



## **Math 5**

### **Semester A Summary:**

In Math 5 A, the student will learn mathematical concepts related to place value, adding and subtracting decimals, using models to multiply and divide, the coordinate plane, algebra, patterns, and relationships. 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 5**

1. Get Ready to Learn Math
  - Meet Clara the cat, your guide for the course
  - Describe the different parts of a lesson
  - Describe the different types of assessments
  - Locate and describe lesson icons and assets

#### **2. Understand Place Value**

1. Patterns with Exponents and Powers of 10
  - Use exponents to write powers of 10 and calculate products
2. Understand Whole-Number Place Value
  - Read and write whole numbers using standard form, expanded form, and number names
3. Decimals to Thousandths
  - Represent decimals to thousandths as fractions and fractions with denominators of 1,000 as decimals
4. Understand Decimal Place Value
  - Read and write decimals through thousandths in different ways
5. Compare Decimals
  - Use place value to compare decimals through thousandths
6. Round Decimals
  - Round decimals to different places
7. Math Practices: Look For and Use Structure
  - Use the structure of the decimal place value system in order to solve problems involving patterns
8. Understand Place Value Unit Test

#### **3. Add and Subtract Decimals to Hundredths**

1. Mental Math
  - Use properties of addition and strategies to solve problems mentally
2. Estimate and Model Decimal Sums and Differences
  - Use rounding or compatible numbers to estimate sums and differences
  - Model sums and differences of decimals
3. Add Decimals

- Add decimals to the hundredths using the standard algorithm
- 4. Subtract Decimals
  - Subtract decimals to the hundredths using the standard algorithm
- 5. Add and Subtract Decimals
  - Add and subtract decimals
- 6. Math Practices: Model with Math
  - Use prior math knowledge and equations or bar diagrams to solve problems
- 7. Add and Subtract Decimals to Hundredths Unit Test

#### **4. Multiply Multi-Digit Whole Numbers**

1. Multiply Greater Numbers by Power of 10
  - Use place-value understandings and patterns to mentally multiply whole numbers and powers of 10
2. Estimate Products
  - Use rounding and compatible numbers to estimate products
3. Multiply 3-Digit by 2-Digit Numbers
  - Multiply 3-digit by 2-digit numbers by combining equal groups and adding partial products
4. Multiply Whole Numbers with Zeros
  - Use knowledge about place value and multiplying with 2-digit and 3-digit numbers to multiply with zeros
5. Multiply Multi-Digit Numbers
  - Use properties and the standard algorithm for multiplication to find the product of multi-digit numbers
  - Write expressions and equations with variables
6. Solve Word Problems Using Multiplication
  - Use models and strategies to solve word problems
7. Math Practices: Critique Reasoning
  - Critique the reasoning of others by asking questions, looking for flaws, and using prior knowledge of estimating products
8. Multiply Multi-Digit Whole Numbers Unit Test

#### **5. Strategies to Multiply Decimals**

1. Multiply Decimals by Powers of 10
  - Use knowledge about place value and patterns to find the product of a decimal number and a power of 10
2. Estimate Decimal and Whole Number Products
  - Use rounding and compatible numbers to estimate the product of a decimal and a whole number
  - Use models to represent multiplying a decimal and a whole number
3. Multiply a Decimal by a Whole Number
  - Use place-value understanding and the standard multiplication algorithm to multiply a decimal by a whole number
4. Use Models to Multiply a Decimal and a Decimal
  - Use grids to model decimals and find the product of a decimal and a decimal
5. Multiply Decimals Using Partial Products
  - Multiply decimals using partial products and models
6. Use Properties to Multiply Decimals
  - Use properties to multiply decimals
7. Use Number Sense to Multiply Decimals
  - Use number sense and reasoning to place the decimal point in a product
8. Multiply Decimals
  - Multiply decimals using the standard algorithm for multiplication and

multiplication strategies

9. Math Practices: Model with Math

- Use previously-learned concepts and skills to represent and solve problems

10. Strategies to Multiply Decimals Unit Test

**6. Strategies to Divide Whole Numbers**

1. Characteristics of Numbers

- Identify and describe the characteristics of prime and composite numbers
- Identify and describe the characteristics of even and odd numbers

2. Use Patterns and Mental Math to Divide

- Use place-value patterns and mental math to find quotients

3. Estimate and Model 2-Digit Divisor Quotients

- Use compatible numbers and place-value patterns to estimate quotients
- Use models to find quotients

4. Use Partial Quotients to Divide

- Solve division problems using partial quotients

5. Divide by Multiples of 10

- Find the quotient when the divisor is a multiple of 10

6. Estimate to Place the First Digit of a Quotient

- Decide where to place the first digit of the quotient when dividing whole numbers

7. Divide by 2-Digit Divisors

- Use estimation to decide whether a quotient is reasonable when dividing a 2-digit divisor

8. Math Practices: Make Sense and Persevere

- Make sense of problems and keep working

9. Strategies to Divide Whole Numbers Unit Test

**7. Strategies to Divide Decimals**

1. Patterns for Dividing with Decimals

- Use mental math and place-value patterns to divide a decimal by a power of 10

2. Estimate and Model Decimal Quotients

- Use reason and strategies such as rounding and compatible numbers to estimate quotients in problems with decimals
- Use models to help find quotients in problems involving decimals

3. Divide by a 1-Digit Whole Number

- Use the standard algorithm for division to divide decimals by a whole number

4. Divide by a 2-Digit Whole Number

- Use models to visualize the relationship between division and multiplication to divide decimals by a 2-digit whole number

5. Use Number Sense to Divide Decimals

- Use number sense and reasoning to place the decimal point in the quotient when dividing two decimals

6. Divide by a Decimal

- Use the standard algorithm and place-value patterns to divide a decimal by another decimal
- Use the standard algorithm to divide decimals, annexing zeros as needed

7. Math Practices: Reasoning

- Use reasoning to solve problems by making sense of quantities and relationships in the situation

8. Strategies to Divide Decimals Unit Test

**8. Graph Points on the Coordinate Plane**

1. The Coordinate System
  - Locate points on a coordinate grid
2. Graph Data Using Ordered Pairs
  - Graph points on a coordinate grid
3. Solve Problems Using Ordered Pairs
  - Solve real-world problems by graphing points
4. Math Practices: Reasoning
  - Use reasoning to solve problems by making sense of quantities and relationships in the situation
5. Graph Points on the Coordinate Plane Unit Test

## **9. Algebra: Patterns and Relationships**

1. Numerical Patterns
  - Analyze numerical patterns
2. More Numerical Patterns
  - Use tables to identify relationships between patterns
3. Analyze and Graph Relationships
  - Analyze patterns and graph ordered pairs generated from number sequences
4. Math Practices: Make Sense and Persevere
  - Make sense of problems and persevere in solving them
5. Algebra: Patterns and Relationships Unit Test

## **Semester B Summary:**

In Math 5 B, the student will learn mathematical concepts related to 2-D figures, operations with fractions, volume, converting measurements, interpreting data, and equivalent expressions. 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 5**

1. Get Ready to Learn Math
  - Meet Clara the cat, your guide for the course
  - Describe the different parts of a lesson
  - Describe the different types of assessments
  - Locate and describe lesson icons and assets

### **2. Classify Two-Dimensional Figures**

1. Classify Triangles
  - Classify triangles by their angles and sides
  - Classify and measure angles
  - Find the measures of the angles of a triangle
2. Classify Quadrilaterals
  - Classify quadrilaterals by their properties
3. Continue to Classify Quadrilaterals
  - Classify quadrilaterals using a hierarchy
4. Parts of a Circle
  - Identify and describe the parts of a circle
5. Math Practices: Construct Arguments
  - Construct arguments about geometric figures

## 6. Classify Two-Dimensional Figures Unit Test

### 3. Add and Subtract Fractions

1. Estimate Sums and Differences of Fractions
  - Estimate sums and differences of fractions by using the nearest half or whole number
2. Find Common Denominators
  - Find common denominators for fractions with unlike denominators
3. Add Fractions with Unlike Denominators
  - Add fractions with unlike denominators using equivalent fractions with a common denominator
4. Subtract Fractions with Unlike Denominators
  - Subtract fractions with unlike denominators
5. Add and Subtract with Equivalent Fractions
  - Write equivalent fractions to add and subtract fractions with unlike denominators
6. Estimate Sums and Differences of Mixed Numbers
  - Estimate sums and differences of fractions and mixed numbers
7. Add Mixed Numbers
  - Add mixed numbers using models
  - Add mixed numbers using equivalent fractions and a common denominator
8. Subtract Mixed Numbers
  - Use models to subtract mixed numbers
  - Subtract mixed numbers using equivalent fractions and a common denominator
9. Add and Subtract Mixed Numbers
  - Add and subtract mixed numbers using equivalent fractions and a common denominator
10. Math Practices: Model with Math
  - Represent a problem situation with a mathematical model
11. Add and Subtract Fractions Unit Test

### 4. Multiply Fractions

1. Multiply a Whole Number by a Fraction
  - Multiply a whole number by a fraction
  - Multiply a fraction by a whole number
2. Multiply Fractions and Whole Numbers
  - Multiply fractions and whole numbers
3. Multiply Two Fractions
  - Use models to multiply two fractions
  - Multiply two fractions
4. Area of a Rectangle
  - Find the area of a rectangle using fractions and diagrams
5. Multiply Mixed Numbers
  - Use models, equations, and previously learned strategies to multiply mixed numbers
6. Multiplication as Scaling
  - Compare the size of the product to the size of one factor without multiplying to consider multiplication as scaling
7. Math Practices: Make Sense and Persevere
  - Use previously learned knowledge to make sense of problems and persevere in solving them
8. Multiply Fractions Unit Test

## **5. Divide Fractions**

1. Fractions and Division
  - Understand how fractions are related to division
2. Fractions and Mixed Numbers as Quotients
  - Implement division of fractions to show quotients as fractions and mixed numbers
3. Use Multiplication to Divide
  - Use multiplication to divide a whole number by a unit fraction
4. Divide Whole Numbers by Unit Fractions
  - Use models such as pictorial models or a number line to show dividing a whole number by a unit fraction
5. Divide Unit Fractions by Non-Zero Whole Numbers
  - Use models to divide unit fractions by nonzero whole numbers
6. Divide Whole Numbers and Unit Fractions
  - Use models to divide whole numbers and unit fractions. Check your answer using multiplication
7. Solve Problems Using Division
  - Solve multi-step problems involving division with unit fractions
8. Math Practices: Repeated Reasoning
  - Notice repetition in calculations and generalize about how to divide whole numbers and unit fractions
9. Divide Fractions Unit Test

## **6. Understand Volume Concepts**

1. Model Volume
  - Find the volume of solid figures
2. Develop a Volume Formula
  - Find the volume of rectangular prisms using a formula
3. Volumes of Prisms
  - Find the volume of prisms in different ways
4. Combine Volumes of Prisms
  - Find the volume of a solid figure that is the combination of two or more rectangular prisms
5. Solve Word Problems Using Volume
  - Use models, prior knowledge of volumes, and previously learned strategies to solve word problems involving volume
6. Math Practices: Use Appropriate Tools
  - Use previously learned knowledge about volumes to choose the appropriate tools to solve volume problems
7. Understand Volume Concepts Unit Test

## **7. Convert Measurements**

1. Convert Customary Units of Length
  - Convert customary units of length
2. Convert Customary Units of Capacity
  - Convert customary units of capacity
3. Convert Customary Units of Weight
  - Convert customary units of weight
4. Convert Metric Units of Length
  - Convert metric units of length
5. Convert Metric Units of Capacity
  - Convert metric units of capacity
6. Convert Metric Units of Mass

- Convert metric units of mass
7. Solve Word Problems Using Measurement Conversions
    - Solve real-world problems with measurement conversions
  8. Elapsed Time
    - Solve problems related to elapsed time in hours and minutes
  9. Math Practices: Precision
    - Be precise when solving measurement problems
  10. Convert Measurements Unit Test

## **8. Represent and Interpret Data**

1. Analyze Line Plots
  - Read and analyze line plots
  - Interpret data represented in stem-and-leaf plots
2. Make Line Plots
  - Organize and display data in a line plot
  - Represent data in stem-and-leaf plots
  - Compare line plots with stem-and-leaf plots
3. Solve Word Problems Using Measurement Data
  - Solve problems using data in a line plot
4. Statistics
  - Describe mean, median, and mode as measures of center
  - Describe the range of a set of data as a measure of spread
  - Determine the mean, median, mode, and range of a set of data
5. Probability
  - Determine the probability of an outcome
6. Math Practices: Critique Reasoning
  - Critique the reasoning of others using understanding of line plots and fractions
7. Represent and Interpret Data Unit Test

## **9. Algebra: Numerical Expressions**

1. Order of Operations
  - Use the order of operations to evaluate expressions
2. Evaluate Expressions
  - Evaluate expressions with parentheses, brackets, and braces
3. Write Numerical Expressions
  - Write simple expressions that show calculations with numbers
4. Interpret Numerical Expressions
  - Interpret numerical expressions without evaluating them
5. Math Practices: Reasoning
  - Use reasoning to solve problems by making sense of quantities and relationships in the situation
6. Algebra: Numerical Expressions Unit Test

## **10. Look How Far You've Come!**

1. See How Much You've Learned!
  - See how your knowledge of several math concepts developed over time