Apply Properties: Area of Irregular Shapes
    - Use areas of rectangles to find the area of irregular shapes
7. Math Practices: Look for and Use Structure
    - Solve problems by breaking apart or changing the problem into simpler problems
8. Understand Area of Shapes Unit Test

4. **Solve Perimeter Problems**
    1. Understand Perimeter
        - Find the perimeter of different polygons
    2. Perimeter of Common Shapes
        - Find the perimeter of different polygons with common shapes
    3. Perimeter and Unknown Side Lengths
        - Use the given sides of a polygon and the known perimeter to find the unknown side length
    4. Same Perimeter, Different Area
        - Understand the relationship of shapes with the same perimeter and different areas
    5. Same Area, Different Perimeter
        - Understand the relationship of shapes with the same area and different perimeters
    6. Math Practices: Reasoning
        - Understand the relationship between numbers in order to simplify and solve problems involving perimeter
    7. Solve Perimeter Problems Unit Test
5. **Solve Problems with Whole Numbers**
    1. Two-Step Problems: Addition and Subtraction
        - Draw diagrams and write equations to solve two-step problems involving addition and subtraction of whole numbers
    2. Two-Step Problems: Multiplication and Division
        - Draw diagrams and write equations to solve two-step problems involving multiplication and division of whole numbers
    3. Two-Step Problems: All Operations
        - Examine relationships between quantities in a two-step word problem by writing equations
        - Choose and apply the operations needed to find the answer
    4. Math Practices: Critique Reasoning
        - Critique the reasoning of others by asking questions, identifying mistakes, and providing suggestions for improvement
    5. Solve Problems with Whole Numbers Unit Test
6. **Understand Fractions as Numbers**
    1. Divide Regions into Equal Parts

- Understand how to read and write unit fractions for equal-size parts of a region

2. Fractions and Regions
    - Use a fraction to represent multiple copies of a unit fraction
3. Understand the Whole
    - Determine and draw the whole (unit) given one part (unit fraction)
4. Number Line: Fractions Less Than 1
    - Represent fractions on a number line
5. Number Line: Fractions Greater Than 1
    - Represent fractions greater than 1 on a number line
6. Add and Subtract Fractions with Like Denominators
    - Solve problems by adding or subtracting parts of the same whole
7. Mixed Numbers
    - Use mixed numbers to represent fractions greater than 1
8. Math Practices: Make Sense and Persevere
    - Determine when a problem has either extra or missing information
9. Understand Fractions as Numbers Unit Test

7. **Fraction Equivalence and Comparison**
    1. Equivalent Fractions: Use Models
        - Find equivalent fractions that name the same part of the whole
    2. Equivalent Fractions: Use the Number Line
        - Represent equivalent fractions on a number line
    3. Use Models to Compare Fractions: Same Denominator
        - Use models such as fraction strips to compare fractions that refer to the same whole and have the same denominator
    4. Use Models to Compare Fractions: Same Numerator
        - Use models such as fraction strips to compare fractions that refer to the same whole and have the same numerator
    5. Compare Fractions: Use Benchmarks
        - Use benchmark numbers to compare fractions
    6. Compare Fractions: Use the Number Line
        - Use a number line to compare fractions
    7. Whole Numbers and Fractions
        - Use fraction names to represent whole numbers
    8. Math Practices: Construct Arguments
        - Construct math arguments using fractions
    9. Fraction Equivalence and Comparison Unit Test
8. **Represent and Interpret Data**
    1. Line Plots and Length
        - Measure length to the nearest fourth inch and show the data on a line plot
        - Measure length to the nearest half inch and show the data on a line plot
    2. Read Picture Graphs and Bar Graphs
        - Use graphs to compare and interpret data
    3. Make Picture Graphs
        - Use frequency tables and picture graphs to compare and interpret data
    4. Make Bar Graphs
        - Use scaled bar graphs to represent data sets
    5. Solve Word Problems with Information in Graphs
        - Use graphs to solve problems
    6. Math Practices: Precision
        - Use words, symbols, and numbers to accurately and precisely solve math

problems
7. Represent and Interpret Data Unit Test

9. **Measurements**
    1. Time to the Minute and Equivalent Time
        - Show and tell time to the nearest minute using analog and digital clocks
        - Identify equivalent periods of time
        - Solve practical problems related to equivalent periods of time
    2. Units of Time: Measure Elapsed Time
        - Tell and write time to the nearest minute and measure time intervals in minutes
    3. Units of Time: Solve Word Problems
        - Solve word problems involving addition and subtraction to measure quantities of time
    4. Money
        - Determine the value of a collection of bills and coins
        - Compare the values of two sets of bills and coins
        - Make change
    5. Liquid Volume
        - Use customary and metric units to estimate and measure liquid volume
    6. Use Customary Measures of Length
        - Use customary units to estimate and measure length
    7. Use Metric Measures of Length
        - Use metric units to estimate and measure length
    8. Temperature
        - Read temperature to the nearest degree in Fahrenheit and Celsius
    9. Math Practices: Reasoning
        - Make sense of quantities and relationships in problems
    10. Measurements Unit Test
10. **Step Up to Grade 4**
    1. Place-Value Relationships
        - Recognize the relationship between adjacent digits in a multi-digit number
        - Order multi-digit numbers
    2. Multiply by Multiples of 10, 100, and 1,000
        - Multiply multiples of 10, 100, and 1,000 using mental math and place-value strategies
        - Use place value understanding and properties of operations to perform multi-digit arithmetic
    3. Mental Math: Multiply Multiples of 10
        - Use mental math strategies to multiply 2-digit by 2-digit multiples of ten
    4. Multiply 2-Digit Numbers by Multiples of 10
        - Use models and properties of operations to multiply 2-digit numbers by multiples of ten