Course Description:

Students will learn math topics outlined in this course drawing from a variety of sources, including hands-on activities, interactive lessons, and practical math applications. Students will focus on several critical areas including but not limited to developing fluency with addition, subtraction, multiplication, and division of fractions. They will also learn to extend division to 2-digit divisors, integrate decimal fractions into the place value system, and increase an understanding of operations with decimals to hundredths. They will develop fluency with whole numbers and decimal operations.   The semester begins with operations and expressions, moves into decimals and money, and ends with more work on fractions. Learners will gain valuable skills as they carry out activities that model real life situations like grocery shopping throughout the semester.

Materials needed: Calculator, handheld or online, Dice, and Scissors

Module	Lesson Title	Objectives
1	Order of Operations	• Evaluate expressions using the basic order of operations.
	Parentheses, Brackets and Braces	• Use symbols such as parentheses, brackets or braces in numerical expressions. • Evaluate expressions that use these
	Translating Words to Math	• Translate words into math.
	Translating Math to Words	• Translate math into words.
	Meaning of Math Expressions	• Recognize the meanings of numerical expressions.

Module	Lesson Title	Objectives
	Translation Application	• Translate between words and math. • Write simple expressions that include all operations. • Recognize the meanings of numerical expressions.
	Patterns and Sequences	• Create numerical patterns using different rules.
	Relationships Between Sequences	• Identify and explain the relationships between corresponding terms of patterns.
	Ordered Pairs	• Using two patterns, generate and graph ordered pairs from the corresponding terms.
2	Place Value in Whole Numbers	• Identify place value in multi-digit whole numbers.
	Place Value in Decimals	• Identify place value in decimal numbers.
	Place Value Relationships	• Identify and describe relationships between numbers in adjacent place values.
	Exponents	• Write numbers in exponential, expanded, and standard forms.
	Multiplying with Powers of 10	• Identify and explain patterns of zeros when a number is multiplied by powers of 10. • Use whole-number exponents to denote powers of 10.

Module	Lesson Title	Objectives
	Multiplying Decimals by Powers of 10	• Identify and explain patterns of decimal point placement when multiplying decimals by powers of 10.
	Dividing Decimals by Powers of 10	• Identify and explain patterns of decimal point placement when dividing decimals by powers of 10.
3	Decimals	• Read and write decimal numbers in written forms to the thousandths place.
	Expanded Form	• Read decimal numbers in expanded and written forms, to the thousandths place. • Write decimal numbers using expanded and written forms, to the thousandths place.
	Comparing Decimals	• Compare two decimal numbers, to the thousandths place.
	Rounding Whole Numbers	• Round whole numbers to various place value places.
	Rounding Decimals	• Round decimals to the 10th, 100th, 1000th places.
	Estimating Addition and Subtraction	• Estimate operations by rounding decimal numbers.

Module	Lesson Title	Objectives
	Estimating Using Compatible Numbers	• Estimate operations by using compatible numbers.
4	Multiplying with One-digit Numbers	• Multiply multi-digit whole numbers by one-digit whole numbers with efficiency and flexibility.
	Multiplying with Multi-digit Numbers	• Multiply two-digit whole numbers by two-digit whole numbers with efficiency and flexibility. • Multiply multi-digit whole numbers with efficiency and flexibility.
	Solving Problems with Multiplication	• Solve problems using multiplication.
	Dividing by One-digit Divisors	• Divide dividends with up to four digits by a single-digit divisor.
	Dividing by Two-digit Divisors	• Divide dividends with up to four digits by two-digit divisors.
	Partial Quotients with Powers of 10	• Use partial quotients to solve long division problems. • Divide dividends with up to four digits by two-digit divisors.
	Other Partial Quotients	• Use partial quotients to solve long division problems. • Divide dividends with up to four digits by two-digit divisors.
	Traditional Division	• Divide dividends with up to four digits by two-digit divisors. • Apply division strategies to problem solving.

Module	Lesson Title	Objectives
5	Adding Decimals	• Add decimals to the hundredths.
	Subtracting Decimals	• Subtracting decimals to the hundredths.
	Subtracting Thousandths	• Subtracting decimals to the thousandths.
	Writing Money	• Write dollars and cents as decimals.
	Adding and Subtracting Money	• Add and subtract money.
	Money to Fractions	• Convert decimals to fractions using money.
	Money Applications	• Apply decimal operations to real-world situations.
	Multiplying Hundredths	• Multiply decimals to the hundredths.
	Multiplying Thousandths	• Multiply decimals to the thousandths.

Module	Lesson Title	Objectives
	Dividing Hundredths	• Divide decimals to the hundredths.
	Dividing Thousandths	• Divide decimals to the thousandths.
6	Dividing Small Dividends	• Divide a whole number into a dividend less than one.
	Dividing Decimals with Remainders	• Divide a whole number into a dividend less than one with a remainder.
	Dividing by 10s	• Divide by 10, 100, and 1000.
	Write Equivalent Fractions	• Write equivalent fractions.
	Common Denominators	• Learn how to find the common denominator when solving problems with fractions.
	Greatest Common Factors	• Find the GCF.
	Lowest Common Denominator	• Use the LCM to write equivalent fractions.

Module	Lesson Title	Objectives
	Adding and Subtracting with Like Denominators	• Add and subtract fractions with like denominators.
	Adding Mixed Numbers with Like Denominators	• Add and subtract mixed numbers with like denominators.
	Adding and Subtracting with Unlike Denominators	• Add and subtract fractions with unlike denominators. • Reduce fractions to simplest terms.
	Adding Mixed Numbers with Unlike Denominators	• Add and subtract mixed numbers with unlike denominators. • Reduce fractions to simplest terms.
	Subtracting Mixed Numbers	• Subtract mixed numbers

Course Description:

Semester B begins with students continuing to work with fractions. The first lesson focuses on ratios and challenges students to solve word problems using fractions and ratios in practical life situations. Learners continue to strengthen their math skills by studying mixed and fraction products, and fraction application, models, and division. The third critical area that students will focus on in Grade 5 Math is volume. Students will receive lessons in measurement of length, weight, and volume. They will end the course with a focus on geometry. Varied types of instruction are used to enhance their learning, including video and real life applications, activities, and creative projects.

Materials needed: Ruler, 8 pennies, graph paper, 3 plastic containers with similar volume and different shapes, and scissors.

Module	Lesson Title	Objectives
1	Writing Ratios	• Express comparisons in ratio form.
	Writing Fractions as Division	• Interpret a fraction as division of the numerator by the denominator.
	Using Fraction Models	• Use visual fraction models to solve word problems involving division with fractions in the answer.
	Writing Equations	• Use equations to solve word problems involving division to represent the problems with fractions in the answer.
	Locating Fractions on a Number Line	• Locate fractions on a number line.
	Comparing Fractions on a Number Line	• Compare fractions using a number line.
	Estimating Fraction Sums and Differences	• Use a benchmark fraction to estimate and examine the reasonableness of answers.
	Estimating Fractions in Problem Solving	• Use a benchmark fraction to estimate and examine the reasonableness of answers. • Use fraction estimation to solve problems.

Module	Lesson Title	Objectives
	Using Visual Models to Represent Fractions	• Use visual fraction models to represent fractions. • Multiply a whole number by a fraction.
	Creating Story Problems	• Use visual fraction models to solve word problems involving mixed number products.
	The Commutative Property	• Apply the commutative property to mixed products.
	Multiplying a Whole Number by a Fraction	• Multiply a whole number by a fraction.
2	Finding a Fraction of a Fraction	• Use visual fraction models to represent the multiplication of a fraction by a fraction.
	Multiplying Fractions by Fractions	• Multiply a fraction by a fraction.
	Using Fraction Models to Solve Word Problems	• Use visual fraction models to solve word problems involving fraction products.
	Area with Fractional Sides	• Use tiles to find the area and perimeter of a rectangle with fractional side lengths.
	Finding Area by Multiplying	• Use formulas to solve word problems involving mixed number and fraction products.
	Finding Perimeter	• Use tiles to find the perimeter of a rectangle with fractional side lengths.
	Multiplying by Less Than One	• Show that multiplying the numerator and denominator of a fraction by the same number has the same effect as multiplying that fraction by 1. • Recognize that multiplying a given whole number by a fraction less than 1 results in a product smaller than the given number.
	Multiplying by More Than One	• Recognize that multiplying a given whole number by a fraction greater than 1 results in a product greater than the given number.

Module	Lesson Title	Objectives
	Less Than, Greater Than, or Equal To	• Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
	Comparing Products	• Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
3	Using Fraction Models to Solve Problems	• Use visual fraction models to solve real world problems involving multiplication of fractions and mixed numbers.
	Using Equations to Solve Problems	• Use equations to solve real world problems involving multiplication of fractions and mixed numbers.
	Explaining Your Products	• Explain in writing the process of how to solve real world problems involving multiplication of fractions and mixed numbers.
	Identifying Unit Fractions	• Define and identify a unit fraction.
	Using Models to Divide with Unit Fractions	• Use a visual fraction model to represent the quotient of a unit fraction divided by a non-zero whole number.
	Multiplication and Division with Unit Fractions	• Use the relationship between multiplication and division to interpret division of a whole number by a unit fraction and the division of a unit fraction by a non-zero whole number.
	Dividing Whole Numbers by Unit Fractions	• Use a visual fraction model to represent the quotient of a whole number by a unit fraction.
	Reciprocals	• Identify reciprocals.
	Unit Fractions Divided by Whole Numbers	• Divide a unit fraction by a whole number. • Use a word problem to represent the division of a unit fraction by a non-zero whole number.
	Whole Numbers Divided By Unit Fractions	• Divide a whole number by a unit fraction. • Use a word problem to represent the division of a whole number by a unit fraction.

Module	Lesson Title	Objectives
4	Customary Length Conversions	• Convert length measurements within the customary system of measurement.
	Customary Weight Conversions	• Convert weight measurements within the customary measurement system.
	Customary Volume Conversions	• Convert volume measurements within the customary measurement system.
	Metric Conversions	• Convert measurements within the metric system of measurement. • Solve multi-step measurement conversions in real-world problems. • Explore how the base-ten system supports conversions within the metric system.
	Measuring Length	• Measure objects to one-eighth of a unit of length.
	Reading and Creating Line Plots	• Display a data set of measurements in fractions of a unit of length on a line plot.
	Problem Solving with Line Plots	• Add and multiply fractions based on length data in line plots. • Solve length word problems involving information presented in line plots by using operations on fractions.
	Reading a Scale	• Measure objects to one-eighth of a unit of weight.
	Reviewing Line Plots with Weight	• Display a data set of measurements in fractions of a unit of weight on a line plot.
	Solving Line Plot Problems	• Add and multiply fractions based on weight data in line plots. • Solve weight word problems involving information presented in line plots by using operations on fractions.
	What Is Volume?	• Define volume.
	Area and Volume	• Use models to demonstrate the relationship between area and volume. • Define the standard units for measuring volume. • Identify the dimensions that are used to find solid volume (length, width, height).

Module	Lesson Title	Objectives
5	Unit Cubes	• Use models to demonstrate volume.
	Volume Using Models	• Calculate volume using models.
	Volume Formula	• Explain why the volume formulas V = b x h and V = l x w x h for the cube is true.
	Area vs. Volume	
	Volume of Rectangular Prism	• Identifying length, width and height of a rectangular prism. • Calculating volume of a rectangular prism.
	Composite Figures	• Decompose 2-D and 3-D composite shapes into separate smaller shapes. • Find the area of 2-D composite figures. • Find the volume of 3-D composite figures.
	Finding Missing Dimensions	• Identify missing dimensions of a rectangular prism. • Calculate the missing dimensions of a rectangular prism given volume and two of the dimensions.
	Applications of Volume	• Apply the volume of rectangular prisms in real world applications.
	The Coordinate Plane	• Define and draw the first quadrant of the coordinate plane using a pair of perpendicular lines, or axes, that intersect at the zero point of each line.
	Identifying Coordinate Points	• Identify ordered pairs on the coordinate plane.
	Plotting Coordinate Points	• Explain how to plot an ordered pair on the coordinate plane.
6	Graphing Figures on the Coordinate Plane	• Graph ordered pairs to create geometric figures in the first quadrant of the coordinate plane.
	Identify Missing Points	• Identify missing ordered pairs in geometric figures.
	Problem Solving with the Coordinate Plane	• Represent real world problems by graphing points in the first quadrant.

Module	Lesson Title	Objectives
	Special Quadrilaterals	• Define and describe attributes of quadrilaterals.
	Common Attributes	• Use reasoning to classify quadrilaterals according to shared attributes.
	Lines of Symmetry	• Identify lines of symmetry in quadrilaterals.
	Polygons and Prefixes	• Define prefixes and their meaning as related to polygons: tri-, quad-, pent-, hex-, hept -, oct-.
	Hierarchy of Quadrilaterals	• Create a hierarchy diagram of quadrilaterals.
	Regular and Irregular Polygons	• Compare and contrast the attributes of regular and irregular polygons.
	Lines of Symmetry of Polygons	• Identify lines of symmetry in polygons.