CURRICULUM GUIDE

In Spirit and Truth

Math

Diocese of Little Rock
Office of Catholic Schools

Diocese of Little Rock
Office of Catholic Schools

Mathematics

Mathematics reflects the inherent order and unity present in God's creation, providing a pathway to understanding truth. As such, it holds a central place in Catholic education. Through its study, students come to appreciate the beauty of creation while developing essential skills that contribute to their intellectual and spiritual growth. Mathematics also plays a vital role in the development of the whole person, enriching lives by offering practical tools for everyday situations. It fosters logical thinking and problem-solving skills that extend beyond the classroom, equipping students to navigate the complexities of the world with confidence.

A strong foundation in mathematics is essential for every student, as it serves as the cornerstone for success in other academic disciplines. In today's world, a solid understanding of mathematics is not only valuable but necessary. It enables students to reason effectively, think critically, and creatively solve problems, all of which are crucial skills in an ever-evolving society. To ensure a comprehensive mathematical education, each grade level's standards are organized into eight key areas: Numbers, Numerations, and Operations; Measurement; Problem Solving and Critical Thinking; Estimation; Graphs and Charts; Statistics and Probability; Geometry; and Algebra. These categories provide a framework for students to develop both practical and analytical skills, preparing them for future academic pursuits and real-world challenges.

To support sustained growth and mastery, students and teachers should consistently build upon foundational standards from prior years, with intentional review and reinforcement of key concepts. This cumulative approach, paired with the Standards for Mathematical Practice, ensures that students engage with mathematics in increasingly sophisticated ways as they progress from elementary through high school, developing both deep understanding and mathematical expertise.

Grade-level standards are clearly outlined, with bolded standards identifying the key learning objectives students are expected to master.

PROGRAM GOALS

	K	1	2	3	4	5	6	7	8
Program Goal I: Numbers, Numerations, Operations									
Learn Basics of Whole Numbers									
Add and Subtract Whole Numbers									
Multiply Whole Numbers									
Divide Whole Numbers									
Learn Basics of Fractions									
Add and Subtract Fractions									
Multiply Fractions									
Divide Fractions									
Learn the Basics of Decimals									
Add and Subtract Decimals									
Multiply Decimals									
Divide Decimals									
Percents									
Properties of Numbers									
Exponents									
Calculator									
Program Goal II: Measurement									
Measurement Concepts									
Measurement Application									
Time									
Calendar									

PROGRAM GOALS

	K	1	2	3	4	5	6	7	8
Money									
Temperature									
Program Goal III: Problem Solving & Critical Thinking									
Use Basic Operations to Solve Problems									
Use Critical Thinking to Solve Problems									
Use Strategies to Solve Problems									
Learn and Apply Formulas									
Program Goal IV: Estimation									
Solve Problems Using Estimation									
Program Goal V: Graphs and Charts									
Make Graphs and Charts									
Interpret Graphs and Charts									
Program Goal VI: Statistics and Probability									
Probability									
Statistics									
Program Goal VII: Geometry									
Learn Geometric Words									
Identify Geometric Shapes									
Construct Geometric Shapes									
Solve Problems Involving Shapes									

PROGRAM GOALS									
	K	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Program Goal VIII: Algebra									
Write Expressions and Solve Equations									
Use Fundamentals of Algebra									
Ratios and Proportional Relationships									
Functions									

In Spirit and Truth

KINDERGARTEN

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Program Goal I: Numbers, Numeration, and Operations
Students will develop skills to recognize, write, and compare numbers up to 100, understand place value, and use ordinal numbers. They will practice addition and subtraction, solve word problems, decompose numbers, and count by tens, twos, and fives. Additionally, students will explore fractions and apply these concepts to real-world situations.

Program Goal II: Measurement
Students will learn fundamental measurement concepts, including identifying and comparing attributes such as height, weight, and length. They will explore appropriate units for measuring liquid and mass, estimate and measure length using informal units and inches, and develop an understanding of time using both digital and analog clocks. Students will also learn calendar concepts (days, weeks, months, and seasons) and recognize money, including pennies, dimes, and the use of dollar and cent symbols.

Program Goal III: Problem Solving and Critical Thinking
Students will solve word problems involving addition, subtraction, and money, while applying critical thinking skills to classify objects and determine the appropriate operations. They will develop the ability to explain the problem-solving process by using strategies such as acting out, models, guess and check, and identifying patterns.

Program Goal IV: Estimation
Students will develop the ability to make reasonable estimations about quantities, sizes, and measurements based on prior knowledge and visual cues. They will practice estimating the number of objects in a group, the length of an item, or the time needed for tasks.

Program Goal V: Graphs and Charts
Students will learn to create and interpret simple graphs, such as picture graphs, tables, bar graphs, pictographs, line graphs, and circle graphs. This will help them understand how data is represented visually and learn to interpret the meaning behind the information.

Program Goal VI: Geometry
Students will identify and describe 2D and 3D shapes, including squares, circles, triangles, cubes, and cones. They will use basic geometric terms like sides and corners, recognize shapes in everyday objects, and practice drawing, modeling, and combining shapes. Students will also explore the attributes of shapes, such as symmetry and similarities.

KINDERGARTEN MATH STANDARDS

Program Goal I: Numbers, Numerations, Operations

Learn the Basics of Whole Numbers

K.NNO.BWN.1 Identify mathematical terminology: compare, addition, subtraction, equal, counting, skip counting

K.NNO.BWN.2 Recognize groups of objects with the same number of objects or the group which has more or less

K.NNO.BWN.3 **Recognize, write and order numbers to 20**

K.NNO.BWN.4 Recognize and use ordinal numbers (first - twelfth)

K.NNO.BWN.5 Recognize, write, and count by ones to 100, including counting forward beginning from a given number

K.NNO.BWN.6 Identify which number is greater or less using numbers to 100

K.NNO.BWN.7 **Compose and decompose numbers 11-19 into tens and ones using objects or drawings**

K.NNO.BWN.8 Write the standard form for numbers up to 100

K.NNO.BWN.9 **Count by ones to 100**

K.NNO.BWN.10 **Count objects, understanding that each number corresponds to one object, and the final number counted indicates the total number of objects**

K.NNO.BWN.11 **Count up to 20 concrete objects**

K.NNO.BWN.12 **Compare two numbers between one and ten presented as written numerals (example: Give the student the numbers 8 and 2. The student should be able to identify which number is larger.)**

K.NNO.BWN.13 Recognize and understand symbols +, -, and =

K.NNO.BWN.14 Begins to understand place value, emphasizing that 10 ones equal a ten

Add Whole Numbers

K.NNO.AWN.1 **Understand that when counting each successive number refers to a quantity that is one larger**

K.NNO.AWN.2 **Solve addition word problems by adding up to ten by using objects to represent the problem**

K.NNO.AWN.3 Fluently identify the number that, when added to any number from one to nine, equals ten, using drawings or pictures if needed

K.NNO.AWN.4 **With numbers less than or equal to 10 able to decompose in more than one way (e.g. 6 = 2 + 4 and 6 = 1 + 5)**

K.NNO.AWN.5 Begin to fluently add two numbers with sums to ten

K.NNO.AWN.6 Add two or three numbers with sums to 20, using strategies if necessary (e.g.

making 10, using known problems to make it easier such as: 6 + 7 = 6 + 6 + 1 = 12 + 1 = 13)

K.NNU.AWN.7 Solve word problems using addition of three whole numbers whose sum is less than or equal to 20 by using objects, drawings, and equations with a symbol for the unknown number

Subtract Whole Numbers

K.NNO.SWN 1 **Solve subtraction word problems within ten by using objects to represent the problem**

K.NNO.SWN.2 Subtract from numbers to 20

K.NNO.SWN.3 Understand concept of subtraction as an unknown addend problem (e.g. 15-5 can be found by what added to 5 equals 15)

Multiply Whole Numbers

K.NNO.MWN.1 **Counts by tens to 100**

K.NNO.MWN.2 Practices counting by twos and fives to 100

Learn the Basics of Fractions

K.NNO.LBF.1 Understand basic concept of fractions (part-to-whole)

Program Goal II: Measurement

Measurement Concepts

K.MEA.MCO.1 Identify and define mathematical terminology: measure, height, weight, length, smaller, larger, shorter, longer, between, taller, heavier, lighter

K.MEA.MCO.2 **Describe objects using measurable attributes such as length and height**

K.MEA.MCO.3 **Compare two objects with a measurable attribute in common**

K.MEA.MCO.4 Decide which of three objects is largest, smallest, longest, or shortest

K.MEA.MCO.5 Determine which object is lighter or heavier by comparison

K.MEA.MCO.6 Determine the appropriate unit for measuring liquid using cup, pint, quart, or gallon and mass (weight) using ounces or pounds

K.MEA.MCO.7 Estimate lengths by using objects

K.MEA.MCO.8 Measure length using informal units (counting cubes, paper clips) and inches

Time

K.MEA.TIM.1 Identify and define mathematical terminology: clock, time

K.MEA.TIM.2 Understand concepts of time, recognizing that clocks and calendars are tools that measure time

K.MEA.TIM.3 Tell time using digital and analog clocks, including identifying hour and minute hands

K.MEA.TIM.4 Tell time to the hour, half hour, and using minutes

Calendar

K.MEA.CAL.1 Identify and define mathematical terminology: days, weeks, months, seasons
K.MEA.CAL.2 Complete an outline of a given month
K.MEA.CAL.3 Understand and use a calendar, including: morning, afternoon, evening, today, yesterday, tomorrow, day, week, month, and year

Money

K.MEA.MON.1 Identify and define mathematical terminology: money, pennies, dimes, cent symbol, and dollar sign
K.MEA.MON.2 Identify pennies and dimes by name and value.
K.MEA.MON.3 Recognize the value of a mixed coin amount and apply the cent and dollar sign appropriately

Temperature

K.MEA.TEM.1 Understand the relationship between temperature and weather
K.MEA.TEM.2 Introduce the thermometer as a tool for measuring temperature
K.MEA.TEM.3 Begin to explore temperature measurements in Fahrenheit and Celsius

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Program Goal III: Problem Solving and Critical Thinking

Use Basic Operations to Solve Problems

K.PCT.BSP.1 Identify and define mathematical terminology: problem solving, data, explain, pattern, sort
K.PCT.BSP.2 Add or subtract to solve word problems to 20
K.PCT.BSP.3 Solve word problems involving money

Use Critical Thinking Skills to Solve Problems

K.PCT.CSP.1 **Classify objects into given categories and count the objects**
K.PCT.CSP.2 Use data to solve word problems
K.PCT.CSP.3 Choose correct operations to solve word problems
K.PCT.CSP.4 Able to explain how a problem is worked and the reasoning of the answer

Use Strategies to Solve Problems

K.PCT.SSP.1 Use a plan to solve problems, such as: acts out or use models, use guess and check, makes a model, diagram, table, graph, list, or find a pattern to solve problems
K.PCT.SSP.2 Generate and identify features of a pattern such as continue and create color and shape patterns

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Program Goal IV: Estimation

Solve Problems Using Estimation

K.EST.SPE.1	Identify and define mathematical terminology: estimate, size, objects, length, time, guess
K.EST.SPE.2	Understand concept of estimation

Program Goal V: Graphs and Charts

Make Graphs and Charts

K.GAC.MGC.1	Identify and define mathematical terminology: graph, data, bar graph, picture graph, line graph, table, chart, collect data, compare, number line
K.GAC.MGC.2	Construct a graph from given data and student-constructed data

Interpret Graphs and Charts

K.GAC.IGC.1	Interpret a picture graph, table, chart, bar graph, pictograph, line graph, and circle graph

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Program Goal VII: Geometry

Learn Geometric Words

K.GEO.LGW.1	Identify and define geometric terminology: 2D shapes (flat) and 3D shapes (solid)
K.GEO.LGW.2	Name types of polygons: 2-D shapes: squares, circles, triangles, rectangles, and hexagons; 3-D shapes: cube, cone, cylinder, and sphere
K.GEO.LGW.3	Use simple geometric terms: sides, corners/vertices

Identify Geometric Shapes

K.GEO.IGS.1	**Identify everyday objects are geometric shapes**
K.GEO.IGS.2	Model geometric shapes by drawing or using everyday materials (straws, toothpicks, clay balls)
K.GEO.IGS.3	Identify circles, triangles, rectangles, squares, and describe attributes of each
K.GEO.IGS.4	Compose geometric shapes by combining two or more geometric shapes
K.GEO.IGS.5	Identify and describe characteristics of spheres, rectangular boxes, cubes, cones, cylinders, pyramids, or prisms
K.GEO.IGS.6	Identify shapes that are similar and shapes that are symmetrical

Constructs Geometric Shapes

- K.GEO.CGS.1 Draw plane and space figures
- K.GEO.CGS.2 Draw polygons in the coordinate plane and use to solve problems

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Kindergarten Mathematical Terminology by Domain					
Numbers, Numerations, Operations	**Measurem-ent**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Geometry**
Learn the basics of whole numbers: compare, addition, subtraction, equal, counting, skip counting	Measurement concepts: measure, height, weight, length, smaller, larger, shorter, longer, between, taller, heavier Time: clock, time Calendar: days, weeks, months, seasons Money: money, pennies, nickel, quarter, dimes, cent symbol, and dollar sign	Use Basic Operations to Solve Problems: problem solving, data, explain, pattern, sort	Solve Problems Using Estimation: estimate, size, objects, length, time, guess	Make Graphs and Charts: graph, data, bar graph, picture graph, line graph, table, chart, collect data, compare, number line	Learn Geometric Words: shapes, model, drawing, similar, 2D shapes (flat): squares, circles, triangles, rectangles, and hexagons; 3D shapes (solid): cube, cone, cylinder, and sphere, sides, corners/ vertices,

In Spirit and Truth

FIRST GRADE

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Program Goal I: Numbers, Numerations, Operations
Students will order, compare, and write numbers up to 200, understand place value, and practice addition and subtraction within 20. They will explore multiplication through skip counting, learn basic fractions, and use mental strategies for adding and subtracting. Students also recognize number properties, such as the identity, commutative, and associative properties, and solve word problems.

Program Goal II: Measurement
First grade students learn to compare objects and choose appropriate units for length, mass, and liquid measurements. They practice measuring length, telling time on analog and digital clocks, understanding calendars, and counting coins up to 100 cents using the correct money symbols.

Program Goal III: Problem Solving and Critical Thinking
Students use addition and subtraction to solve word problems up to 100, including problems with multiple addends, time intervals, and money. They apply critical thinking to choose the correct operations, identify necessary information, and explain their reasoning. Students also use strategies like acting out problems, making models, and finding patterns to solve problems and write equations.

Program Goal IV: Estimation
Estimation in first grade involves making reasonable guesses about quantities, lengths, or measurements based on prior knowledge. Students practice estimating the number of objects in a group, the length of an item, or how much something weighs, and then check their estimate for accuracy.

Program Goal V: Graphs and Charts
First grade students create and interpret various types of graphs, including picture graphs, bar graphs, and line graphs, using both student-collected and given data. They also understand the number line as a set of points representing numbers.

Program Goal VII: Geometry
In first grade, students learn basic geometric terms and identify shapes such as circles, triangles, squares, and rectangles, describing their attributes. They model and create shapes using everyday materials, recognize symmetrical and similar shapes, and compose new shapes by combining others. Students also draw two- and three-dimensional shapes, divide shapes into equal parts, and solve problems by locating points on plane shapes.

Program Goal VIII: Algebra

First grade students build foundational knowledge in algebra by using addition and subtraction within 20 to solve word problems involving addition, subtraction, and comparisons with unknowns. They determine if equations are true or false and use variables to represent unknown quantities in simple equations.

FIRST GRADE MATH STANDARDS

Program Goal I: Numbers, Numerations, Operations

Learn the Basics of Whole Numbers

1.NNO.BWN.1 Identify and define mathematical terminology: order, compare, place value, addition, subtraction, even numbers, odd numbers, sum, difference

1.NNO.BWN.2 Order numbers 0-20 and is able to count up to 20 objects to answer "how many" arranged in various configurations

1.NNO.BWN.3 **Recognize groups of objects with the same number of objects or the group which has more or less**

1.NNO.BWN.4 **Recognizes and applies ordinal numbers (first through twelfth)**

1.NNO.BWN.5 **Recognizes, writes, and identifies which number is greater or less numbers to 100**

1.NNO.BWN.6 **Count by ones to 120**

1.NNO.BWN.7 **Count up to 120, both forwards and backwards, by ones and tens ,starting from any given number**

1.NNO.BWN.8 Compare and order two numbers up to 99 when written as numerals, and identify which group of objects has more, fewer, or the same number of items.

1.NNO.BWN.9 Order and compare numbers greater than 100

1.NNO.BWN.10 Write the standard form and expanded form for numbers up to 200

1.NNO.BWN.11 Round numbers to the nearest 10 or 100

1.NNO.BWN.12 Differentiate between odd and even numbers

1.NNO.BWN.13 **Recognizes and understands symbols +, -, and =**

1.NNO.BWN.14 Recognizes and uses symbols < and >

1.NNO.BWN.15 **Understand place value, including that ten ones make a 'ten' and ten groups of tens make a 'hundred'**

1.NNO.BWN.16 Predict numbers in a pattern

1.NNO.BWN.17 Learn appropriate name for all operations

Add Whole Numbers

1.NNO.AWN.1 **Add and subtract fluently within 10 with mastery by the end of first grade**

1.NNO.AWN.2 Fluently identify the number that, when added to any number from one to nine, equals ten, using drawings or pictures if needed

1.NNO.AWN.3 Fluently add two or three numbers with sums to ten

1.NNO.AWN.4 Fluently add within 20 using mental strategies

1.NNO.AWN.5 Add two or three numbers with sums to 20, using strategies if necessary (e.g. making ten, using known problems to make it easier such as: 6 + 7 = 6 + 6 + 1 = 12 + 1 = 13)

1.NNO.AWN.6 Determine if equations involving addition are true or false (e.g. 5 + 2 = 2 + 5 or 4 + 1 = 5 + 2)
1.NNO.AWN.7 Add a two-digit and one-digit number
1.NNO.AWN.8 Add three or more one-digit numbers
1.NNO.AWN.9 Add two or three two-digit numbers and three-digit numbers with no regrouping
1.NNO.AWN.10 **Solve word problems using addition of three whole numbers whose sum is less than or equal to 20 by using objects, drawings, and equations with a symbol for the unknown number**
1.NNO.AWN.11 Add ten more to any two-digit or three-digit number mentally

Subtract Whole Numbers

1.NNO.SWN.1 **Fluently Subtract from numbers to ten**
1.NNO.SWN.2 Subtract from numbers 11-20
1.NNO.SWN.3 **Understand concept of subtraction as an unknown addend problem (e.g. 15-5 can be found by asking what number added to 5 equals 15)**
1.NNO.SWN.4 Subtract two two-digit numbers with no regrouping
1.NNO.SWN.5 Subtract a one-digit number from a two-digit number
1.NNO.SWN.6 Subtract two three-digit numbers with no regrouping
1.NNO.SWN.7 **Find ten less than any two-digit number mentally**
1.NNO.SWN.8 Subtract 10 or 100 from any number 100-900 mentally
1.NNO.SWN.9 Fluently subtract within 20 using mental strategies

Multiply Whole Numbers

1.NNO.MWN.1 Understand the basic concept of multiplication using various terminology (skip count, groups of, repeated addition, etc.)
1.NNO.MWN.2 Count by twos to 100
1.NNO.MWN.3 Count by fives, tens, and hundreds to 1000
1.NNO.MWN.4 Use addition to fluently master multiplication facts and understand relationship

Learn the Basics of Fractions

1.NNO.LBF.1 Identify and define mathematical terminology: fractions (half and whole), total, part
1.NNO.LBF.2 Understand basic concept of fractions (part-to-whole)
1.NNO.LBF.3 Write a fraction or mixed number for the shaded parts of regions or the indicated parts of groups or objects

Properties of Numbers

1.NNO.PON.1 Recognize and use identity property (one and zero) and associative property
1.NNO.PON.2 **Recognize and use commutative property (order)**

Program Goal II: Measurements

Measurement Concepts

1.MEA.MCO.1 Identify and define mathematical terminology: length, mass, liquid, compare, inches, feet, pounds, ounces

1.MEA.MCO.2 Decide which of three objects is largest, smallest, longest, or shortest

1.MEA.MCO.3 Determine the appropriate metric unit for measuring length using centimeter, meter, kilometer, or millimeter

1.MEA.MCO.4 Determine the appropriate metric unit for liquid measure using liter

1.MEA.MCO.5 Determine which object is lighter or heavier by comparison

1.MEA.MCO.6 Determine the appropriate metric unit for measuring:

- mass/weight using gram or kilogram, ounces or pounds
- length using inch, foot, yard, or mile
- liquid using cup, pint, quart, or gallon

1.MEA.MCO.7 Estimate lengths in metric and customary systems

Measurement Application

1.MEA.MAP.1 Measure length using informal units, centimeters, millimeters, and inches

1.MEA.MAP.2 Measure the length of an object by using several copies of a smaller object placed end-to-end, understanding that the length is the total number of units needed to cover the object with no gaps or overlaps.

Time

1.MEA.TIM.1 Identify and define mathematical terminology: clock, time

1.MEA.TIM.2 **Tell time to the hour and half hour**

1.MEA.TIM.3 **Tell and write time to the nearest hour and half hour using analog clocks, and understand how to read time in hours and minutes on digital clocks**

1.MEA.TIM.4 Tell time to the quarter hour interval, five-minute interval, and minutes

1.MEA.TIM.5 Identify the use of AM, PM, hours in a day, minutes in an hour, seconds in a minute

Calendar

1.MEA.CAL.1 **Name the four seasons, days, and months; recognizes days, weeks, months**

1.MEA.CAL.2 Complete an outline of a given month

1.MEA.CAL.3 Understand and use a calendar

Money

1.MEA.MON.1 Identify and define mathematical terminology: penny, nickel, dime, quarter, cent sign, dollar sign

1.MEA.MON.2 Recognize the value of pennies, nickels, dimes, quarters, half dollars, and dollars

1.MEA.MON.3 Recognize and count the value of a mixed coin amount to determine their value

up to 100 cents

1.MEA.MON.4 Recognizes and uses the cent and dollar sign appropriately

Temperature

1.MEA.TEM.1 Understand that temperature helps describe the weather and is connected to what we experience outdoors

1.MEA.TEM.2 Recognize a thermometer as a tool that measures temperature and understand the basic differences between Fahrenheit and Celsius

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Program Goal III: Problem Solving and Critical Thinking

Use Basic Operations to Solve Problems

1.PCT.BSP.1 Identify and define mathematical terminology: critical thinking, model, pattern, write equations

1.PCT.BSP.2 **Add or subtract to solve word problems to 20**

1.PCT.BSP.3 Add or subtract to solve word problems to 100

1.PCT.BSP.4 Solve various types of word problems including: involving multiple addends, involving time intervals using a number line diagram if needed, and money

Use Critical Thinking Skills to Solve Problems

- Use data to solve word problems
- Choose correct operations to solve word problems
- Identify if a problem has enough or unnecessary information and explain how it was solved, including the reasoning behind their answer

Use Strategies to Solve Problems

1.PCT.CSP.1 Use a plan to solve problems, such as: act out or use models, use guess and check, make a model, diagram, table, graph, or list, find a pattern to solve problems

1.PCT.CSP.2 Write and solve an equation

1.PCT.CSP.3 Generate and identify features of a pattern to solve a problem

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Program Goal IV: Estimation

Solve Problems Using Estimation

1.EST.SPE.1	Identify and define mathematical terminology: estimate, reasonable guess, quantity, accuracy, approximate
1.EST.SPE.2	Understand concept of estimation

Program Goal V: Graphs and Charts

Make Graphs and Charts

1.GAC.MGC.1	Identify and define mathematical terminology: graph, data, picture graph, bar graph, line graph, number line, points
1.GAC.MGC.2	Construct appropriate type of graph from student-collected data and given data
1.GAC.MGC.3	Understand the number line as a dense set of points representing numbers

Interpret Graphs and Charts

1.GAC.IGC.1	Interpret a picture graph, table, chart, bar graph, pictograph, line graph, and circle graph

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Program Goal VII: Geometry

Learn Geometric Words

1.GEO.LGW.1	Identify and define geometric terminology: shape, circle, triangle, square, rectangle, sides, corners, edges, faces, symmetry, equal parts, two-dimensional shapes, three-dimensional shapes
1.GEO.LGW.2	Name types of polygons and use simple geometric terms to describe each

Identify Geometric Shapes

1.GEO.IGS.1	Model geometric shapes by drawing or using everyday materials
1.GEO.IGS.2	Identify circles, triangles, rectangles, squares, and describe attributes of each
1.GEO.IGS.3	Understand that squares, rectangles, rhombuses are examples of quadrilaterals
1.GEO.IGS.4	**Compose geometric shapes by combining two or more geometric shapes**
1.GEO.IGS.5	Identify and describes characteristics of spheres, rectangular boxes, cubes, cones, cylinders, pyramids, or prisms; two-dimensional shapes (e.g., rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles); and three-dimensional shapes (e.g., cubes, right rectangular prisms, right circular cones, and right circular cylinders)
1.GEO.IGS.6	Identify shapes that are symmetrical and shapes that are similar

Construct Geometric Shapes

1.GEO.CGS.1	Draw plane and space figures

1.GEO.CGS.2	Draw polygons in the coordinate plane and use to solve problems
1.GEO.CGS.3	Divide a shape into two, three, or four equal pieces

Solve Problems Involving Shapes

1.GEO.SPS.1	Locate points outside, inside, and on a plane shape

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Program Goal VIII: Algebra

Write Expressions and Solve Equations

1.ALG.ESE.1	Identify and define mathematical terminology: comparison, unknown, variable, equation
1.ALG.ESE.2	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions
1.ALG.ESE.3	Determine if equations involving addition or subtraction are true or false
1.ALG.ESE.4	Solve equations using addition and subtraction of non-negative rational numbers
1.ALG.ESE.5	Use a variable to represent an unknown quantity

First Grade Mathematical Terminology by Domain						
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Geometry**	**Algebra**
Learn the Basics of Whole Numbers: order, compare, place value, addition, subtraction, even numbers, odd numbers, sum, difference Multiply Whole Numbers: skip counting, groups of, repeated addition Learn the Basics of Fractions: fractions (half and whole), total, part Properties of Numbers: identity property, associative property	Measurement Concepts: length, mass, liquid, compare, inches, feet, pounds, ounces Time: clock, time Calendar: calendar, days, weeks, months, seasons Money: penny, nickel, dime, quarter, cent sign, dollar sign	Use Basic Operations to Solve Problems: critical thinking, model, pattern, write equations	Solve Problems Using Estimation: estimate, reasonable guess, quantity, accuracy, approximate	Make Graphs and Charts: graph, data, picture graph, bar graph, line graph, number line, points	Learn Geometric Words: shape, circle, triangle, square, rectangle, sides, corners, edges, faces, symmetry, equal parts, two-dimensional shapes, three-dimensional shapes	Write Expressions and Solve Equations: comparison, unknown, variable, equation

In Spirit and Truth

SECOND GRADE

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Program Goal I: Numbers, Numerations, Operations
In second grade, students build an understanding of whole numbers by comparing, ordering, and rounding numbers up to 1000, and recognizing even and odd numbers. They fluently add and subtract within 1000, use mental strategies, and solve word problems involving one- and two-step operations. Students also begin learning multiplication and division, explore fractions, and understand number properties such as the identity and associative properties, while using calculators for simple operations.

Program Goal II: Measurement
Second grade students learn measurement concepts by comparing objects and selecting the appropriate units for length, liquid, and mass in both metric and customary systems. They practice measuring length, telling time to the nearest five minutes, understanding elapsed time, and using calendars. Students also learn to recognize and count coins, round money to the nearest dollar, and perform simple addition and subtraction with money.

Program Goal III: Problem Solving and Critical Thinking
Students use basic operations to solve word problems, explain their strategies, and apply place value and properties of operations. They also practice using critical thinking to evaluate information, determine if answers are reasonable, and explain their reasoning. Students apply problem-solving strategies like acting out, using models, and finding patterns. Additionally, students work with equations and data to solve problems.

Program Goal IV: Estimation
In second grade, students learn to estimate sums and differences of whole numbers and money. They begin solving problems using rounding, compatible numbers, front-end estimation, patterns, clustering, and mental math strategies.

Program Goal V: Graphs and Charts
Students construct various types of graphs from given and student-collected data and understand the number line as a series of points. They also interpret different types of graphs, such as picture graphs, bar graphs, and line graphs, and learn to identify and write number pairs for points on a graph.

Program Goal VI: Statistics and Probability
Second Grade students learn basic probability concepts and predict the likelihood of different outcomes. They explore probability through experiments, tree diagrams, and models.

Program Goal VII: Geometry
In second grade, students learn geometric terms and identify shapes like squares, triangles, and cubes. They solve problems involving perimeter, area, and transformations (slides, flips, turns) and explore symmetry and congruence. Students also practice drawing and dividing shapes to represent and solve geometric problems.

Program Goal VIII: Algebra

Students will learn to write and solve simple algebraic expressions and equations involving addition and subtraction within 20. They will apply these operations to solve word problems in real-world situations, such as adding to, taking from, putting together, taking apart, and comparing quantities with unknowns in different positions. Students will also practice determining whether equations are true or false and solve equations using non-negative rational numbers. They will understand the use of variables to represent unknown quantities and perform arithmetic operations while following the correct order of operations.

SECOND GRADE MATH STANDARDS

Program Goal I: Numbers, Numerations, Operations

Learn the Basics of Whole Numbers

2.NNO.BWN.1 Identify and define mathematical terminology: regrouping, even numbers, odd, numbers, greater-than, less-than, equal to, whole numbers, place value, addends, sum, difference , equal, equation,related addition/subtraction fact, ten-frame, take apart, fact families, standard form, expanded form

2.NNO.BWN.2 **Identify which number is greater or less using numbers to 100**

2.NNO.BWN.3 **Count within 1000 forwards and backwards, by ones, tens, and hundreds from any number**

2.NNO.BWN.4 Recognize and write the standard form, word form, and expanded form for numbers up to 1000

2.NNO.BWN.5 **Compare two numbers up to 99 as written numerals**

2.NNO.BWN.6 Order and compare a list of numbers greater than 100

2.NNO.BWN.7 Round numbers to the nearest 10 or 100

2.NNO.BWN.8 **Differentiate between odd and even numbers**

2.NNO.BWN.9 Recognize and understand symbols x, ÷, <, and >

2.NNO.BWN.10 Compare two and three two-digit numbers using <, >, and =

2.NNO.BWN.11 **Understand place value, mastering the understanding that ten groups of ten equals a "hundred"**

2.NNO.BWN.12 Predict numbers in a pattern

2.NNO.BWN.13 Learn appropriate name for all operations

Add Whole Numbers

2.NNO.AWN.1 **For numbers one-nine, fluently find the number that when added to it will make ten (may use drawings or pictures)**

2.NNO.AWN.2 **Add two or three numbers with sums to 20, using strategies if necessary (e.g. making ten, using known problems to make it easier i.e. 6 + 7 = 6 + 6 + 1 = 12 + 1 = 13)**

2.NNO.AWN.3 **Determine if equations involving addition are true or false (e. g. 5 + 2 = 2 + 5 or 4 + 1 = 5 + 2)**

2.NNO.AWN.4 **Add a two-digit and one-digit number**

2.NNO.AWN.5 **Add three or more one-digit numbers**

2.NNO.AWN.6 **Add two or more two-digit numbers**

2.NNO.AWN.7 Add three-digit numbers with no regrouping

2.NNO.AWN.8 **Fluently add numbers to 1000**

2.NNO.AWN.9 Add two or more two to six-digit numbers with regrouping

2.NNO.AWN.10 Add ten more to any two-digit and three-digit number mentally and any three-digit

number 100-900 mentally

2.NNO.AWN.11 **Fluently add within 20 using mental strategies**

2.NNO.AWN.12 Use addition to solve one- and two-step word problems

Subtract Whole Numbers

2.NNO.SWN.1 **Subtract from numbers 11-20**

2.NNO.SWN.2 **Subtract a one-digit number from a two-digit number**

2.NNO.SWN.3 **Subtract two two-digit and three-digit numbers with no regrouping (i.e. 35 - 13; 652 - 541)**

2.NNO.SWN.4 Subtract two two-digit to six-digit numbers with regrouping

2.NNO.SWN.5 **Subtract 10 or 100 from any number 100-900 mentally**

2.NNO.SWN.6 **Fluently subtract within 20 using mental strategies**

2.NNO.SWN.7 Use subtraction to solve one- step word problems

Multiply Whole Numbers

2.NNO.MWN.1 Understand the basic concept of multiplication using various terminology (skip count, groups of, repeated addition, etc.)

2.NNO.MWN.2 **Count by fives, tens, and hundreds to 1000**

2.NNO.MWN.3 Count by twos to 100

2.NNO.MWN.4 Use addition to develop multiplication facts and understand relationship

2.NNO.MWN.5 Use an array to multiply

2.NNO.MWN.6 Introduced to multiplying one-digit numbers, including by 2, 3, 5, 10, 100, and 1,000, using basic multiplication facts.

Divide Whole Numbers

2.NNO.DWN.1 Understand basic concepts of division using various terminology

Learn the Basics of Fractions

2.NNO.LBF.1 Identify and define mathematical terminology: part, whole, / (symbol)

2.NNO.LBF.2. Understand basic concept of fractions (part-to-whole)

2.NNO.LBF.3 Write a fraction or mixed number for the shaded parts of regions or the indicated parts of groups or objects

Properties of Numbers

2.NNO.PON.1 Identify and define mathematical terminology: identity property, associative property

2.NNO.PON.2 Recognize and use identity property (one and zero)

2.NNO.PON.3 **Recognize and use associative property (grouping)**

Calculator

2.NNO.CAL.1 Begin to use a calculator for whole number operations

Program Goal II: Measurement

Measurement Concepts

2.MEA.MCO.1 Identify and define mathematical terminology: ruler, feet, yard, length, mass, metric system, customary system, inches, feet, centimeters, millimeters, grams, kilograms, ounces, pounds, meters

2.MEA.MCO.2 Decide which of three objects is largest, smallest, longest, or shortest

2.MEA.MCO.3 Determine the appropriate metric unit for measuring

- length using centimeter, meter, millimeter, or kilometer; decimeter or millimeter; inch, foot, yard, or mile
- liquid measure using liter; cup, pint, quart, or gallon
- mass (weight) using gram or kilogram; ounces or pounds

2.MEA.MCO.4 **Determine which object is lighter or heavier by comparison**

2.MEA.MCO. Estimate lengths in metric and customary systems

Measurement Application

2.MEA.MAP.1 Measure length using informal units, centimeters or millimeters, inches, and fractions of inches

Time

2.MEA.TIM.1 Identify and define mathematical terminology: hour, minute, hand (clock), analog clock, digital clock, time

2.MEA.TIM.2 **Tell time to the quarter-hour interval and five-minute interval**

2.MEA.TIM.3 **Tell and write time to the nearest five minutes using an analog clock, including a.m. and p.m., and understand the relationships between time units (seconds in a minute, minutes in an hour, days in a week, and days, weeks, and months in a year)**

2.MEA.TIM.4 Tell time using minutes

2.MEA.TIM.5 Tell elapsed time

Calendar

2.MEA.CAL.1 **Complete an outline of a given month**

2.MEA.CAL.2 **Understand and use a calendar**

Money

2.MEA.MON.1 Identify and define mathematical terminology: cent, dollar, penny, dime, nickel, quarter

2.MEA.MON.2 **Recognize the value of pennies, nickels, dimes, quarters, half dollars, and dollars and appropriately use the cent and dollar signs**

2.MEA.MON.3 Recognize the value of a mixed coin amount

2.MEA.MON.4 Round money to the nearest dollar

2.MEA.MON.5 Add or subtract with money and make change

Temperature

2.MEA.TEM.1 Relate temperature to weather conditions

2.MEA.TEM.2 Identify and understand how a thermometer is used to measure temperature in both Fahrenheit and Celsius, specifically how the numbers on a thermometer correspond to temperature

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Program Goal III: Problem Solving and Critical Thinking

Use Basic Operations to Solve Problems

2.PCT.BSP.1 Identify and define mathematical terminology: operations (addition, subtraction, multiplication, division), place value, reasonable answer, evaluate, model, pattern, data, models

2.PCT.BSP.2 **Add or subtract to solve word problems to 100**

2.PCT.BSP.3 Multiply or divide to solve word problems using various terminology (equal groups)

2.PCT.BSP.4 Solve various types of word problems involving multiple addends, money, and time intervals using a number line diagram if needed.

2.PCT.BSP.5 Explain why addition and subtraction strategies work, using place value and the properties of operation

Use Critical Thinking Skills to Solve Problems

2.PCT.CSP.1 Find more than one answer

2.PCT.CSP.2 Use data and correct operations to solve word problems

2.PCT.CSP.3 Determine if a problem has sufficient information or unnecessary information, if an answer is reasonable or not, and explain how a problem is worked with the reasoning of the answer

Use Strategies to Solve Problems

2.PCT.SSP.1 Use a plan to solve problems such as: acts out or use models, use guess and check to solve problems, makes a model, diagram, table, graph, or list in order to solve problems, find a pattern to solve problems

2.PCT.SSP.2 Write and solve an equation

2.PCT.SSP.3 Generate and identify features of a pattern

Program Goal IV: Estimation

Solve Problems Using Estimation

2.EST.SPE.1 Identify and define mathematical terminology: estimate, sum, difference, rounding, front-end estimation, patterns, approximate, clustering

2.EST.SPE.2	Understand concept of estimation
2.EST.SPE.3	Estimate a sum and difference of whole numbers and money
2.EST.SPE.4	Begin to solve problems using rounding, compatible numbers, front-end estimation, patterns, clustering, and mental math

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Program Goal V: Graphs and Charts

Make Graphs and Charts

2.GAC.MGC.1	Identify and define mathematical terminology: graph, data, number line, picture graph, bar graph, line graph (line plot), interpret, data collection, points on a graph, number pairs, data
2.GAC.MGC.2	Construct an appropriate type of graph from given data and student-collected data
2.GAC.MGC.3	Understand the number line as a dense set of points representing numbers

Interpret Graphs and Charts

2.GAC.IGC.1	**Interpret a picture graph**
2.GAC.IGC.2	Interpret a table or chart, bar graph, pictograph, circle graph or line graph
2.GAC.IGC.3	Write the number pair for a point or name the point for a number pair

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Program Goal VI: Statistics and Probability

Probability

2.SAP.PRO.1	Identify and define mathematical terminology: probability, outcome, likelihood, predict, tree diagram, model, possible outcomes
2.SAP.PRO.2	Understand basic probability concepts and predict the likelihood of an outcome
2.SAP.PRO.3	Find the probability of an outcome using experiments, tree diagrams, and models

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Program Goal VII: Geometry

Learn Geometric Words

2.GEO.LGW.1	Identify and define geometric terminology: shape names, rectangle, triangle, square, trapezoid, hexagon, parallelogram, rhombus, faces, vertices, sides, edges, two-dimensional shapes: circles, triangles, rectangles, squares; three-dimensional shapes: spheres, rectangular boxes, cubes, cones, cylinders, pyramids, or prisms, slide, flip, turns, pentagons, quadrilateral; congruent, symmetrical, similar
2.GEO.LGW..2	Use simple geometric terms such as, faces, vertices, sides, to describe geometric shapes

Identify Geometric Shapes

- 2.GEO.IGS.1 Model geometric shapes by drawing or using everyday materials
- 2.GEO.IGS.2 Identify and describe characteristics of two-dimensional shapes: circles, triangles, rectangles, squares, and three-dimensional shapes: spheres, rectangular boxes, cubes, cones, cylinders, pyramids, or prisms
- 2.GEO.IGS.3 Recognize that squares, rectangles, rhombuses are examples of quadrilaterals
- 2.GEO.IGS.4 Determine if an angle is a right angle
- 2.GEO.IGS.5 Identify shapes that are congruent, symmetrical, and similar

Solve Problems Involving Shapes

- 2.GEO.SPS.1 Find the perimeter of a polygon and the area of simple geometric shapes
- 2.GEO.SPS.2 Locate points outside, inside, and on a plane shape
- 2.GEO.SPS.3 Identify slides, flips, turns (transformation, reflection, rotation)

Construct Geometric Shapes

- 2.GEO.CGS.1 Draw plane and space figures
- 2.GEO.CGS.2 Draw polygons in the coordinate plane and use them to solve problems
- 2.GEO.CGS.3 Divide a shape into two, three, or four equal pieces

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Program Goal VIII: Algebra

Write Expressions and Solve Equations

- 2.ALG.ESE.1 Identify and define mathematical terminology: expression, equation, unknown, variable, solve, value, equal
- 2.ALG.ESE.2 **Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions**
- 2.ALG.ESE.3 Determine if equations involving addition or subtraction are true or false
- 2.ALG.ESE.4 Solve equations using addition and subtraction of non-negative rational numbers
- 2.ALG.ESE.5 Use a variable to represent an unknown quantity
- 2.ALG.ESE.6 Perform arithmetic operations using the Order of Operations

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Second Grade Mathematical Terminology by Domain							
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
Learn the Basics of Whole Numbers: regrouping, even numbers, odd, numbers, greater-than, less-than, equal to, whole numbers, place value, addends, sum, difference, equal, equation, related addition/subtraction fact, ten-frame, take apart, fact families, standard form, expanded form Multiply Whole Numbers: skip count, groups of, repeated addition	Measurement Concepts: ruler, feet, yard, length, mass, metric system, customary system, inches, feet, centimeters, millimeters, grams, kilograms, ounces, pounds, meters Time: hour, minute, hand (clock), analog clock, digital clock, time Money: cent, dollar, penny, dime, nickel, quarter	Use Basic Operations to Solve Problems: operations (addition, subtraction, multiplication, division), place value, reasonable answer, evaluate, model, pattern, data, models	Solve Problems Using Estimation: estimate, sum, difference, rounding, front-end estimation, patterns, approximate, clustering	Make Graphs and Charts: graph, data, number line, picture graph, bar graph, line graph (line plot), interpret, data collection, points on a graph, number pairs, data	Probability: probability, outcome, likelihood, predict, tree diagram, model, possible outcomes	Learn Geometric Words: shape names, rectangle, triangle, square, trapezoid, hexagon, parallelogram, rhombus, faces, vertices, sides, edges, two-dimensional shapes: circles, triangles, rectangles, squares; three-dimensional shapes: spheres, rectangular boxes, cubes, cones, cylinders, pyramids, or prisms, slide, flip, turns, pentagons, quadrilateral, congruent,	Write Expressions and Solve Equations: expression, equation, unknown, variable, solve, value, equal

Second Grade Mathematical Terminology by Domain							
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
<u>Learn the Basics of Fractions:</u> Part, whole, "/" symbol <u>Properties of Numbers</u>: identity property, associative property						symmetrical, similar	

In Spirit and Truth

THIRD GRADE

Diocese of Little Rock
Office of Catholic Schools

Program Goal I: Numbers, Numerations, Operations

In third grade, students will learn to recognize and write whole numbers up to 100,000 in both standard and expanded form, compare and order numbers, and round them to the nearest 10 or 100. They will practice addition, subtraction, multiplication, and division of whole numbers, including word problems and multi-digit calculations. Students will also understand basic fractions, including identifying equivalent fractions and performing operations with fractions that have the same denominator. They will explore decimals, including reading, writing, and comparing them, and perform basic operations with decimals. Lastly, students will learn number properties like the identity and distributive properties, and use calculators for basic operations.

Program Goal II: Measurement

Students will learn measurement concepts such as identifying units of length, mass, and volume in both metric and customary systems (e.g., inches, feet, grams, liters). They will also estimate, convert, and measure length in various units like centimeters, inches, and millimeters. Students will practice telling time to the nearest minute, solving word problems involving time, and working with money by recognizing values, rounding, and performing addition, subtraction, and multiplication with money.

Program Goal III: Problem Solving and Critical Thinking

Third grade students will use basic operations like multiplication and division to solve word problems, explaining their strategies with place value and properties of operations. They will apply critical thinking by choosing the correct operations, checking for necessary information, and justifying their solutions. Additionally, they will use strategies such as acting out problems, drawing models, creating patterns, and working backwards to solve problems, while also learning to write and solve equations.

Program Goal IV: Estimation

In third grade, students will learn to estimate sums, differences, products, and quotients of whole numbers, determining if an answer is reasonable. They will use various strategies such as rounding, compatible numbers, front-end estimation, patterns, clustering, and mental math to solve problems.

Program Goal V: Graphs and Charts

Students will learn to create graphs using given and student-collected data, and understand how to plot numbers on a number line. They will interpret different types of graphs, such as tables, circle graphs, bar graphs, pictographs, and line graphs, and identify or name points on the number line or coordinate plane. Additionally, they will practice graphing ordered pairs in the first quadrant.

Program Goal VI: Statistics and Probability

Third grade students learn basic probability by using terms like "likely," "unlikely," "certain," and "impossible" to describe the chances of different events happening. They explore probability through activities like flipping coins or rolling dice, and learn to express outcomes as "more likely," "less likely," or in simple fractions.

Program Goal VII: Geometry

Students learn geometric terminology like line, line segment, ray, angle types, and various shapes (squares, triangles, rectangles, and more). They can identify and describe two-dimensional and three-dimensional shapes, classify polygons, and recognize symmetry, congruence, and similarity. Students practice solving problems related to perimeter, area, and volume, and learn how to construct and divide shapes into equal parts, using formulas and basic geometry concepts to solve real-world problems.

Program Goal VIII: Algebra

In third grade, students learn to solve simple equations involving addition and subtraction, determine if equations are true or false, and use variables to represent unknowns in expressions and word problems. They practice reading, writing, and evaluating expressions with variables, and identify when two expressions are equivalent. Students also apply the order of operations and the properties of operations to generate equivalent expressions.

THIRD GRADE MATH STANDARDS

Program Goal I: Numbers, Numerations, Operations

Learn the Basics of Whole Numbers

- 3.NNO.BWN.1 Recognize and write the standard form and expanded form for numbers up to 100,000
- 3.NNO.BWN.2 Order or compare numbers greater than 100
- 3.NNO.BWN.3 **Round four-digit numbers to the nearest 10 or 100**
- 3.NNO.BWN.4 **Recognize and understand symbols x, and ÷, <, and >**
- 3.NNO.BWN.5 **Compare up to six-digit numbers using <, > and =**
- 3.NNO.BWN.6 Predict numbers in a pattern
- 3.NNO.BWN.7 Recognize I, V, X, L, C, M as Roman Numerals
- 3.NNO.BWN.8 Learn appropriate name for all operations
- 3.NNO.BWN.9 **Understand place value up to 100,000**
- 3.NNO.BWN.10 Recognize that in a multi-digit whole number a digit in one place represents ten times what it represents in the place to its right

Add Whole Numbers

- 3.NNO.AWN.1 **Add two or more two- to six-digit numbers with regrouping**
- 3.NNO.AWN.2 **Add two or three three-digit numbers with no regrouping**
- 3.NNO.AWN.3 **Add ten more to any two-digit number mentally**
- 3.NNO.AWN.4 Add ten more to any three-digit number 100-900 mentally

Subtract Whole Numbers

- 3.NNO.SWN.1 Subtract two two- to six-digit numbers with regrouping
- 3.NNO.SWN.2 Use subtraction to solve two-step word problems

Multiply Whole Numbers

- 3.NNO.MWN.1 **Multiply a one-digit number by a one-digit number from memory with fluency**
- 3.NNO.MWN.2 **Multiply a one-digit number by two, three, or five using facts to 20**
- 3.NNO.MWN.3 Multiply by 10, 100 and 1000
- 3.NNO.MWN.4 **Understand the basic concept of multiplication using various terminology (skip count, groups of, repeated addition, etc.)**
- 3.NNO.MWN.5 **Count by twos to 100**
- 3.NNO.MWN.6 **Use addition to develop multiplication facts and understand relationships**
- 3.NNO.MWN.7 Multiply a two-, three-, or four-digit number by a one-digit number with Regrouping
- 3.NNO.MWN.8 Use an array to multiply

3.NNO.MWN.9 **Use multiplication to solve word problems**

Divide Whole Numbers

3.NNO.DWN.1 Understand basic concepts of division using various terminology
3.NNO.DWN.2 Use subtraction to develop division concept and understand relationship between division and multiplication, including checking a division problem using multiplication
3.NNO.DWN.3 Divide using facts within 100
3.NNO.DWN.4 Divide a two- to five-digit number by a one-digit number with a remainder
3.NNO.DWN.5 Use division to solve word problems

Learn the Basics of Fractions

3.NNO.LBF.1 Identify and define mathematical terminology
3.NNO.LBF.2 Understand basic concept of fractions (part to whole)
3.NNO.LBF.3 Write a fraction or mixed number for the shaded parts of regions or the indicated parts of groups or objects
3.NNO.LBF.4 Identify the numerator and the denominator of a fraction
3.NNO.LBF.5 Find the factors and multiples of a number and determine if a number is prime or composite
3.NNO.LBF.6 Understand two fractions are equivalent if they are the same size and explain why they are equivalent, and create other equivalent fractions to demonstrate understanding
3.NNO.LBF.7 **Compare fractions with like denominators**
3.NNO.LBF.8 **Write a whole number as a fraction**
3.NNO.LBF.9 Locate fractions or mixed numbers on a number line

Add and Subtract Fractions

3.NNO.ASF.1 **Add and subtract fractions with like denominators**

Learn the Basics of Decimals

3.NNO.LBD.1 Identify and define mathematical terminology
3.NNO.LBD.2 Read, write, compare, and order decimals to thousandths
3.NNO.LBD.3 Round decimals at an introductory level

Add and Subtract Decimals

3.NNO.ASD.1 Add and subtract multi-digit numbers which contain decimals

Properties of Numbers

3.NNO.PON.1 **Recognize and use identity property (one and zero) and distributive property**

Understand and Use a Calculator

3.NNO.CAL.1 Use a calculator for whole number operations

Program Goal II: Measurement

Measurement Concepts

3.MEA.MCO.1 Identify and define mathematical terminology:Length, inch, feet, yard, mile, gallon, cup, pint, quart, ounce, pound, meter, gram, kilogram, kilometer, centimeter, decimeter, milliliter, liter, mass, volume, metric system, customary system, conversion

3.MEA.MCO.2 Decide which of three objects is largest, smallest, longest, or shortest

3.MEA.MCO.3 Determine the appropriate metric unit for measuring:

- **length using inch, foot, yard, or mile**
- length using centimeter, meter, or kilometer
- liquid using liter and milliliter; cup, pint, quart, or gallon
- mass (weight) using gram or kilogram; ounces, pounds, or tons

3.MEA.MCO.4 Estimate lengths in metric and customary systems

3.MEA.MCO.5 Convert between different units of measurement within the same system

Measurement Application

3.MEA.MAP.1 **Measure length using centimeters and informal units**

3.MEA.MAP.2 Measure length using inches, fractions of inches, and millimeters

Time

3.MEA.TIM.1 Identify and define mathematical terminology: elapsed time, day, hour, minute, seconds

3.MEA.TIM.2 **Tell time using minutes**

3.MEA.TIM.3 Identify the use of A.M., P.M., hours in a day, minutes in an hour, seconds in a Minute

3.MEA.TIM.4 Tell elapsed time

3.MEA.TIM.5 Tell and write time to the nearest minute on an analog clock. Solve word problems that involve adding and subtracting time in minutes

Money

3.MEA.MON.1 Identify and define mathematical terminology: penny, nickel, dime, quarter, dollar

3.MEA.MON.2 **Recognize the value of a mixed coin amount**

3.MEA.MON.3 Round money to the nearest dollar, add or subtract amounts of money, make change, and multiply or divide with money

Temperature

3.MEA.TEM.1 Relate temperature to weather conditions

3.MEA.TEM.2 Identify and understand how a thermometer is used to measure temperature in both Fahrenheit and Celsius, specifically how the numbers on a thermometer correspond to temperature

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Program Goal III: Problem Solving and Critical Thinking

Use Basic Operations to Solve Problems

3.PCT.BSP.1 Identify and define mathematical terminology: word problem, strategy, place value, equation, justify, model, pattern, reasoning, critical thinking

3.PCT.BSP.2 Multiply or divide to solve word problems

3.PCT.BSP.3 Explain why addition and subtraction strategies work, using place value, and the properties of operation

3.PCT.BSP.4 Solve various types of two-step word problems including: involving money, involving time intervals using a number line diagram if needed, simple fractions, mixed numbers, factoring, decimals, percents, and multiple addends

Use Critical Thinking Skills to Solve Problems

3.PCT.CSP.1 Solve word problems by using data, choosing the correct operations, and determining if the problem has enough or unnecessary information

3.PCT.CSP.2 Find more than one answer if needed, check if the answer is reasonable, and explain the steps and reasoning used to solve the problem

Use Strategies to Solve Problems

3.PCT.SSP.1 Use a plan to solve problems such as: acts out or use models, use guess and check to solve problems, make a model, diagram, table, graph, or list in order to solve problems, find a pattern to solve problems, and works backwards to solve problems

3.PCT.SSP.2 Write and solve an equation

3.PCT.SSP.3 Generate and identify features of a pattern

Program Goal IV: Estimation

Solve Problems Using Estimation

3.EST.SPE.1 Identify and define mathematical terminology: estimate, sum, difference, product, quotient, reasonable, rounding, compatible numbers, front-end estimation, clustering, mental math

3.EST.SPE.2 Understand concept of estimation

3.EST.SPE.3 Estimate a sum, difference, product, or quotient of whole numbers and estimate to determine if an answer is reasonable

3.EST.SPE.4	Solve problems using rounding, compatible numbers, front-end estimation, patterns, clustering, and mental math

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Program Goal V: Graphs and Charts

Make Graphs and Charts

3.GAC.MGC.1	Identify and define mathematical terminology: graph, data, plot, number line, table, circle graph, bar graph, pictograph, line graph, ordered pairs, coordinate plane
3.GAC.MGC.2	Construct appropriate type of graph from given data and student-collected data
3.GAC.MGC.3	Understand the number line as a dense set of points representing numbers
3.GAC.MGC.4	Graph a set of numbers (points) on the number line

Interpret Graphs and Charts

3.GAC.IGC.1	Interpret a table or chart and circle graph
3.GAC.IGC.2	**Interpret a bar graph, pictograph, or line graph**
3.GAC.IGC.3	Write the number pair for a point or name the point for a number pair
3.GAC.IGC.4	Name the point for an ordered pair on the number plane and graph ordered pairs
3.GAC.IGC.5	Represent problems by graphing points in first quadrant

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Program Goal VI: Statistics and Probability

Probability

3.SAP.PRO.1	Identify and define mathematical terminology: probability, likely, unlikely, certain, impossible, outcome, chance, fraction, more likely, less likely
3.SAP.PRO.2	Understand basics of probability by learning to use simple terms like "likely," "unlikely," "certain," and "impossible" to describe the chances of different outcomes
3.SAP.PRO.3	Develop an understanding of basic probability outcomes as fractions or simple statements like "more likely" or "less likely"

Program Goal VII: Geometry

Learn Geometric Words

3.GEO.LGW.1	Identify and define geometric terminology: line, line segment, ray, intersecting lines, parallel lines, perpendicular lines, angle, right, acute, obtuse, polygon, quadrilateral, parallelogram, triangle, square, rectangle, rhombus, pentagon, hexagon, octagon, trapezoid, congruent/similar, symmetry, perimeter, area, volume, two-dimensional shapes: circles, triangles, rectangles, squares, three-dimensional shapes: spheres, rectangular boxes, cubes, cones, cylinders, pyramids, prisms
3.GEO.LGW.2	Name types of polygons and use simple geometric terms

Identify Geometric Shapes

3.GEO.IGS.1	**Model geometric shapes by drawing or using everyday materials**
3.GEO.IGS.2	Identify and describe characteristics of two-dimensional shapes: circles, triangles, rectangles, squares, and three-dimensional shapes: spheres, rectangular boxes, cubes, cones, cylinders, pyramids, or prisms
3.GEO.IGS.3	**Recognize that squares, rectangles, rhombUse are examples of quadrilaterals**
3.GEO.IGS.4	Identify points, line segments, angles, lines, rays, planes, perpendicular lines, or perpendicular planes
3.GEO.IGS.5	Determine if an angle is a right angle, acute angle, or obtuse angle
3.GEO.IGS.6	Classify triangles, special quadrilaterals, and regular polygons
3.GEO.IGS.7	Identify shapes that are symmetrical, congruent, and similar

Solve Problems Involving Shapes

3.GEO.SPS.1	Find the perimeter of a polygon and find the area of geometric shapes
3.GEO.SPS.2	Find the volume of right triangular prisms
3.GEO.SPS.3	**Locate points outside, inside, and on a plane shape**
3.GEO.SPS.4	Know geometric formulas by memory

Construct Geometric Shapes

3.GEO.CGS.1	Draw plane and space figures
3.GEO.CGS.2	Draw polygons in the coordinate plane and use to solve problems
3.GEO.CGS.3	**Divide a shape into 2, 3, or 4 equal pieces**

Program Goal VIII: Algebra

Write Expressions and Solve Equations

3.ALG.ESE.1	Identify and define mathematical terminology: equation, variable, expression, unknown, order of operations, equivalent expressions

3.ALG.ESE.2	Determine if equations involving addition or subtraction are true or false
3.ALG.ESE.3	Solve equations using addition and subtraction of non-negative rational numbers
3.ALG.ESE.4	Use a variable to represent an unknown quantity in expressions, equations, and word problems
3.ALG.ESE.5	Read, write, and evaluate expressions with variables
3.ALG.ESE.6	Identify when two expressions are equivalent
3.ALG.ESE.7	Perform arithmetic operations using the Order of Operations
3.ALG.ESE.8	Apply the properties of operations to generate equivalent expressions

Third Grade Mathematical Terminology by Domain							
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
Learn the Basics of Whole Numbers: whole number, standard-form, expanded form, place value Multiply Whole Numbers: multiplication, skip count, groups of, repeated addition, array Divide Whole Numbers: division Learn the Basics of Fractions: fraction, equivalent fractions, denominator, numerator, prime, composite	Measurement Concepts: Length, inch, feet, yard, mile, gallon, cup, pint, quart, ounce, pound, meter, gram, kilogram, kilometer, centimeter, decimeter, milliliter, liter, mass, volume, metric system, customary system, conversion Time: elapsed time, day, hour, minute, seconds Money: penny, nickel, dime, quarter, dollar	Use Basic Operations to Solve Problems: word problem, strategy, place value, equation, justify, model, pattern, reasoning, critical thinking	Solve Problems Using Estimation: estimate, sum, difference, product, quotient, reasonable, rounding, compatible numbers, front-end estimation, clustering, mental math	Make Graphs and Charts: graph, data, plot, number line, table, circle graph, bar graph, pictograph, line graph, ordered pairs, coordinate plane	Probability: probability, likely, unlikely, certain, impossible, outcome, chance, fraction, more likely, less likely	Learn Geometric Words: line, line segment, ray, intersecting lines, parallel lines, perpendicular lines, angle, right, acute, obtuse, polygon, quadrilateral, parallelogram, triangle, square, rectangle, rhombus, pentagon, hexagon, octagon, trapezoid, congruent/similar, symmetry, perimeter, area, volume, two-dimensional shapes: circles, triangles, rectangles, squares, three-dimensional shapes: spheres, rectangular	Write Expressions and Solve Equations: equation, variable, expression, unknown, order of operations, equivalent expressions

Third Grade Mathematical Terminology by Domain							
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
Learn the Basics of Decimals: decimal Properties of Numbers: identity property, distributive property						boxes, cubes, cones, cylinders, pyramids, prisms	

In Spirit and Truth

FOURTH GRADE

Diocese of Little Rock
Office of Catholic Schools

Program Goal I: Numbers, Numerations, Operations
Students will develop a comprehensive understanding of whole numbers up to 1,000,000, including ordering, comparing, and writing numbers in standard, expanded, and word form. They will perform addition, subtraction, multiplication, and division with multi-digit numbers, using various strategies and properties of operations. Students will explore fractions by finding equivalent fractions, comparing, and adding or subtracting fractions with unlike denominators, and working with mixed numbers and improper fractions. They will also learn to multiply fractions and solve related word problems. Students will gain a foundational understanding of decimals, including rounding, ordering, and converting between fractions and decimals. Additionally, they will work with exponents, use calculators for fraction, decimal, and whole number operations, and apply all operations to solve word problems.

Program Goal II: Measurements
Fourth grade students will learn U.S. customary and metric measurement terms, including units for length, weight, and liquid. They will determine the appropriate units for different types of measurements, such as centimeters, meters, grams, and gallons, and estimate lengths in both metric and customary systems. Students will practice converting between units within the same system and measure lengths using millimeters and fractions of inches. They will understand time concepts like hours, minutes, and seconds, and solve problems involving time intervals. In money, students will learn to round to the nearest dollar, add and subtract with money, make change, and solve problems involving multiplication and division with money.

Program Goal III: Problem Solving and Critical Thinking
Students will solve word problems involving fractions, mixed numbers, decimals, time intervals, money, and multi-step calculations. They will explain their strategies for addition and subtraction, using place value and operation properties. Students will apply critical thinking by finding multiple answers, using data, and choosing the correct operations. They will evaluate if a problem has enough information and explain their reasoning. Students will also use various strategies, such as acting out problems, drawing models, finding patterns, and working backwards to solve problems. They will practice writing and solving equations and identifying patterns.

Program Goal III: Problem Solving and Critical Thinking
Fourth grade students will solve word problems involving fractions, mixed numbers, decimals, time intervals, money, and multi-step calculations. They will explain their strategies for addition and subtraction, using place value and operation properties. Students will apply critical thinking by finding multiple answers, using data, and choosing the correct operations. They will evaluate if a problem has enough information and explain their reasoning. Students will also use various strategies, such as acting

out problems, drawing models, finding patterns, and working backwards to solve problems. They will practice writing and solving equations and identifying patterns.

Program Goal IV: Estimation
Students in fourth-grade will understand the concept of estimation and use it to estimate sums, differences, products, and quotients of whole numbers and decimals, including money. They will determine if an answer is reasonable by estimating and apply various strategies such as rounding, compatible numbers, front-end estimation, patterns, clustering, and mental math to solve problems.

Program Goal V: Graphs and Charts
Students will learn to create and interpret various types of graphs, including picture graphs, bar graphs, circle graphs, and line graphs, using both given and student-collected data. They will understand the number line as a set of points and graph numbers and inequalities on it. Students will also interpret tables, charts, and graphs, and represent problems by graphing ordered pairs in the first quadrant.

Program Goal VI: Statistics and Probability
Fourth-grade students will learn to find and understand the mean (average), median, mode, and range of a set of numbers. Students will explore basic probability concepts, using experiments, tree diagrams, and models to predict outcomes. They will also learn key probability terms and how to apply them.

Program Goal VII: Geometry
Students will learn key geometric terms and concepts, including classifications of quadrilaterals (e.g., trapezoid, parallelogram, rectangle, square, rhombus) and triangles (e.g., right, acute, obtuse). They will explore 2D shapes (e.g., circles, triangles, squares) and 3D shapes (e.g., spheres, cubes, cones), as well as classify angles (right, acute, obtuse) and polygons. Students will understand congruence and similarity between shapes and identify symmetrical figures. They will use formulas to calculate perimeter, area, and volume for various geometric shapes, memorize key geometric formulas, and apply them in real-world problem-solving. Students will also practice drawing geometric shapes, including polygons, and use the coordinate plane to solve related problems.

Program Goal VIII: Algebra
In fourth grade, students will build a foundation in algebra by identifying key mathematical terms and factors of whole numbers. They will write and solve equations involving addition, subtraction, multiplication, and division, and assess the validity of equations. Students will work with parentheses, brackets, and braces in numerical expressions and learn to evaluate them. They will also learn to use variables to represent unknown quantities and evaluate expressions with variables. Students will explore whole-number exponents and solve real-world problems by evaluating expressions at specific values. Throughout these lessons, students will apply the order of operations and use the properties of operations to generate equivalent expressions.

FOURTH GRADE MATH STANDARDS

Program Goal I: Numbers, Numerations, Operations

Learn the Basics of Whole Numbers

4.NNO.BWN.1 Identify and define mathematical terminology: whole numbers, standard form, expanded form, word form, place value

4.NNO.BWN.2 **Recognize and write the standard form, word form, and expanded form for numbers greater than up to 1,000,000**

4.NNO.BWN.3 **Order or compare numbers greater than 100**

4.NNO.BWN.4 **Compare two- and three-digit, up to seven-digit, numbers using <, >, and =**

4.NNO.BWN.5 **Predict numbers in a pattern**

4.NNO.BWN.6 Recognize I, V, X, L, C, M as Roman Numerals

4.NNO.BWN.7 Learn appropriate names for all operations

4.NNO.BWN.8 **Recognize that in a multi-digit whole number a digit in one place represents ten times what it represents in the place to its right**

4.NNO.BWN.9 Recognize that in a multi-digit number, a digit in one place represents 1/10 of what it represents in the place to its left

4.NNO.BWN.10 **Determine whether a whole number is prime or composite**

Add Whole Numbers

4.NNO.AWN.1 Identify and define mathematical terminology: Associative Property, Commutative Property, Identity Property, fact, sum, addends, equations, Expressions

4.NNO.AWN.2 Fluently add numbers to 1000

4.NNO.AWN.3 **Add ten more to any three-digit number 100-900 mentally**

Subtract Whole Numbers

4.NNO.SWN.1 Identify and define mathematical terminology: difference

4.NNO.SWN.2 **Subtract two-digit to six-digit numbers with regrouping**

Multiply Whole Numbers

4.NNO.MWN.1 Identify and define mathematical terminology: Property of Zero, Distributive Property, factors, product, fact, array, multiples, area

4.NNO.MWN.2 **Multiply a two-, three-, or four-digit number by a one-digit number with Regrouping**

4.NNO.MWN.3 **Use an array to multiply**

4.NNO.MWN.4 **Multiply a two-digit number by a two-digit number**

4.NNO.MWN.5 Multiply a multi-digit number by another multi-digit number (three or more digits)
4.NNO.MWN.6 **Multiply by 10, 100, and 1000**

Divide Whole Numbers

4.NNO.DWN.1 Identify and define mathematical terminology: quotient dividend, divisor, remainder
4.NNO.DWN.2 **Understand basic concepts of division using various terminology**
4.NNO.DWN.3 Use subtraction to develop division concept and understand the relationship between division and multiplication
4.NNO.DWN.4 Divide using facts within 100
4.NNO.DWN.5 **Divide a two-digit number by a one-digit number with a remainder**
4.NNO.DWN.6 **Divide a three- to five-digit number by a one-digit number with a remainder**
4.NNO.DWN.7 Divide a two- to four-digit number by a two-digit number
4.NNO.DWN.8 Divide a multi-digit number by a multi-digit number
4.NNO.DWN.9 Check a division problem using multiplication
4.NNO.DWN.10 Divide by 10, 100, and 1000
4.NNO.DWN.11 Learn rules for divisibility for numbers two, three, five, and ten
4.NNO.DWN.12 **Use division to solve word problems**

Learn the Basics of Fractions

4.NNO.LBF.1 Identify and define mathematical terminology: fraction, equivalent fraction, denominator, numerator, equivalent, mixed numbers, improper fractions, fraction, reduced fractions, greatest common factor, least common multiple
4.NNO.LBF.2 Understand basic concept of fractions (part-to-whole)
4.NNO.LBF.3 **Write a fraction or mixed number for the shaded parts of regions or the indicated parts of groups or objects**
4.NNO.LBF.4 **Identify the numerator and the denominator of a fraction**
4.NNO.LBF.5 Find the least common multiple of two or more numbers
4.NNO.LBF.6 **Find the factors and multiples of a number**
4.NNO.LBF.7 Find the greatest common factor of two or more numbers less than 100
4.NNO.LBF.8 Write the simplest form for a fraction
4.NNO.LBF.9 **Understand two fractions are equivalent if they are the same size and explain why they are equivalent and create other equivalent fractions**
4.NNO.LBF.10 Compare fractions with unlike denominators
4.NNO.LBF.11 Write an improper fraction as a mixed number and a mixed number as an improper fraction
4.NNO.LBF.12 Locate fractions or mixed numbers on a number line

Add and Subtract Fractions

4.NNO.ASF.1 Add and subtract fractions with unlike denominators
4.NNO.ASF.2 **Add mixed numbers with like denominators**

4.NNO.ASF.3 Subtract mixed numbers with like denominators

Multiply Fractions

4.NNO.MFR.1 Find the fractional part of a whole number
4.NNO.MFR.2 **Multiply a whole number and a fraction**
4.NNO.MFR.3 Interpret multiplication as resizing: multiplying by fractions makes the size larger or smaller
4.NNO.MFR.4 Solve word problems involving multiplication of a fraction

Learn the Basics of Decimals

4.NNO.LBD.1 Read and write decimals to thousandths
4.NNO.LBD.2 **Write a fraction or mixed number with denominators of 10, 100, 1000 as a decimal**
4.NNO.LBD.3 Write a decimal as a fraction or a mixed number
4.NNO.LBD.4 Round decimals
4.NNO.LBD.5 Compare and order decimals to thousandths

Add and Subtract Decimals

4.NNO.ASD.1 Add and subtract multi-digit numbers which contain decimals

Exponents

4.NNO.EXP.1 Identify and define mathematical terminology: perfect square, square root
4.NNO.EXP.2 Find perfect squares and their square roots

Calculator

4.NNO.CAL.1 **Use a calculator for whole number operations**
4.NNO.CAL.2 Use a calculator for decimal and fraction number operations

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Program Goal II: Measurement

Measurement Concepts

4.MEA.MCO.1 Identify and define mathematical terminology: customary units, metric units, length, weight, volume, centimeters, meters, grams, gallons, millimeters, inches, conversion
4.MEA.MCO.2 Determine the appropriate metric unit for measuring:

- length using centimeter, meter, or kilometer, millimeters
- liquid measure using liter and milliliter
- **liquid using cup, pint, quart, or gallon**
- mass (weight) using gram or kilogram, tons
- **mass (weight) using ounces or pounds**

4.MEA.MCO.3 Estimate lengths in metric and customary systems such as inches, centimeters, feet, yard, meters and continued progression
4.MEA.MCO.4 Converts between different units of measurement within the same system

Measurement Application

4.MEA.MAP.1 Measures length using millimeters
4.MEA.MAP.2 **Measures length using fractions of inches**

Time

4.MEA.TIM.1 Identify and define mathematical terminology: time, hours, minutes, seconds
4.MEA.TIM.2 **Identify hours in a day, minutes in an hour, seconds in a minute**
4.MEA.TIM.3 **Solve real world problems involving time intervals that may cross the hour**

Money

4.MEA.MON.1 Identify and define mathematical terminology: change (money)
4.MEA.MON.2 **Round money to the nearest dollar**
4.MEA.MON.3 **Add or subtract with money and make change**
4.MEA.MON.4 Multiply or divide with money

Program Goal III: Problem Solving and Critical Thinking

Use Basic Operations to Solve Problems

4.PCT.BSP.1 Identify and define mathematical terminology: multi-step problems, time intervals, place value, strategy, critical thinking, data, operations, pattern, reasoning, modeling, evaluate information, explain reasoning
4.PCT.BSP.2 Solve word problems involving fractions, mixed numbers, factoring, multistep, decimals, and multiple addends
4.PCT.BSP.3 **Explain why addition and subtraction strategies work, using place value and the properties of operation**
4.PCT.BSP.4 **Solve various types of word problems involving multiplication and division, time intervals using a number line diagram if needed, and involving money**

Use Critical Thinking Skills to Solve Problems

4.PCT.CSP.1 Find more than one answer
4.PCT.CSP.2 Use data to solve word problems
4.PCT.CSP.3 **Chooses correct operations to solve word problems**
4.PCT.CSP.4 Determine if a problem has sufficient information or unnecessary information, or if an answer is reasonable or not and be able to explain how a problem is worked

Use Strategies to Solve Problems

4.PCT.SSP.1	Use a plan to solve problems such as: **acts out or use models,** use guess and check to solve problems, makes a model, diagram, table, graph, or list in order to solve problems, find a pattern to solve problems, and works backwards to solve problems
4.PCT.SSP.2	Write and solve an equation
4.PCT.SSP.3	**Generate and identify features of a pattern**

Program Goal IV: Estimation

Solve Problems Using Estimation

4.EST.SPE.1	Identify and define mathematical terminology: estimation, sum, difference, product, quotient, reasonable answer, rounding, compatible numbers, front-end estimation, clustering, mental math, patterns
4.EST.SPE.2	**Understand concept of estimation**
4.EST.SPE.3	Estimate a sum, difference, product, or quotient of whole numbers, decimals, whole number and a decimal (including money)
4.EST.SPE.4	Estimate to determine if an answer is reasonable
4.EST.SPE.5	Solve problems using rounding, compatible numbers, front-end estimation, patterns, clustering, and mental math

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Program Goal V: Graphs and Charts

Make Graphs and Charts

4.GAC.MGC.1	Identify and define mathematical terminology: graph, data, table, circle graph, bar graph, pictograph, line graph, ordered pairs, coordinate plane, number line, inequalities, point, interpretation
4.GAC.MGC.2	Constructs appropriate type of graph from given data and student-collected data
4.GAC.MGC.3	Understand the number line as a dense set of points representing numbers
4.GAC.MGC.4	Graph a set of numbers (points) on the number line
4.GAC.MGC.5	Graph inequalities on the number line

Interpret Graphs and Charts

4.GAC.IGC.1	**Interpret a picture graph**
4.GAC.IGC.2	Interpret a table, chart, and circle graph
4.GAC.IGC.3	**Interpret a bar graph, pictograph, and line graph**
4.GAC.IGC.4	Write the number pair for a point and name the point for a number pair

4.GAC.IGC.5	Name the point for an ordered pair on the number plane and graphs ordered pairs
4.GAC.IGC.6	Represent problems by graphing points in first quadrant

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Program Goal VI: Statistics and Probability

Statistics

4.SAP.STA.1	Identify and define mathematical terminology: mean, median, mode, range
4.SAP.STA.2	Determine the range, mode, average (mean), and median of a group of numbers

Probability

4.SAP.PRO.1	Identify and define mathematical terminology: probability, likelihood, outcome, tree diagram, experiment, fractional probability
4.SAP.PRO.2	Understand basic concepts of probability and be able to predict an outcome based on probability using experiments, tree diagrams, and models

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Program Goal VII: Geometry

Learn Geometric Words

4.GEO.LGW.1	Identify and define geometric terminology: quadrilaterals: trapezoid, parallelogram, rectangle, square, rhombus and triangles: right, acute, obtuse, angle, isosceles, scalene, equilateral, congruent, similar, symmetry, perimeter, area, volume, polygon, two-dimensional shapes, three-dimensional shapes, circle, spheres, cubes, cones

Identify Geometric Shapes

4.GEO.IGS.1	Identify circles, triangles, rectangles, squares, and describe attributes of each
4.GEO.IGS.2	**Recognize that squares, rectangles, rhombus are examples of quadrilaterals**
4.GEO.IGS.3	**Identify points, line segments, angles, lines, rays, planes, perpendicular lines, or perpendicular planes**
4.GEO.IGS.4	**Determine if an angle is a right angle, acute angle, or obtuse angle**
4.GEO.IGS.5	**Classify triangles, special quadrilaterals, and regular polygons**
4.GEO.IGS.6	Identify and describe characteristics of spheres, rectangular boxes, cubes, cones, cylinders, pyramids, or prisms
4.GEO.IGS.7	Identify shapes that are symmetrical
4.GEO.IGS.8	Identify congruent shapes
4.GEO.IGS.9	Identify similar shapes

4.GEO.IGS.10 Determine the difference between congruent shapes and similar shapes

Solve Problems Involving Shapes

4.GEO.SPS.1 Use a formula to find the perimeter or area of a given polygon, the area of a geometric shapes and the volume of geometric solids

4.GEO.SPS.2 Know geometric formulas by memory: perimeter, area, and volume

Construct Geometric Shapes

4.GEO.CGS.1 Draw plane and space figures

4.GEO.CGS.2 Draw polygons in the coordinate plane and use to solve problems

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Program Goal VIII: Algebra

Use Fundamentals of Algebra

4.ALG.UFA.1 Identify and define mathematical terminology: algebra, factors, equations, variable, expression, parentheses, brackets, evaluate, exponents, order of operations, simplify, equivalent expressions

4.ALG.UFA.2 **Find factors of whole numbers**

Write Expressions and Solve Equations

4.ALG.ESE.1 **Determine if equations involving addition or subtraction are true or false**

4.ALG.ESE.2 **Solve equations using addition and subtraction of non-negative rational numbers**

4.ALG.ESE.3 **Solve equations using multiplication and division of non-negative numbers**

4.ALG.ESE.4 Use parenthesis, brackets, or braces in numerical expressions, and evaluate these expressions with these symbols

4.ALG.ESE.5 **Use a variable to represent an unknown quantity**

4.ALG.ESE.6 Read, write, and evaluate expressions with variables, including being able to identify when two expressions are equivalent

4.ALG.ESE.7 Write and evaluate numerical expressions involving whole-number exponents

4.ALG.ESE.8 Write, read and evaluate expressions in which letters stand for numbers in statements involving one or more operations

4.ALG.ESE.9 Evaluate expressions at specific values of their variables including expressions that arise from formulas used in real-world problems

4.ALG.ESE.10 Perform arithmetic operations using the Order of Operations

4.ALG.ESE.11 Apply the properties of operations to generate equivalent expressions

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Fourth Grade Mathematical Terminology by Domain							
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
Learn the Basics of Whole Numbers: whole numbers, standard form, expanded form, word form, place value Add Whole Numbers: Associative Property, Commutative Property, Identity Property, fact, sum, addends, equations, expressions Subtract Whole Numbers: difference Multiply Whole Numbers: Property of Zero, Distributive Property, factors, product, fact,	Measurement Concepts: customary units, metric units, length, weight, volume, centimeters, meters, grams, gallons, millimeters, inches, conversion Time: time, hours, minutes, seconds Money: change (money)	Use Basic Operations to Solve Problems: multi-step problems, time intervals, place value, strategy, critical thinking, data, operations, pattern, reasoning, modeling, evaluate information, explain reasoning	Solve Problems Using Estimation: estimation, sum, difference, product, quotient, reasonable answer, rounding, compatible numbers, front-end estimation, clustering, mental math, patterns	Make Graphs and Charts: graph, data, table, circle graph, bar graph, pictograph, line graph, ordered pairs, coordinate plane, number line, inequalities, point, interpretation	Statistics: mean, median, mode, range Probability: probability, likelihood, outcome, tree diagram, experiment, fractional probability	Learn Geometric Words: quadrilaterals: trapezoid, parallelogram, rectangle, square, rhombus and triangles: right, acute, obtuse, angle, isosceles, scalene, equilateral, congruent, similar, symmetry, perimeter, area, volume, polygon, two-dimensional shapes, three-dimensional shapes, circle, spheres, cubes, cones	Use Fundamentals of Algebra: algebra, factors, equations, variable, expression, parentheses, brackets, evaluate, exponents, order of operations, simplify, equivalent expressions

Fourth Grade Mathematical Terminology by Domain							
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
array, multiples, area Divide Whole Numbers: quotient dividend, divisor, remainder Learn the Basics of Fractions: fraction, equivalent fraction, denominator, numerator, equivalent, mixed numbers, improper fractions, fraction, reduced fractions, greatest common factor, least common multiple Exponents: perfect square, square root							

In Spirit and Truth

FIFTH GRADE

Diocese of Little Rock
Office of Catholic Schools

Program Goal I: Numbers, Numerations, Operations
In fifth grade, students will strengthen their understanding of whole numbers, including Roman numerals up to 1,000, mathematical operations, and place value. They will focus on multiplying and dividing multi-digit numbers, including three-digit by two-digit and multi-digit by multi-digit operations. Students will explore division by 10, 100, and 1,000, as well as apply divisibility rules for 2, 3, 5, 6, 9, and 10.

Students will also work with fractions, simplifying, comparing, and converting between mixed numbers and improper fractions. They will perform operations on fractions (addition, subtraction, multiplication, division) and solve related word problems. Additionally, they will work with decimals, learning to read, write, round, compare, and perform operations. Students will also convert between fractions, decimals, and percentages and solve percent-related problems.

Fifth graders will explore properties of numbers, including inverse properties, and use positive and negative numbers in real-world contexts. They will study exponents, including powers of 10, and perform calculations with decimals, fractions, and percents using a calculator.

Program Goal II: Measurements
In fifth grade, students will learn key terminology related to measurement and determine the appropriate metric units for length, liquid, and mass (millimeters, centimeters, meters, kilometers, liters, milliliters, grams, kilograms, ounces, pounds, tons). They will estimate lengths in both metric and customary systems and convert between units using ratio reasoning. Students will also measure lengths, angles, and volume, understanding how volume relates to multiplication. They will learn to tell elapsed time and measure temperature in both Fahrenheit and Celsius. In consumer math, students will solve problems involving money, including calculating discounts, taxes, and making price comparisons or cost analyses.

Program Goal III: Problem Solving and Critical Thinking
Fifth graders will apply critical thinking to solve word problems involving fractions, decimals, percents, mixed numbers, and multiple addends. They will find multiple solutions, use data to solve problems, and assess whether the information is sufficient. Students will explain their reasoning and steps clearly. They will use strategies such as guess and check, pattern recognition, and working backwards. Students will also use models, diagrams, tables, and graphs to solve problems and check their work by substituting simpler numbers. They will write and solve equations and analyze patterns. Students will apply formulas to solve real-world problems related to rates, unit rates, time, and distance.

Program Goal IV: Estimation

In Spirit and Truth

FIFTH GRADE

Diocese of Little Rock
Office of Catholic Schools

Program Goal I: Numbers, Numerations, Operations
In fifth grade, students will strengthen their understanding of whole numbers, including Roman numerals up to 1,000, mathematical operations, and place value. They will focus on multiplying and dividing multi-digit numbers, including three-digit by two-digit and multi-digit by multi-digit operations. Students will explore division by 10, 100, and 1,000, as well as apply divisibility rules for 2, 3, 5, 6, 9, and 10.

Students will also work with fractions, simplifying, comparing, and converting between mixed numbers and improper fractions. They will perform operations on fractions (addition, subtraction, multiplication, division) and solve related word problems. Additionally, they will work with decimals, learning to read, write, round, compare, and perform operations. Students will also convert between fractions, decimals, and percentages and solve percent-related problems.

Fifth graders will explore properties of numbers, including inverse properties, and use positive and negative numbers in real-world contexts. They will study exponents, including powers of 10, and perform calculations with decimals, fractions, and percents using a calculator.

Program Goal II: Measurements
In fifth grade, students will learn key terminology related to measurement and determine the appropriate metric units for length, liquid, and mass (millimeters, centimeters, meters, kilometers, liters, milliliters, grams, kilograms, ounces, pounds, tons). They will estimate lengths in both metric and customary systems and convert between units using ratio reasoning. Students will also measure lengths, angles, and volume, understanding how volume relates to multiplication. They will learn to tell elapsed time and measure temperature in both Fahrenheit and Celsius. In consumer math, students will solve problems involving money, including calculating discounts, taxes, and making price comparisons or cost analyses.

Program Goal III: Problem Solving and Critical Thinking
Fifth graders will apply critical thinking to solve word problems involving fractions, decimals, percents, mixed numbers, and multiple addends. They will find multiple solutions, use data to solve problems, and assess whether the information is sufficient. Students will explain their reasoning and steps clearly. They will use strategies such as guess and check, pattern recognition, and working backwards. Students will also use models, diagrams, tables, and graphs to solve problems and check their work by substituting simpler numbers. They will write and solve equations and analyze patterns. Students will apply formulas to solve real-world problems related to rates, unit rates, time, and distance.

Program Goal IV: Estimation

Students will use estimation strategies to solve problems involving sums, differences, products, and quotients of whole numbers, decimals, and fractions, including money. They will estimate percentages and apply strategies like rounding, compatible numbers, front-end estimation, patterns, and mental math to check the reasonableness of their answers.

Program Goal V: Graphs and Charts

In fifth grade, students will construct and interpret various graphs and charts. They will create graphs from given or collected data, graph inequalities on a number line, and interpret tables, charts, and circle graphs. Students will also work with scale drawings, graph ordered pairs on a coordinate plane, and make predictions based on data. They will identify misleading information in graphs and represent problems visually by graphing points in the first quadrant.

Program Goal VI: Statistics and Probability

Students will learn basic statistics, including key terms like range, mode, mean, and median, and apply them to analyze data. They will calculate probabilities and predict outcomes using models, experiments, and tree diagrams. Students will understand basic probability concepts and determine the likelihood of specific events.

Program Goal VII: Geometry

In geometry, students will learn key terms such as polygons, symmetry, and basic geometric shapes. They will describe the attributes of shapes like circles, triangles, rectangles, squares, and 3D shapes such as spheres, cubes, and cylinders. Students will calculate the perimeter, area, and circumference of 2D shapes and the volume and surface area of 3D solids. They will apply geometric formulas to real-world problems and practice drawing shapes on the coordinate plane to enhance geometric reasoning and problem-solving skills.

Program Goal VIII: Algebra

Fifth-grade students will build a foundation in algebra, learning key terms and concepts such as absolute value, variables, and the order of operations. They will simplify expressions, solve addition and subtraction equations, and practice evaluating expressions with variables, parentheses, and exponents. Students will identify equivalent expressions, write expressions to represent calculations, and apply algebraic reasoning to solve real-world problems. They will explore how to generate equivalent expressions and use these skills to solve equations.

FIFTH GRADE MATH STANDARDS

Program Goal I: Numbers, Numerations, Operations

Learn the Basics of Whole Numbers

5.NNO.BWN.1 Identify and define mathematical terminology: Roman Numerals, place value, multi-digit numbers, multiplication, division, rounding, negative numbers, positive numbers

5.NNO.BWN.2 **Recognizes I, V, X, L, C, M as Roman Numerals**

5.NNO.BWN.3 Read and write Roman Numerals through M

5.NNO.BWN.4 Learn appropriate name for all operations

5.NNO.BWN.5 **Recognizes that in a multi-digit number, a digit in one place represents 1/10 of what it represents in the place to its left**

Multiples Whole Numbers

5.NNO.MWN.1 **Multiply a three-digit number by a two-digit number**

5.NNO.MWN.2 **Multiply a three- or four-digit number by a three-digit number**

Divide Whole Numbers

5.NNO.DWN.1 Identify and define mathematical terminology: divisibility rules

5.NNO.DWN.2 **Use subtraction to develop division concept and understand relationship between division and multiplication**

5.NNO.DWN.3 **Divide using facts within 100**

5.NNO.DWN.4 **Divide a two- to four-digit number by a two-digit number**

5.NNO.DWN.5 **Divide a multi-digit number by a multi-digit number**

5.NNO.DWN.6 **Check a division problem using multiplication**

5.NNO.DWN.7 Divide by 10, 100, 1000

5.NNO.DWN.8 Learn rules for divisibility by six and nine (review two, three, four, five, and ten)

5.NNO.DWN.9 Write a remainder as a fraction and as a decimal

Learn the Basics of Fractions

5.NNO.LBF.1 Identify and define mathematical terminology: improper fractions, simplifying fractions, equivalent fractions, reciprocal, fractions, mixed numbers

5.NNO.LBF.2 **Understand basic concept of fractions (part-to-whole)**

5.NNO.LBF.3 Find the least common multiple of two or more numbers

5.NNO.LBF.4 Determine if a number is prime or composite, and write the prime factorization of a number

5.NNO.LBF.5 Find the greatest common factor of two or more numbers less than 100

5.NNO.LBF.6 Write the simplest form for a fraction

5.NNO.LBF.7 **Compare fractions with unlike denominators**
5.NNO.LBF.8 Write a mixed number as a fraction and a fraction as a mixed number
5.NNO.LBF.9 **Locate fractions or mixed numbers on a number line**
5.NNO.LBF.10 **Interpret a fraction as division of the numerator by the denominator**

Add and Subtract Fractions

5.NNO.ASF.1 **Add and subtract fractions with unlike denominators**
5.NNO.ASF.2 **Add mixed numbers with unlike denominators**
5.NNO.ASF.3 **Subtract mixed numbers with like denominators**
5.NNO.ASF.4 Subtract a fraction or a mixed number from a whole number
5.NNO.ASF.5 Subtract mixed numbers with unlike denominators

Multiply Fractions

5.NNO.MFR.1 **Find the fractional part of a whole number**
5.NNO.MFR.2 **Multiply two fractions**
5.NNO.MFR.3 **Multiply a mixed number by a fraction, whole number, or another mixed number**
5.NNO.MFR.4 **Interpret multiplication as scaling (resizing; multiplying by a proper fraction makes the product smaller, improper fraction makes it bigger)**
5.NNO.MFR.5 Solve word problems involving multiplication of a fraction

Divide Fractions

5.NNO.DFR.1 Find the reciprocal of a fraction and relate division by a whole number to multiplication by its reciprocal
5.NNO.DFR.2 Divide fractions and mixed numbers by fractions, whole numbers, or each other, and simplify complex fractions
5.NNO.DFR.3 Solve word problems involving division of a fraction

Learn the Basics of Decimals

5.NNO.LBD.1 Identify and define mathematical terminology: decimals, tenths, hundredths, thousandths
5.NNO.LBD.2 **Read and write decimals to thousandths**
5.NNO.LBD.3 Write a decimal as a fraction or a mixed number
5.NNO.LBD.4 **Round decimals**
5.NNO.LBD.5 **Compare and order decimals to thousandths**

Add and Subtract Decimals

5.NNO.ASD.1 **Add and subtract multi-digit numbers which contain decimals**

Multiply Decimals

5.NNO.MDE.1 **Multiply a decimal by a whole number**
5.NNO.MDE.2 **Multiply two decimals to hundredths**

Divide Decimals

5.NNO.DDE.1 **Divide a decimal by a whole number**
5.NNO.DDE.2 Divide a whole number or a decimal by another decimal
5.NNO.DDE.3 Divide decimal numbers with multiple digits
5.NNO.DDE.4 Write a fraction as a terminating decimal, repeating decimal, or as a decimal rounded to the nearest hundredth

Percents

5.NNO.PER.1 Identify and define mathematical terminology
5.NNO.PER.2 Write fractions with denominators of 100 as percents
5.NNO.PER.3 Write decimals as percents and percents as fractions or decimals
5.NNO.PER.4 Find a percent of a number
5.NNO.PER.5 Find the percent one number is of another number
5.NNO.PER.6 Find a number if the percent of the number is known
5.NNO.PER.7 Understand the relationship between fractions, decimals, and percents

Properties of Numbers

5.NNO.PON.1 Identify and define mathematical terminology: inverse properties
5.NNO.PON.2 Recognize and use inverse property
5.NNO.PON.3 Understand and use positive/negative numbers to represent real-world quantities

Exponents

5.NNO.EXP.1 Identify and define mathematical terminology: exponents, powers of 10, square root, perfect square
5.NNO.EXP.2 Understand raising a base to a positive power
5.NNO.EXP.3 **Recognize, find, multiply, and divide powers of 10**
5.NNO.EXP.4 **Write the standard form for numbers in exponential notation**
5.NNO.EXP.5 Write numbers in expanded notation for numbers in standard notation and vice versa
5.NNO.EXP.6 Find perfect squares and their square roots

Calculator

5.NNO.CAL.1 Use a calculator for decimal, fraction, and percent operations

Program Goal II: Measurement

Measurement Concepts

- 5.MEA.MCO.1 Identify and define mathematical terminology
- 5.MEA.MCO.2 **Determine the appropriate metric unit for measuring:**
  - **length using millimeter, centimeter, meter, or kilometer**
  - **liquid using liter and milliliter; cup, pint, quart, or gallon**
  - **mass (weight) using gram or kilogram; ounces, pounds, tons**
- 5.MEA.MCO.3 **Estimate lengths in metric and customary systems**
- 5.MEA.MCO.4 Convert between different units of measurement within the same system
- 5.MEA.MCO.5 Use ratio reasoning to convert measurement units

Measurement Application

- 5.MEA.MAP.1 Measure length using fractions of inches
- 5.MEA.MAP.2 Measure and draw angles
- 5.MEA.MAP.3 Measure volume and relate volume to multiplication

Time

- 5.MEA.TIM.1 **Tell elapsed time**

Temperature

- 5.MEA.TEM.1 Identify and define mathematical terminology: Fahrenheit, Celcius
- 5.MEA.TEM.2 **Use a thermometer to measure temperature to degrees Fahrenheit or Celsius**

Money

- 5.MEA.MON.1 Identify and define mathematical terminology: discount, price comparison, cost analysis
- 5.MEA.MON.2 **Multiply or divide with money**
- 5.MEA.MON.3 Solve discount and tax problems, price comparison, and cost analysis

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Program Goal III: Problem Solving and Critical Thinking

Use Basic Operations to Solve Problems

- 5.PCT.BSP.1 Identify and define mathematical terminology: critical thinking, multiple solutions, data, modeling, diagrams, tables, graphs, lists, patterns, guess and check, formula, rate, unit rate, time, distance
- 5.PCT.BSP.2 **Solve word problems involving fractions, mixed numbers, factoring, decimals, percents, and multiple addends**

Use Critical Thinking Skills to Solve Problems

5.PCT.CSP.1 Find more than one answer
5.PCT.CSP.2 Use data to solve word problems
5.PCT.CSP.3 Determine if a problem has sufficient information or unnecessary information, able to explain how a problem is worked, and the reasoning of the answer

Use Strategies to Solve Problems

5.PCT.SSP.1 Use a plan to solve problems such as, use guess and check to solve problems, find a pattern to solve problems, and works backwards to solve problems
5.PCT.SSP.2 **Make a model, diagram, table, graph, or list in order to solve problems**
5.PCT.SSP.3 Substitute simpler numbers in order to check operation
5.PCT.SSP.4 Write and solve an equation
5.PCT.SSP.5 Generate and identify features of a pattern

Learn and Apply Formulas

5.PCT.LAF.1 Solve problems involving rate, unit rate, time, and distance

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Program Goal IV: Estimation

Solve Problems Using Estimation

5.EST.SPE.1 Identify and define mathematical terminology: estimation, sum, difference, product, quotient, reasonable answer, rounding, compatible numbers, front-end estimation, clustering, mental math, patterns
5.EST.SPE.2 Estimate a sum, difference, product, or quotient of whole numbers and decimals of a whole number and a decimal (including money)
5.EST.SPE.3 **Estimate to determine if an answer is reasonable**
5.EST.SPE.4 Estimate a sum, difference, product, or quotient of fractions
5.EST.SPE.5 Estimate percents
5.EST.SPE.6 Solve problems using rounding, compatible numbers, front-end estimation, patterns, clustering, and mental math

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Program Goal V: Graphs and Charts

Makes Graphs and Charts

5.GAC.MGC.1 **Construct appropriate type of graph from given data and student-collected data**
5.GAC.MGC.2 **Understand the number line as a dense set of points representing numbers**
5.GAC.MGC.3 **Graph a set of numbers (points) on the number line**

5.GAC.MGC.4 Graph inequalities on the number line

Interpret Graphs and Charts

5.GAC.IGC.1 **Interpret a table, chart, and circle graph**
5.GAC.IGC.2 Interpret a scale drawing
5.GAC.IGC.3 **Write the number pair for a point and name the point for a number pair**
5.GAC.IGC.4 **Name the point for an ordered pair on the number plane and graphs ordered pairs**
5.GAC.IGC.5 Make predictions and interpret misleading information from a graph
5.GAC.IGC.6 **Represent problems by graphing points in first quadrant**

Program Goal VI: Statistics and Probability

Statistics

5.SAP.STA.1 Identify and define mathematical terminology: mean, median, mode, range
5.SAP.STA.2 Find the range, mode, average/mean, and median of a group of numbers

Probability

5.SAP.PRO.1 Identify and define mathematical terminology: probability, outcome, likelihood, tree diagram, experiment, prediction, fractional probability
5.SAP.PRO.2 Understand basic concepts of probability and predict an outcome based on probability using experiments, tree diagrams, and models

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Program Goal VII: Geometry

Learn Geometric Words

5.GEO.LGW.1 Identify and define geometric terminology: polygon, circle, triangle, rectangle, square, sphere, cube, cylinder, symmetry, congruence, similar shapes, perimeter, area, circumference, volume, surface area, coordinate plane, 2D shapes, 3D shapes, angle, acute, obtuse, right
5.GEO.LGW.2 **Name types of polygons and use simple geometric terms**

Identify Geometric Shapes

5.GEO.IGS.1 **Identify circles, triangles, rectangles, squares, and describe attributes of each**
5.GEO.IGS.2 **Identify and describe characteristics of spheres, rectangular boxes, cubes, cones, cylinders, pyramids, or prisms**
5.GEO.IGS.3 **Identify shapes that are symmetrical and similar**

5.GEO.IGS.4 Identify congruent shapes and determine the difference between congruent shapes and similar shapes

5.GEO.IGS.5 Identify base and corresponding altitude height for triangles and special quadrilaterals

Solve Problems Involving Shapes

5.GEO.SPS.1 **Find the perimeter of a polygon**

5.GEO.SPS.2 Find the area and circumference of a circle and find the area of other geometric shapes

5.GEO.SPS.3 Find the surface area of geometric solids using nets and find the volume of geometric solids (rectangular prisms)

5.GEO.SPS.4 Know geometric formulas by memory: perimeter, area, circumference, surface area, and volume

Constructs Geometric Shapes

5.GEO.CGS.1 **Draw plane and space figures**

5.GEO.CGS.2 **Draw polygons in the coordinate plane and use to solve problems**

Program Goal VIII: Algebra

Use Fundamentals of Algebra

5.ALG.UFA.1 Identify and define mathematical terminology: absolute value, order of operations, expression, equation, like terms, variables, parentheses, brackets, exponents, evaluate, equivalent expressions, substitution

5.ALG.UFA.2 Find the opposite of a number

5.ALG.UFA.3 Understand absolute value as distance from zero on a number line

5.ALG.UFA.4 Understand and use the Order of Operations

Write Expressions and Solve Equations

5.ALG.ESE.1 Solve addition and subtraction equations by combining like terms

5.ALG.ESE.2 Use parentheses, brackets, or braces in numerical expressions, and evaluate these expressions with these symbols

5.ALG.ESE.3 **Read, write, and evaluate expressions with variables**

5.ALG.ESE.4 **Identify when two expressions are equivalent**

5.ALG.ESE.5 **Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them**

5.ALG.ESE.6 Write and evaluate numerical expressions involving whole-number exponents

5.ALG.ESE.7 Write, read, and evaluate expressions in which letters stand for numbers in statements involving one or more operations

5.ALG.ESE.8	Evaluate expressions at specific values of their variables including expressions that arise from formulas used in real-world problems
5.ALG.ESE.9	Perform arithmetic operations using the Order of Operations
5.ALG.ESE.10	**Apply the properties of operations to generate equivalent expressions**
5.ALG.ESE.11	**Identify when two expressions are equivalent**

Fifth Grade Mathematical Terminology by Domain							
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
Learn the Basics of Whole Numbers: Roman Numerals, place value, multi-digit numbers, multiplication, division, rounding, negative numbers, positive numbers Divide Whole Numbers: divisibility rules Learn the Basics of Fractions: improper fractions, simplifying fractions, equivalent fractions, reciprocal, fractions, mixed numbers	Measurement Concepts: Metric units, customary units, millimeters, centimeters, meters, kilometers, liters, milliliters, grams, kilograms, ounces, pounds, tons, unit conversion, ratio reasoning, angles, volume Temperature: Fahrenheit, Celcius Money: discount, price comparison, cost analysis	Use Basic Operations to Solve Problems: critical thinking, multiple solutions, data, modeling, diagrams, tables, graphs, lists, patterns, guess and check, formula, rate, unit rate, time, distance	Solve Problems Using Estimation: estimation, sum, difference, product, quotient, reasonable answer, rounding, compatible numbers, front-end estimation, clustering, mental math, patterns	Makes Graphs and Charts: Graph, data, table, circle graph, bar graph, line graph, coordinate plane, ordered pairs, inequalities, scale drawing, prediction, misleading information, interpretation, number line, point	Statistics: mean, median, mode, range Probability: probability, outcome, likelihood, tree diagram, experiment, prediction, fractional probability	Learn Geometric Words: polygon, circle, triangle, rectangle, square, sphere, cube, cylinder, symmetry, congruence, similar shapes, perimeter, area, circumference, volume, surface area, coordinate plane, 2D shapes, 3D shapes, angle, acute, obtuse, right	Use Fundamentals of Algebra: absolute value, order of operations, expression, equation, like terms, variables, parentheses, brackets, exponents, evaluate, equivalent expressions, substitution

Fifth Grade Mathematical Terminology by Domain							
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
Learn the Basics of Decimals: decimals, tenths, hundredths, thousandths Percents: percent Properties of Numbers: inverse properties Exponents: exponents, powers of 10, square root, perfect square							

In Spirit and Truth

SIXTH GRADE

Diocese of Little Rock
Office of Catholic Schools

Program Goal I: Numbers, Numerations, Operations
In sixth grade, students will deepen their understanding of whole numbers, fractions, decimals, percents, properties of numbers, and exponents. They will learn to recognize, read, and write Roman numerals and master division by 10, 100, and 1,000. Students will also explore divisibility rules for numbers such as 2, 3, 4, 5, 6, 9, and 10, and express remainders as fractions or decimals. They will gain proficiency in fraction operations (addition, subtraction, multiplication, division) and simplify fractions, including finding least common multiples and greatest common factors. Students will convert fractions to mixed numbers and vice versa, and apply these concepts to real-world problems.

Additionally, students will work with decimals, converting them to fractions and vice versa, and perform operations with decimals. They will learn to convert fractions and decimals to percents, calculate percentages, and determine percent changes. Students will also study number properties (commutative, associative, distributive, inverse) and apply them to solve problems. They will explore exponents, square and cube roots, and scientific notation, performing related operations. Calculators will be used for operations involving fractions, decimals, and percents.

Program Goal II: Measurements
In sixth grade, students will focus on measurement concepts, using ratio reasoning to convert between different units within the same system. They will measure and draw angles and apply measurement to calculate volumes, linking volume to multiplication. Students will also solve real-world problems involving money, such as calculating discounts, taxes, and cost comparisons.

Program Goal III: Problem Solving and Critical Thinking
Students will develop critical thinking skills by solving word problems, analyzing data, evaluating sufficiency of information, and ensuring solutions are reasonable. They will explore multiple solution strategies, including simplifying numbers, identifying patterns, working backward, and graphing points on the coordinate plane. Students will solve problems using equations, ratios, and formulas related to interest, proportions, rates, unit rates, time, and distance.

Program Goal IV: Estimation
In sixth grade, students will learn to solve problems using estimation by estimating sums, differences, products, or quotients involving decimals, whole numbers, and decimals (including money). They will also estimate percents, fractions, and operations with fractions. Additionally, students will use various strategies like rounding, compatible numbers, front-end estimation, patterns, clustering, and mental math to make reasonable approximations and solve problems efficiently.

Program Goal V: Graphs and Charts

In sixth grade, students will learn to graph inequalities on a number line and interpret various types of graphs and charts. They will also work with scale drawings and identify misleading information in graphs while making predictions based on data. Students will graph points with negative coordinates in all four quadrants of the coordinate plane. Additionally, they will construct and interpret scatter plots to investigate patterns of association between two variables, exploring both positive and negative relationships.

Program Goal VI: Statistics and Probability

Students will explore the basics of statistics by calculating the mean, median, mode, and range of a set of data. They will display data using number lines, box plots, and histograms, and construct and interpret scatter plots to identify patterns in bivariate data. In probability, students will predict outcomes using models, experiments, and tree diagrams, and learn to calculate the probability of events, analyzing likely and unlikely occurrences.

Program Goal VII: Geometry

In geometry, students will learn key terms such as polygons, congruent and similar shapes, and the Pythagorean theorem. They will calculate the area and circumference of circles, the surface area of geometric solids, and the volume of right triangular prisms. Students will distinguish between congruent and similar shapes and solve problems involving the Pythagorean theorem and similar figures. They will memorize and apply geometric formulas to solve real-world shape-related problems.

Program Goal VIII: Algebra

In sixth-grade algebra, students will master key concepts, including square roots, variables, coefficients, absolute values, constants, expressions, equations, and inequalities. They will simplify expressions involving absolute values, perform arithmetic operations with integers and rational numbers, and apply the order of operations. Students will explore ratios and proportional relationships, using ratio language to describe relationships and solve problems involving unit rates and percentages. They will also write and evaluate expressions with variables, solve one-step equations, and represent solutions on number lines. Students will analyze relationships between dependent and independent variables through graphs, tables, and equations.

SIXTH GRADE MATH STANDARDS

Program Goal I: Numbers, Numerations, Operations

Learn the Basics of Whole Numbers

6.NNO.BWN.1 Identify and define mathematical terminology: Roman numerals
6.NNO.BWN.2 **Recognizes, read, and write Roman Numerals I, V, X, L, C, M**
6.NNO.BWN.3 **Learn appropriate name for all operations**

Divide Whole Numbers

6.NNO.DWN.1 Identify and define mathematical terminology: divisibility rules
6.NNO.DWN.2 **Divide by 10, 100, 1000**
6.NNO.DWN.3 **Master rules for divisibility by: 2, 3, 4, 5, 6, 9, and 10**
6.NNO.DWN.4 **Write a remainder as a fraction and a decimal**

Learn the Basics of Fractions

6.NNO.LBF.1 Identify and define mathematical terminology: numerator, denominator, mixed number, improper fraction, reciprocal, multiplicative inverse, simplest form, like denominators, unlike denominators, equivalent, greatest common factor
6.NNO.LBF.2 **Find the least common multiple of two or more numbers**
6.NNO.LBF.3 **Write the prime factorization of a number**
6.NNO.LBF.4 **Find the greatest common factor of two or more numbers less than 100**
6.NNO.LBF.5 **Write the simplest form for a fraction**
6.NNO.LBF.6 **Convert fractions into mixed numbers and mixed numbers into fractions**

Add and Subtract Fractions

6.NNO.ASF.1 **Subtract a fraction or a mixed number from a whole number**
6.NNO.ASF.2 **Subtract mixed numbers with unlike denominators**

Multiply Fractions

6.NNO.MFR.1 **Solve word problems involving multiplication of a fraction**

Divide Fractions

6.NNO.DFR.1 Find the reciprocal of a fraction and relate division by a whole number to multiplication by its reciprocal
6.NNO.DFR.2 Divide a fraction or mixed number by a fraction or whole number
6.NNO.DFR.3 Divide a fraction or mixed number by a whole number
6.NNO.DFR.4 **Simplify complex fractions (writing horizontally from a vertical problem (fraction over fraction))**

6.NNO.DFR.5 **Divide a mixed number by a fraction, divide a fraction or mixed number by a whole number, and divide a mixed or whole number by a mixed number**
6.NNO.DFR.6 **Solve word problems involving division of a fraction**

Learn the Basics of Decimals
6.NNO.LBD.1 Write a decimal as a fraction or a mixed number

Add and Subtract Decimals
6.NNO.ASD.1 Add and subtract multi-digit numbers which contain decimals

Divide Decimals
6.NNO.DDE.1 **Divide a whole number or a decimal by a decimal**
6.NNO.DDE.2 **Divide multi-digit decimal numbers**
6.NNO.DDE.3 **Write a fraction as a terminating decimal, repeating decimal, or as a decimal rounded to the nearest hundredth**

Percents
6.NNO.PER.1 Identify and define mathematical terminology: percent, rate, ratio
6.NNO.PER.2 Write fractions with denominators of 100 as percents
6.NNO.PER.3 Write decimals as percents
6.NNO.PER.4 Write percents as fractions or decimals
6.NNO.PER.5 Find a percent of a number
6.NNO.PER.6 Find the percent one number is of another number
6.NNO.PER.7 Find a number if the percent of the number is known
6.NNO.PER.8 Find the percent of change between two numbers
6.NNO.PER.9 Understand the relationship between fractions, decimals, and percents

Properties of Numbers
6.NNO.PON.1 **Identify and define mathematical terminology: commutative property, associative property, identity property, distributive property, inverse property**
6.NNO.PON.2 Recognizes and use inverse property
6.NNO.PON.3 Understand and use positive/negative numbers to represent real-world quantities

Exponents
6.NNO.EXP.1 Identify and define mathematical terminology: base number, exponent, power, squares, square root, cubes, cube root, expanded form, exponential form, scientific notation
6.NNO.EXP.2 Understand raising a base to a positive and negative power
6.NNO.EXP.3 Write the standard form for numbers in exponential notation
6.NNO.EXP.4 Write numbers in expanded notation for numbers in standard notation and vice versa

6.NNO.EXP.5 Find perfect squares and their square roots
6.NNO.EXP.6 Write a decimal number in scientific notation and the standard form for a number in scientific notation
6.NNO.EXP.7 Use square root and cube root symbols to represent solutions to equations of the form X^2 where p is a positive rational number
6.NNO.EXP.8 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notations are used

Calculator

6.NNO.CAL.1 **Use a calculator for decimal number operations**
6.NNO.CAL.2 Use a calculator for whole number, fraction, and percent operations

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Program Goal II: Measurements

Measurement Concepts

6.MEA.MCO.1 Identify and define mathematical terminology: ratio, conversion factor
6.MEA.MCO.2 Convert between different units of measurement within the same system
6.MEA.MCO.3 Use ratio reasoning to convert measurement units

Measurement Application

6.MEA.MAP.1 Measured and draw angles
6.MEA.MAP.2 **Measure volume and relate volume to multiplication**

Money

6.MEA.MON.1 Identify and define mathematical terminology: discount, tax, unit rate, rate, cost analysis, ratio, volume, angle, price comparison
6.MEA.MON.2 Solve problems involving price comparison, cost analysis, discount, and tax problems

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Program Goal III: Problem Solving and Critical Thinking

Use Critical Thinking Skills to Solve Problems

6.PCT.CSP.1 Identify and define mathematical terminology: coordinate plane, inequalities, equation, guess and check, interest, proportion, distance
6.PCT.CSP.2 Use critical thinking skills to solve word problems by analyzing data, determining if the information is sufficient or unnecessary, and evaluating whether the answer is reasonable

6.PCT.CSP.3 Find multiple solutions when applicable and clearly explain the steps and reasoning used to solve the problem

Use Strategies to Solve Problems

6.PCT.SSP.1 Use a plan to solve problems such as: substitutes simpler numbers in order to check operation, find a pattern to solve problems, works backwards to solve problems and Solve problems by graphing points in all 4 quadrants of coordinate plane and by using absolute value

6.PCT.SSP.2 **Use guess and check to solve problems**

6.PCT.SSP.3 Write and solve an equation

6.PCT.SSP.4 **Generate and identify features of an x pattern**

6.PCT.SSP.5 Understand concept of a ratio, use ratio language to describe a relationship between two quantities

Learn and Apply Formulas

6.PCT.LAF.1 Write ratios as fractions

6.PCT.LAF.2 Solve problems involving interest, proportions, rate, unit rate, time, and distance using the appropriate formulas

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Program Goal IV: Estimation

Solve Problems Using Estimation

6.EST.SPE.1 Identify and define mathematical terminology: compatible numbers, front-end estimation, patterns, clustering, mental math

6.EST.SPE.2 **Estimate a sum, difference, product, or quotient of decimals or of a whole number and a decimal (including money)**

6.EST.SPE.3 Estimate percents, sums, differences, products, or quotients of fractions

6.EST.SPE.4 Solve problems using rounding, compatible numbers, front-end estimation, patterns, clustering, and mental math

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Program Goal V: Graphs and Charts

Make Graphs and Charts

6.GAC.MGC.1 Identify and define mathematical terminology: graph, coordinate plane, inequality, scatter plot, prediction, misleading graphs, scale drawing, number line, ordered pairs, negative coordinates, quadrants, line graph, bar graph, circle graph, interpretation

6.GAC.MGC.2 **Graph inequalities on the number line**

Interpret Graphs and Charts

6.GAC.IGC.1	Interpret a scale drawing
6.GAC.IGC.2	Interpret misleading information from a graph and makes predictions from a Graph
6.GAC.IGC.3	Graph with negative coordinates (second, third, and fourth quadrants)
6.GAC.IGC.4	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities positive or negative association

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Program Goal VI: Statistics and Probability

Statistics

6.SAP.STA.1	Identify and define mathematical terminology: statistics, bivariate, mean, median, mode, range
6.SAP.STA.2	**Find the mean (average), median, mode, and range of a group of numbers**
6.SAP.STA.3	Construct and interpret scatter plots for bivariate measurements data to investigate patterns of association between two quantities
6.SAP.STA.4	**Display data on a number line (data, box plot, histogram)**
6.SAP.STA.5	**Use measure of center to summarize data**

Probability

6.SAP.PRO.1	Identify and define mathematical terminology: probability, outcome, box plot, histogram, scatter plot
6.SAP.PRO.2	**Understand basic concepts of probability**
6.SAP.PRO.3	Predict an outcome based on probability and find the probability of an outcome using experiments, tree diagrams, and models

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Program Goal VII: Geometry

Learn Geometric Words

6.GEO.LGW.1	Identify and define geometric terminology: geometry, polygon, congruent, similar, proportional, altitude, prisms, net, pythagorean theorem, polygon, congruent, similar, parallel, perpendicular, diagonal, prism, net, perimeter, area, surface area, right triangle, triangular prism, congruency, similarity
6.GEO.LGW.2	**Use simple geometric terms: polygon, congruent, similar, parallel, perpendicular, diagonal, prism, net**

Identify Geometric Shapes

6.GEO.IGS.1 **Identify congruent shapes**
6.GEO.IGS.2 Determine the difference between congruent shapes and similar shapes
6.GEO.IGS.3 Identify base and corresponding altitude height for triangles and special quadrilaterals

Solve Problems Involving Shapes

6.GEO.SPS.1 Find the area and circumference of a circle, find the surface area of geometric solids using nets, find the volume of geometric solids right triangular prisms
6.GEO.SPS.2 **Find the area of geometric shapes**
6.GEO.SPS.3 Find the missing length of a right triangle by using the rule of Pythagoras
6.GEO.SPS.4 Find the missing length of a similar shape
6.GEO.SPS.5 Know geometric formulas by memory

Program Goal VIII: Algebra

Use Fundamentals of Algebra

6.ALG.UFA.1 Identify and define mathematical terminology: square root, variable, co-efficient, absolute value, constant, expression, equation, terms, like terms, inequalities, evaluate, integers, inverse operations, simplify, integers, rational numbers, order of operations, ratio, proportional relationships, unit rate, dependent variable, independent variable
6.ALG.UFA.2 Find the square root of a number
6.ALG.UFA.3 **Find the opposite of a number**
6.ALG.UFA.4 **Understand absolute value as distance from zero on a number line**
6.ALG.UFA.5 Find the absolute value of a number and simplify expressions using absolute values
6.ALG.UFA.6 Write inequalities using integers to represent real- world situations and locate on a number line
6.ALG.UFA.7 Add, subtract, multiply, and divide integers
6.ALG.UFA.8 Compare, add, subtract, multiply, or divide two rational numbers
6.ALG.UFA.9 Simplify an expression
6.ALG.UFA.10 Find the value of an expression with exponents
6.ALG.UFA.12 Understand and use the order of operations

Ratios and Proportional Relationships

6.ALG.RPR.1 **Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities**
6.ALG.RPR.2 **Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship**

6.ALG.RPR.3	**Use ratio and rate reasoning to solve real-world and mathematical problems by reasoning**
6.ALG.RPR.4	**Find a percent of a quantity as a rate per 100; Solve problems involving finding the whole, given a part and the percent**
6.ALG.RPR.5	**Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane; use tables to compare ratios**
6.ALG.RPR.6	**Solve unit rate problems including those involving unit pricing and constant speed**
6.ALG.RPR.7	**Use ratio reasoning to convert measurement units; manipulates and transforms units appropriately when multiplying or dividing quantities**

Writing Expressions and Solve Equations

6.ALG.ESE.1	**Solve addition and subtraction equations by combining like terms**
6.ALG.ESE.2	**Use parenthesis, brackets, or braces in numerical expressions, and Evaluate these expressions with these symbols**
6.ALG.ESE.3	**Write and evaluate numerical expressions involving whole-number exponents**
6.ALG.ESE.4	**Write, read and evaluate expressions in which letters stand for numbers in statements involving one or more operations**
6.ALG.ESE.5	**Evaluate expressions at specific values of their variables including expressions that arise from formulas used in real-world problems**
6.ALG.ESE.6	**Perform arithmetic operations using the Order of Operations**
6.ALG.ESE.7	**Use substitution to determine whether a given number makes an equation of inequality true**
6.ALG.ESE.8	**Understand that a variable can represent an unknown number**
6.ALG.ESE.9	**Use variables to represent numbers and write expressions when solving a real-world or mathematical problem**
6.ALG.ESE.10	**Solve real-world and mathematical problems by writing and solving one-step equations involving non-negative rational numbers**
6.ALG.ESE.11	**Write an inequality to represent a constraint or condition in a real-world or mathematical problem**
6.ALG.ESE.12	**Recognize that inequalities such as x>c have infinitely many solutions**
6.ALG.ESE.13	**Represent solutions of inequalities on number line diagrams**
6.ALG.ESE.14	**Use variables to represent dependent and independent quantities in real-world problems**
6.ALG.ESE.15	**Analyze the relationship between dependent and independent variables by relating graphs, tables and equations**

Sixth Grade Mathematical Terminology by Domain							
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
Learn the Basics of Whole Numbers: Roman numerals Divide Whole Numbers: divisibility rules Learn the Basics of Fractions: numerator, denominator, mixed number, improper fraction, reciprocal, multiplicative inverse, simplest form, like denominators, unlike denominators, equivalent, greatest common factor Percents: percent, rate, ratio	Measurement Concepts: ratio, conversion factor Money: discount, tax, unit rate, rate, cost analysis, ratio, volume, angle, price comparison	Use Critical Thinking Skills to Solve Problems: coordinate plane, inequalities, equation, guess and check, interest, proportion, distance	Solve Problems Using Estimation: compatible numbers, front-end estimation, patterns, clustering, mental math	Make Graphs and Charts: graph, coordinate plane, inequality, scatter plot, prediction, misleading graphs, scale drawing, number line, ordered pairs, negative coordinates, quadrants, line graph, bar graph, circle graph, interpretation	Statistics: statistics, bivariate, mean, median, mode, range Probability: probability, outcome, box plot, histogram, scatter plot	Learn Geometric Words: geometry, polygon, congruent, similar, proportional, altitude, prisms, net, pythagorean theorem, polygon, congruent, similar, parallel, perpendicular, diagonal, prism, net, perimeter, area, surface area, right triangle, triangular prism, congruency, similarity	Use Fundamentals of Algebra: square root, variable, co-efficient, absolute value, constant, expression, equation, terms, like terms, inequalities, evaluate, integers, inverse operations, simplify, integers, rational numbers, order of operations, ratio, proportional relationships, unit rate, dependent variable, independent variable

Sixth Grade Mathematical Terminology by Domain							
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
Properties of Numbers: commutative property, associative property, identity property, distributive property, inverse property Exponents: base number, exponent, power, squares, square root, cubes, cube root, expanded form, exponential form, scientific notation							

In Spirit and Truth

SEVENTH GRADE

Diocese of Little Rock
Office of Catholic Schools

Program Goal I: Numbers, Numerations, Operations

In seventh grade, students will deepen their understanding of fractions, decimals, and percents. They will learn to divide fractions, including dividing fractions by fractions and mixed numbers by whole numbers, and recognize that division by a fraction is equivalent to multiplying by its reciprocal. Students will also practice converting between fractions, decimals, and percents. They will explore percent concepts such as calculating percentages, finding percent change, and converting fractions with denominators of 100 into percentages. Additionally, students will apply the order of operations (PEMDAS) with rational numbers, including handling nested parentheses, and work with positive and negative numbers in real-world contexts. They will study exponents, including positive and negative powers, conversion between standard and expanded notation, and square and cube roots. Students will also perform operations involving scientific notation and use calculators to assist in operations with fractions, decimals, and percents.

Program Goal II: Measurements

In seventh grade, students will focus on measurement concepts, learning to identify and define key mathematical terminology and determine the appropriate metric units for measuring length, such as decimeters and millimeters. They will practice converting between different units within the same system and use ratio reasoning for unit conversions. Students will also learn to measure and draw angles accurately. In the context of money, they will solve problems related to discounts, taxes, price comparisons, and cost analysis, applying their mathematical understanding to real-world financial situations.

Program Goal III: Problem Solving and Critical Thinking

Students will develop critical thinking skills to solve problems by considering multiple solutions, using data, and assessing whether problems contain sufficient or extraneous information. They will explain their reasoning and steps for finding solutions. Students will use strategies such as simplifying numbers, identifying patterns, working backward, and using equations. They will also solve problems by graphing points in all four quadrants of the coordinate plane and work with absolute value. Additionally, they will apply ratio concepts to describe relationships between quantities and solve problems involving interest, unit rates, proportions, and rate-time-distance relationships.

Program Goal IV: Estimation

In seventh grade, students will use estimation strategies to solve problems involving sums, differences, products, and quotients of fractions. They will also estimate percentages and apply various techniques like rounding, compatible numbers, front-end estimation, patterns, clustering, and mental math to make reasonable approximations and efficiently solve problems.

Program Goal V: Graphs and Charts

Seventh grade students will learn to interpret various types of graphs and charts, including scale drawings, and identify misleading information in graphs. They will also make predictions based on graph data and work with graphs that include negative coordinates in the second, third, and fourth quadrants. Additionally, students will construct and interpret scatter plots for bivariate data, exploring patterns of association between two quantities, whether the relationship is positive or negative.

Program Goal VI: Statistics and Probability

Students will explore the basics of statistics by constructing and interpreting scatter plots for bivariate data, analyzing patterns of association between two quantities. They will also learn the fundamentals of probability, predicting outcomes based on probability and calculating the probability of events using experiments, tree diagrams, and models.

Program Goal VII: Geometry

In seventh grade, students will learn key geometric terminology and identify different geometric shapes. They will differentiate between congruent and similar shapes and learn to identify the base and corresponding altitude height of triangles and special quadrilaterals. Students will solve problems related to shapes, including finding the area and circumference of circles, calculating angles (vertical, adjacent, supplementary, and complementary), and determining the sum of angles in triangles or polygons. They will also learn to find the surface area of geometric solids using nets, the volume of right triangular prisms, and use the Pythagorean theorem to find the missing length of a right triangle or a similar shape. Additionally, students will memorize and apply geometric formulas to solve real-world problems.

Program Goal VIII: Algebra

Students will focus on algebraic fundamentals, including mastering key terminology and concepts. They will learn to find square roots and absolute values, simplify expressions involving absolute values, and solve inequalities with integers. Students will practice operations with integers and rational numbers, simplifying expressions and applying the order of operations. In ratios and proportional relationships, students will compute unit rates and represent proportional relationships using tables, graphs, and equations. They will test for equivalent ratios, identify the constant of proportionality, and apply proportional relationships to solve multi-step problems. Students will also solve equations and apply properties of operations to simplify and factor linear expressions with rational coefficients. They will graph and interpret solution sets of inequalities and explore real-life problems, including equations and inequalities. Additionally, they will study square and cube roots of small perfect squares and cubes, understand irrational numbers like $\sqrt{2}$, and derive equations for lines through the origin and lines with y-intercepts.

SEVENTH GRADE MATH STANDARDS

Program Goal I: Numbers, Numerations, Operations

Divide Fractions

7.NNO.DFR.1 Identify and define mathematical terminology: reciprocal, divisor, numerator, denominator, mixed number, fraction

7.NNO.DFR.2 **Find the reciprocal of a fraction and relates division by a whole number to multiplication by its reciprocal**

7.NNO.DFR.3 **Divide a fraction by a fraction**

7.NNO.DFR.4 **Divide a fraction or mixed number by a whole number**

Learn The Basics of Decimals

7.NNO.LBD.1 Identify and define mathematical terminology: decimal, mixed number

7.NNO.LBD.2 **Write a decimal as a fraction or a mixed number**

Percents

7.NNO.PER.1 Identify and define mathematical terminology: percent, percent change

7.NNO.PER.2 **Write fractions with denominators of 100 as percents**

7.NNO.PER.3 **Identify and define mathematical terminology**

7.NNO.PER.4 **Write decimals as percents**

7.NNO.PER.5 **Write percents as fractions or decimals**

7.NNO.PER.6 **Find a percent of a number**

7.NNO.PER.7 **Find the percent one number is of another number**

7.NNO.PER.8 **Find a number if the percent of the number is known**

7.NNO.PER.9 Find the percent of change between two numbers

7.NNO.PER.10 Understand the relationship between fractions, decimals, and percents

Properties of Numbers

7.NNO.PON.1 Identify and define mathematical terminology: PEMDAS, (parentheses, exponents, multiplication, division, addition, subtraction) rational numbers, integer

7.NNO.PON.2 **Apply order of operations with rational numbers, including nested grouping symbols**

7.NNO.PON.3 **Understand and use positive/negative numbers to represent real-world quantities**

Exponents

7.NNO.EXP.1 **Identify and define mathematical terminology: base, positive power, power of ten, exponential form, absolute value**

7.NNO.EXP.2 **Understand raising a base to a positive power**
7.NNO.EXP.3 Understand raising a base to a negative power
7.NNO.EXP.4 Write numbers in expanded notation for numbers in standard notation and vice versa
7.NNO.EXP.5 Find perfect squares and their square roots
7.NNO.EXP.6 Write numbers in scientific notation, including decimals and standard forms of a number
7.NNO.EXP.7 Use square root and cube root symbols to represent solutions to equations of the form x^2 where p is a positive rational number
7.NNO.EXP.8 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notations are used

Calculator

7.NNO.CAL.9 **Use a calculator for fraction, decimal, and percent operations**

Program Goal II: Measurements

Measurement Concepts

7.MEA.MCO.1 Identify and define mathematical terminology: metric system, customary system, unit, length, decimeter, millimeter, conversion factor, angle, degree, acute angle, obtuse angle, right angle, angle measurement
7.MEA.MCO.2 **Determine the appropriate metric unit for measuring length using decimeter or millimeter**
7.MEA.MCO.3 **Convert between different units of measurement within the same system**
7.MEA.MCO.4 **Use ratio reasoning to convert measurement units**

Measurement Application

7.MEA.MAP.1 **Measure and draw angles**

Money

7.MEA.MON.1 Identify and define mathematical terminology: discount, tax, price comparison, cost analysis, unit price, percent discount, mark-up, sales tax
7.MEA.MON.2 **Solve problems involving discount and tax problems, price comparison, and cost analysis**

Program Goal III: Problem Solving and Critical Thinking

Use Critical Thinking Skills to Solve Problems

7.PCT.CSP.1	Identify and define mathematical terminology: data analysis, sufficient information, reasoning, multiple solutions, evaluate, unnecessary information, problem-solving, graphene, coordinate plane, absolute value, ratio, interest, unit rate, proportions, rate, time, distance, multi-step problems
7.PCT.CSP.2	**Find more than one answer**
7.PCT.CSP.3	**Use data to solve word problems**
7.PCT.CSP.4	**Determine if a problem has sufficient information or unnecessary information, or if an answer is reasonable or not**
7.PCT.CSP.5	Able to explain how a problem is worked and the reasoning of the answer

Use Strategies to Solve Problems

7.PCT.SSP.1	**Use a plan to solve problems such as: substitutes simpler numbers in order to check operation, find a pattern to solve problems, and work backwards to solve problems**
7.PCT.SSP.2	**Write and solve an equation**
7.PCT.SSP.3	**Solve problems by graphing points in all 4 quadrants of coordinate plane and by using absolute value**
7.PCT.SSP.4	**Understand concept of a ratio, use ratio language to describe a relationship between two quantities**

Learn And Apply Formulas

7.PCT.LAF.1	Solve interest problems
7.PCT.LAF.2	**Write ratios as fractions**
7.PCT.LAF.3	**Solve problems involving unit rate, proportions, rate, time, and distance**

Program Goal IV: Estimation

Solve Problems Using Estimation

7.EST.SPE.1	Identify and define mathematical terminology: estimation, rounding, compatible numbers, front-end estimation, mental math, clustering, patterns, approximation
7.EST.SPE.2	**Estimate a sum, difference, product, or quotient of fractions**
7.EST.SPE.3	**Estimate percents**
7.EST.SPE.4	**Solve problems using rounding, compatible numbers, front-end estimation, patterns, clustering, and mental math**

Program Goal V: Graphs and Charts

Interpret Graphs and Charts

7.GAC.IGC.1	Identify and define mathematical terminology: graph, chart, scale drawing, misleading data, prediction, coordinate plane, negative coordinates, quadrant, bivariate data, scatter plot, bar graph, line graph, pie chart, histogram, coordinate plane, data points, association, correlation, positive relationship, negative relationship
7.GAC.IGC.2	**Interpret a scale drawing**
7.GAC.IGC.3	**Interpret misleading information from a graph and makes predictions from a graph**
7.GAC.IGC.4	**Graphs with negative coordinates (2nd, 3rd, and 4th quadrants)**
7.GAC.IGC.5	Constructs and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities positive or negative association

Program Goal VI: Statistics and Probability

Statistics

7.SAP.STA.1	Identify and define mathematical terminology: scatter plot, bivariate data, mean, median, mode, range, outlier
7.SAP.STA.2	Construct and interpret scatter plots for bivariate measurements data to investigate patterns of association between two quantities

Probability

7.SAP.PRO.1	Identify and define mathematical terminology: data analysis
7.SAP.PRO.2	**Predict and outcome based on probability and find the probability of an outcome using experiments, tree diagrams, and models**

Program Goal VII: Geometry

Learn Geometric Words

7.GEO.LGW.1	Identify and define geometric terminology: bisecting lines, congruent shapes, similar shapes, base, altitude, height, triangle, quadrilateral, area, circumference, vertical angle, adjacent angle, supplementary angle, polygon, surface area, volume, pythagorean theorem, right angle, nets

Identify Geometric Shapes

7.GEO.IGS.1	Determine the difference between congruent shapes and similar shapes
7.GEO.IGS.2	Identify base and corresponding altitude height for triangles and special quadrilaterals

Solve Problems Involving Shapes

7.GEO.SPS.1	**Find the area and circumference of a circle**
7.GEO.SPS.2	Find the measurements of vertical, adjacent, supplementary, and complementary angles
7.GEO.SPS.3	Find the sum of the angles in a triangle or polygon
7.GEO.SPS.4	**Find the surface area of geometric solids using nets**
7.GEO.SPS.5	**Find the volume of geometric solids right triangular prisms**
7.GEO.SPS.6	Find the missing length of a right triangle by using the rule of Pythagoras
7.GEO.SPS.7	**Find the missing length of a similar shape**
7.GEO.SPS.8	**Knows geometric formulas by memory**
7.GEO.SPS.9	Reproduce scale drawings at a different scale
7.GEO.SPS.10	**Compute actual lengths from scale drawing**

Program Goal VIII: Algebra

Use Fundamentals of Algebra

7.ALG.UFA.1	Identify and define mathematical terminology: square root, absolute value, inequality, integer, rational numbers, expression, equation, simplification, order of operations, proportional relationships, unit rate, proportions, ratio, linear expressions, like terms, graphing inequalities, irrational numbers, perfect square, perfect cube, slope, y-intercept, line equation
7.ALG.UFA.2	Find the square root of a number
7.ALG.UFA.3	**Find the absolute value of a number and simplifies expressions using absolute values**
7.ALG.UFA.4	**Write inequalities using integers to represent real- world situations and Locate on a number line**
7.ALG.UFA.5	**Add, subtract, multiply, and divide integers**
7.ALG.UFA.6	Compare/converts, add, subtract, multiply, or divide two rational numbers
7.ALG.UFA.7	**Simplify an expression**
7.ALG.UFA.8	**Find the value of an expression with exponents**
7.ALG.UFA.9	Simplify an expression by combining like terms
7.ALG.UFA.10	**Understand and use the order of operations**

Ratios and Proportional Relationships

7.ALG.RPR.1	**Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units**
7.ALG.RPR.2	**Recognize and represent proportional relationships between quantities**
7.ALG.RPR.3	**Decide whether two quantities are in a proportional relationship by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin**
7.ALG.RPR.4	**Explain what a point (x,y) on the graph of a proportional relationship means in terms of the situation**
7.ALG.RPR.5	**Identify the constant of proportionality in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships**
7.ALG.RPR.6	**Use proportions relationships to solve multi-step ratio and percent problems**
7.ALG.RPR.7	**Represent proportional relationships by equations**

Write Expressions and Solve Equations

7.ALG.ESE.1	**Solve addition and subtraction equations by combining like terms**
7.ALG.ESE.2	**Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients**
7.ALG.ESE.3	**Understand that rewriting an expression in different forms can shed light on the problem and how the quantities in it are related**
7.ALG.ESE.4	**Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers using tools (calculator, spReadsheet, etc.) strategically**
7.ALG.ESE.5	**Apply properties of operations to calculate with numbers in any form**
7.ALG.ESE.6	**Convert between forms of numbers as appropriate**
7.ALG.ESE.7	**Assess the reasonableness of answers using mental computation and estimation strategies**
7.ALG.ESE.8	**Fluently solve word problems leading to equations of the form px+q=r and p(x+q)=r where p, q, and r are rational numbers**
7.ALG.ESE.9	**Solve word problems leading to inequalities of the form px+q>r or px+q<r where p,q, and r are rational numbers**
7.ALG.ESE.10	**Graph the solution set of an inequality and Interpret it in the context of the problem**
7.ALG.ESE.11	Know and apply the properties of integer exponents to generate equivalent numerical expressions
7.ALG.ESE.12	Evaluate square roots of small perfect squares and cube roots of small perfect cubes
7.ALG.ESE.13	Knows that $\sqrt{2}$ is an irrational number
7.ALG.ESE.14	Derive the equation $y=mx$ for a line through the origin and the equation $y=mx+b$ for a line intercepting the vertical axis at b

Seventh Grade Mathematical Terminology by Domain							
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
Divide Fractions: reciprocal, divisor, numerator, denominator, mixed number, fraction Learn The Basics of Decimals: decimal, mixed number Percents: percent, percent change Properties of Numbers: PEMDAS, (parentheses, exponents, multiplication, division, addition, subtraction) rational numbers, integer	Measurement Concepts: metric system, customary system, unit, length, decimeter, millimeter, conversion factor, angle, degree, acute angle, obtuse angle, right angle, angle measurement Money: discount, tax, price comparison, cost analysis, unit price, percent discount, mark-up, sales tax	Use Critical Thinking Skills to Solve Problems: data analysis, sufficient information, reasoning, multiple solutions, evaluate, unnecessary information, problem-solving, graphene, coordinate plane, absolute value, ratio, interest, unit rate, proportions, rate, time, distance, multi-step problems	Solve Problems Using Estimation: estimation, rounding, compatible numbers, front-end estimation, mental math, clustering, patterns, approximation	Interpret Graphs and Charts: graph, chart, scale drawing, misleading data, prediction, coordinate plane, negative coordinates, quadrant, bivariate data, scatter plot, bar graph, line graph, pie chart, histogram, coordinate plane, data points, association, correlation, positive relationship, negative relationship	Statistics: scatter plot, bivariate data, mean, median, mode, range, outlier Probability: data analysis	Learn Geometric Words: bisecting lines, congruent shapes, similar shapes, base, altitude, height, triangle, quadrilateral, area, circumference, vertical angle, adjacent angle, supplementary angle, polygon, surface area, volume, pythagorean theorem, right angle, nets	Use Fundamentals of Algebra: square root, absolute value, inequality, integer, rational numbers, expression, equation, simplification, order of operations, proportional relationships, unit rate, proportions, ratio, linear expressions, like terms, graphing inequalities, irrational numbers. Perfect square, perfect cube, slope, y-intercept, line equation

Seventh Grade Mathematical Terminology by Domain							
Numbers, Numerations, Operations	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
Exponents: base, positive power, power of ten, exponential form, absolute value							

In Spirit and Truth

EIGHTH GRADE

Diocese of Little Rock
Office of Catholic Schools

Program Goal I: Numbers, Numerations, Operations
In eighth grade math, students will learn how to work with percentages, including finding a number based on a given percent and calculating percent change. They will also explore exponents, understanding both positive and negative powers, and convert between standard and expanded form. Students will identify perfect squares, find square roots, and express numbers in scientific notation. They will practice solving equations with square and cube roots and perform operations using scientific notation. Additionally, students will use calculators for operations appropriate to their grade level.

Program Goal III: Problem Solving and Critical Thinking
Eighth grade students will develop critical thinking skills to solve real-world problems, explaining their reasoning and solution process. They will apply formulas and solve problems related to interest and other real-life scenarios.

Program Goal V: Graphs and Charts
Students will learn to construct and interpret scatter plots to analyze bivariate data. They will investigate the relationship between two quantities and determine if the relationship is positive or negative.

Program Goal VI: Statistics and Probability
Students will delve into statistics, focusing on constructing and interpreting scatter plots to explore bivariate data. They will analyze patterns and associations between two quantities, understanding whether the relationship is positive or negative.

Program Goal VII: Geometry
Students will study geometric terminology and definitions, solving problems involving various angles, such as vertical, adjacent, supplementary, and complementary angles. They will calculate the sum of angles in triangles and polygons and use the Pythagorean Theorem to find missing side lengths in right triangles. Students will construct geometric shapes, including perpendicular bisectors and congruent angles, and work with scale drawings, reproducing them at different scales and calculating actual lengths.

Program Goal VIII: Algebra
In 8th grade, students will focus on algebraic principles, including key mathematical terminology, square roots, and operations with rational numbers. They will simplify expressions by combining like terms and applying exponent properties. Students will solve equations using square and cube roots and evaluate perfect squares and cubes. They will also perform operations with scientific notation and use it to estimate large or small quantities. Additionally, students will learn to graph proportional relationships,

understand slope, and solve linear equations, including systems of two linear equations, both algebraically and graphically. They will explore functions, recognizing that each input has exactly one output, and analyze linear functions represented in various forms (tables, graphs, equations). Students will model linear relationships, determine rate of change and initial value, and graph both linear and nonlinear functions.

EIGHTH GRADE MATH STANDARDS

Program Goal I: Numbers, Numerations, Operations

Percents

8.NNO.PER.1	Identify and define mathematical terminology: percent of change
8.NNO.PER.2	**Find a number if the percent of the number is known**
8.NNO.PER.3	**Find the percent of change between two numbers**

Exponents

8.NNO.EXP.1	Identify and define mathematical terminology: exponent, base, positive exponents, negative exponents, power, square root, cube root, perfect square, exponent notation, standard form, expanded notation, rational number, irrational number, radical, perfect cube
8.NNO.EXP.2	**Understand raising a base to a positive power and a negative power**
8.NNO.EXP.3	Write the standard form for numbers in exponential notation
8.NNO.EXP.4	**Write numbers in expanded notation for numbers in standard notation and vice versa**
8.NNO.EXP.5	**Find perfect squares and their square roots**
8.NNO.EXP.6	**Write numbers in scientific notation, including decimals and numbers in standard form**
8.NNO.EXP.7	**Use square root and cube roots symbols to represent solutions to equations of the form x^2 where p is a positive rational number**
8.NNO.EXP.8	**Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notations are used**

Calculator

8.NNO.CAL.1	**Use a calculator for grade level appropriate operations**

Program Goal III: Problem Solving and Critical Thinking

Use Critical Thinking Skills to Solve Problems

8.PCT.CSP.1	Identify and define mathematical terminology: justification, analyze, evaluate, interest (simple interest), principal (in interest problems), rate (interest rate), time (in interest problems, simple interest formulas (I-PRT), variable
8.PCT.CSP.2	Use critical thinking to solve various real-world problems
8.PCT.CSP.3	Explain how a problem is worked and the reasoning of the answer

Learn and Apply Formulas

8.PCT.LAF.1 **Solve interest problems**

Program Goal V: Graphs and Charts

Interpret Graphs and Charts

8.GAC.IGC.1 Identify and define mathematical terminology: scatter plot, bivariate data, x-axis, y-axis, coordinate plane, correlation, association, positive association, negative association, trend, outlier, coordinate pair, independent variable, dependent variable

8.GAC.IGC.2 **Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities positive or negative association**

Program Goal VI: Statistics and Probability

Statistics

8.SAP.STA.1 Identify and define mathematical terminology: bivariate data, scatter plot, data point, x-axis, y-axis, coordinate plane, correlation, association, trend, outlier, data set, mean, median, mode, range, independent variable, dependent variable

8.SAP.STA.2 **Construct and interpret scatter plots for bivariate measurements data to investigate patterns of association between two quantities**

Program Goal VII: Geometry

Learn Geometric Words

8.GEO.LGW.1 Identify and define geometric terminology: angle, vertex, line segment, ray, point, line, perpendicular, parallel, congruent, bisector, symmetry, polygon, radius, diameter, adjacent angles, right angle, acute angle, obtuse angle, angle bisector, pythagorean theorem, hypotenuse

Solve Problems Involving Shapes

8.GEO.SPS.1 **Find the measurements of vertical, adjacent, supplementary, and complementary angles**

8.GEO.SPS.2 **Find the sum of the angles in a triangle or polygon**

8.GEO.SPS.3 **Find the missing length of a right triangle by using the rule of Pythagoras**

Program Goal VIII: Algebra

Use Fundamentals of Algebra

8.ALG.UFA.1	Identify and define mathematical terminology: constant, coefficient, rational numbers, square root, cube root, like terms, simplify, distributive property, inverse operations, integer exponents, negative exponents, irrational number scientific notation, linear equation, function, input, output, ordered pair, domain, range, function notation. Slope (m), y-intercept, linear function, nonlinear function, rate of change, slope-intercept form (y=mx+b), direct variation (y=mx)
8.ALG.UFA.2	**Find the square root of a number**
8.ALG.UFA.3	**Compare, add, subtract, multiply, or divide two rational numbers**
8.ALG.UFA.4	**Simplify an expression by combining like terms**

Write Expressions and Solve Equations

8.ALG.ESE.1	**Know and apply the properties of integer exponents to generate equivalent numerical expressions**
8.ALG.ESE.2	**Use square root and cube root symbols to represent solutions to equations**
8.ALG.ESE.3	**Evaluate square roots of small perfect squares and cube roots of small perfect cubes**
8.ALG.ESE.4	**Understand that $\sqrt{2}$ is an irrational number**
8.ALG.ESE.5	**Use scientific notation to estimate very large or very small quantities and to express how many times as much one is than the other**
8.ALG.ESE.6	**Perform operations with numbers expressed in scientific notation where decimal and scientific notations are used**
8.ALG.ESE.7	**Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities**
8.ALG.ESE.8	**Interpret scientific notation that has been generated by technology**
8.ALG.ESE.9	**Graph proportional relationships, interpreting the unit rate as the slope of the graph**
8.ALG.ESE.10	**Compare two different proportional relationships represented in different ways (graphs, tables, equations)**
8.ALG.ESE.11	**Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane**
8.ALG.ESE.12	**Derive the equation y=mx for a line through the origin and the equation y=mx+b for a line intercepting the vertical axis at b**
8.ALG.ESE.13	**Give examples of linear equations in one variable with one, infinitely many or no solutions**
8.ALG.ESE.14	**Transform a given equation into simpler forms, until an equivalent equation of the form x=a, a=a,or a=b results**

8.ALG.ESE.15	**Solve linear equations with rational number coefficients, including using the distributive property, combining like terms, and variables on both sides, containing solutions of one, zero, or infinitely many solutions**
8.ALG.ESE.16	**Understand that the solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs which is the point that satisfies both equations**
8.ALG.ESE.17	**Solve systems of two linear equations in two variables algebraically and graphically**
8.ALG.ESE.18	**Estimate the solutions of a system of two linear equations in two variables by graphing the equations**
8.ALG.ESE.19	**Solve real-world and mathematical problems leading to two linear equations in two variables**

Functions

8.ALG.FUN.1	**Understand that a function is a rule that assigns to each input exactly one output (when given a table, graph, equation, function map, or set of ordered pairs)**
8.ALG.FUN.2	**Understand that the graph of a function is the set of ordered pairs (input, output)**
8.ALG.FUN.3	**Compare properties of two functions represented in different ways (graphs, tables, verbal descriptions)**
8.ALG.FUN.4	**Interpret the equation y=mx+b as defining a linear function whose graph is a straight line**
8.ALG.FUN.5	**Construct a function to model a linear relationship between two quantities**
8.ALG.FUN.6	**Determine the rate of change (m-slope) and initial value (b-y intercept) from tables, graphs, equations, and verbal descriptions of linear relationships.**
8.ALG.FUN.7	**Analyzes a graph by describing the functional relationship between two quantities (e. g. increasing, decreasing, linear, non-linear, etc.)**
8.ALG.FUN.8	**Sketch a graph that exhibits the qualitative features of a function that has been described verbally (include linear and nonlinear functions)**

Eighth Grade Mathematical Terminology by Domain					
Numbers, Numerations, Operations	**Problem Solving and Critical Thinking**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
Percents: percent of change Exponents: exponent, base, positive exponents, negative exponents, power, square root, cube root, perfect square, exponent notation, standard form, expanded notation, rational number, irrational number, radical, perfect cube	Use Critical Thinking Skills to Solve Problems: justification, analyze, evaluate, interest (simple interest), principal (in interest problems), rate (interest rate), time (in interest problems, simple interest formulas (I-PRT), variable	Interpret Graphs and Charts: scatter plot, bivariate data, x-axis, y-axis, coordinate plane, correlation, association, positive association, negative association, trend, outlier, coordinate pair, independent variable, dependent variable	Statistics: bivariate data, scatter plot, data point, x-axis, y-axis, coordinate plane, correlation, association, trend, outlier, data set, mean, median, mode, range, independent variable, dependent variable	Learn Geometric Words: angle, vertex, line segment, ray, point, line, perpendicular, parallel, congruent, bisector, symmetry, polygon, radius, diameter, adjacent angles, right angle, acute angle, obtuse angle, angle bisector, pythagorean theorem, hypotenuse	Use Fundamentals of Algebra: constant, coefficient, rational numbers, square root, cube root, like terms, simplify, distributive property, inverse operations, integer exponents, negative exponents, irrational number scientific notation, linear equation, function, input, output, ordered pair, domain, range, function notation. Slope (m), y-intercept, linear function, nonlinear function, rate of change, slope-intercept form (y=mx+b), direct variation (y=mx)

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
K	Learn the basics of whole numbers: compare, addition, subtraction, equal, counting, skip counting	Measurement concepts: measure, height, weight, length, smaller, larger, shorter, longer, between, taller, heavier Time: clock, time Calendar: days, weeks, months, seasons Money: money, pennies, nickel, quarter, dimes, cent symbol, and dollar sign	Use Basic Operations to Solve Problems: problem solving, data, explain, pattern, sort	Solve Problems Using Estimation: estimate, size, objects, length, time, guess	Make Graphs and Charts: graph, data, bar graph, picture graph, line graph, table, chart, collect data, compare, number line		Learn Geometric Words: shapes, model, drawing, similar, 2D shapes (flat): squares, circles, triangles, rectangles, and hexagons; 3D shapes (solid): cube, cone, cylinder, and sphere, sides, corners/ vertices,	

1	Learn the Basics of Whole Numbers: order, compare, place value, addition, subtraction, even numbers, odd numbers, sum, difference Multiply Whole Numbers: skip counting, groups of, repeated addition Learn the Basics of Fractions: fractions (half and whole), total, part Properties of Numbers: identity property, associative property	Measurement Concepts: length, mass, liquid, compare, inches, feet, pounds, ounces Time: clock, time Calendar: calendar, days, weeks, months, seasons Money: penny, nickel, dime, quarter, cent sign, dollar sign	Use Basic Operations to Solve Problems: critical thinking, model, pattern, write equations	Solve Problems Using Estimation: estimate, reasonable guess, quantity, accuracy, approximate	Make Graphs and Charts: graph, data, picture graph, bar graph, line graph, number line, points		Learn Geometric Words: shape, circle, triangle, square, rectangle, sides, corners, edges, faces, symmetry, equal parts, two-dimensional shapes, three-dimensional shapes	Write Expressions and Solve Equations: comparison, unknown, variable, equation

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
2	Learn the Basics of Whole Numbers: regrouping, even numbers, odd, numbers, greater-than, less-than, equal to, whole numbers, place value, addends, sum, difference, equal, equation, related addition/subtraction fact, ten-frame, take apart, fact families, standard form, expanded form Multiply Whole Numbers: skip count, groups of, repeated addition	Measurement Concepts: ruler, feet, yard, length, mass, metric system, customary system, inches, feet, centimeters, millimeters, grams, kilograms, ounces, pounds, meters Time: hour, minute, hand (clock), analog clock, digital clock, time Money: cent, dollar, penny, dime, nickel, quarter	Use Basic Operations to Solve Problems: operations (addition, subtraction, multiplication, division), place value, reasonable answer, evaluate, model, pattern, data, models	Solve Problems Using Estimation: estimate, sum, difference, rounding, front-end estimation, patterns, approximate, clustering	Make Graphs and Charts: graph, data, number line, picture graph, bar graph, line graph (line plot), interpret, data collection, points on a graph, number pairs, data	Probability: probability, outcome, likelihood, predict, tree diagram, model, possible outcomes	Learn Geometric Words: shape names, rectangle, triangle, square, trapezoid, hexagon, parallelogram, rhombus, faces, vertices, sides, edges, two-dimensional shapes: circles, triangles, rectangles, squares; three-dimensional shapes: spheres, rectangular boxes, cubes, cones, cylinders, pyramids, or prisms, slide, flip, turns, pentagons, quadrilateral,	Write Expressions and Solve Equations: expression, equation, unknown, variable, solve, value, equal

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
	Learn the Basics of Fractions: Part, whole, "/" symbol Properties of Numbers: identity property, associative property						congruent, symmetrical, similar	

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
3	Learn the Basics of Whole Numbers: whole number, standard-form, expanded form, place value Multiply Whole Numbers: multiplication, skip count, groups of, repeated addition, array Divide Whole Numbers: division Learn the Basics of Fractions: fraction, equivalent fractions, denominator, numerator, prime,	Measurement Concepts: Length, inch, feet, yard, mile, gallon, cup, pint, quart, ounce, pound, meter, gram, kilogram, kilometer, centimeter, decimeter, milliliter, liter, mass, volume, metric system, customary system, conversion Time: elapsed time, day, hour, minute, seconds Money: penny, nickel, dime, quarter, dollar	Use Basic Operations to Solve Problems: word problem, strategy, place value, equation, justify, model, pattern, reasoning, critical thinking	Solve Problems Using Estimation: estimate, sum, difference, product, quotient, reasonable, rounding, compatible numbers, front-end estimation, clustering, mental math	Make Graphs and Charts: graph, data, plot, number line, table, circle graph, bar graph, pictograph, line graph, ordered pairs, coordinate plane	Probability: probability, likely, unlikely, certain, impossible, outcome, chance, fraction, more likely, less likely	Learn Geometric Words: line, line segment, ray, intersecting lines, parallel lines, perpendicular lines, angle, right, acute, obtuse, polygon, quadrilateral, parallelogram, triangle, square, rectangle, rhombus, pentagon, hexagon, octagon, trapezoid, congruent/similar, symmetry, perimeter, area, volume, two-dimensional shapes: circles, triangles,	Write Expressions and Solve Equations: equation, variable, expression, unknown, order of operations, equivalent expressions

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
	composite Learn the Basics of Decimals: decimal Properties of Numbers: identity property, distributive property						rectangles, squares, three-dimensional shapes: spheres, rectangular boxes, cubes, cones, cylinders, pyramids, prisms	

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
4	Learn the Basics of Whole Numbers: whole numbers, standard form, expanded form, word form, place value Add Whole Numbers: Associative Property, Commutative Property, Identity Property, fact, sum, addends, equations, expressions Subtract Whole Numbers: difference Multiply Whole Numbers: Property of Zero, Distributive Property, factors,	Measurement Concepts: customary units, metric units, length, weight, volume, centimeters, meters, grams, gallons, millimeters, inches, conversion Time: time, hours, minutes, seconds Money: change (money)	Use Basic Operations to Solve Problems: multi-step problems, time intervals, place value, strategy, critical thinking, data, operations, pattern, reasoning, modeling, evaluate information, explain reasoning	Solve Problems Using Estimation: estimation, sum, difference, product, quotient, reasonable answer, rounding, compatible numbers, front-end estimation, clustering, mental math, patterns	Make Graphs and Charts: graph, data, table, circle graph, bar graph, pictograph, line graph, ordered pairs, coordinate plane, number line, inequalities, point, interpretation	Statistics: mean, median, mode, range Probability: probability, likelihood, outcome, tree diagram, experiment, fractional probability	Learn Geometric Words: quadrilaterals: trapezoid, parallelogram, rectangle, square, rhombus and triangles: right, acute, obtuse, angle, isosceles, scalene, equilateral, congruent, similar, symmetry, perimeter, area, volume, polygon, two-dimensional shapes, three-dimensional shapes, circle, spheres, cubes, cones	Use Fundamentals of Algebra: algebra, factors, equations, variable, expression, parentheses, brackets, evaluate, exponents, order of operations, simplify, equivalent expressions

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
	product, fact, array, multiples, area <u>Divide Whole Numbers</u>: quotient dividend, divisor, remainder <u>Learn the Basics of Fractions</u>: fraction, equivalent fraction, denominator, numerator, equivalent, mixed numbers, improper fractions, fraction, reduced fractions, greatest common factor, least common multiple							

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
	Exponents: perfect square, square root							

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
5	Learn the Basics of Whole Numbers: Roman Numerals, place value, multi-digit numbers, multiplication, division, rounding, negative numbers, positive numbers Divide Whole Numbers: divisibility rules Learn the Basics of Fractions: improper fractions, simplifying fractions, equivalent fractions,	Measurement Concepts: Metric units, customary units, millimeters, centimeters, meters, kilometers, liters, milliliters, grams, kilograms, ounces, pounds, tons, unit conversion, ratio reasoning, angles, volume Temperature: Fahrenheit, Celcius Money: discount, price comparison, cost analysis	Use Basic Operations to Solve Problems: critical thinking, multiple solutions, data, modeling, diagrams, tables, graphs, lists, patterns, guess and check, formula, rate, unit rate, time, distance	Solve Problems Using Estimation: estimation, sum, difference, product, quotient, reasonable answer, rounding, compatible numbers, front-end estimation, clustering, mental math, patterns	Makes Graphs and Charts: Graph, data, table, circle graph, bar graph, line graph, coordinate plane, ordered pairs, inequalities, scale drawing, prediction, misleading information, interpretation, number line, point	Statistics: mean, median, mode, range Probability: probability, outcome, likelihood, tree diagram, experiment, prediction, fractional probability	Learn Geometric Words: polygon, circle, triangle, rectangle, square, sphere, cube, cylinder, symmetry, congruence, similar shapes, perimeter, area, circumference, volume, surface area, coordinate plane, 2D shapes, 3D shapes, angle, acute, obtuse, right	Use Fundamentals of Algebra: absolute value, order of operations, expression, equation, like terms, variables, parentheses, brackets, exponents, evaluate, equivalent expressions, substitution

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
	reciprocal, fractions, mixed numbers <u>Learn the Basics of Decimals</u>: decimals, tenths, hundredths, thousandths <u>Percents</u>: percent <u>Properties of Numbers</u>: inverse properties <u>Exponents</u>: exponents, powers of 10, square root, perfect square							

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
6	Learn the Basics of Whole Numbers: Roman numerals Divide Whole Numbers: divisibility rules Learn the Basics of Fractions: numerator, denominator, mixed number, improper fraction, reciprocal, multiplicative inverse, simplest form, like denominators, unlike denominators, equivalent, greatest common factor Percents:	Measurement Concepts: ratio, conversion factor Money: discount, tax, unit rate, rate, cost analysis, ratio, volume, angle, price comparison	Use Critical Thinking Skills to Solve Problems: coordinate plane, inequalities, equation, guess and check, interest, proportion, distance	Solve Problems Using Estimation: compatible numbers, front-end estimation, patterns, clustering, mental math	Make Graphs and Charts: graph, coordinate plane, inequality, scatter plot, prediction, misleading graphs, scale drawing, number line, ordered pairs, negative coordinates, quadrants, line graph, bar graph, circle graph, interpretation	Statistics: statistics, bivariate, mean, median, mode, range Probability: probability, outcome, box plot, histogram, scatter plot	Learn Geometric Words: geometry, polygon, congruent, similar, proportional, altitude, prisms, net, pythagorean theorem, polygon, congruent, similar, parallel, perpendicular, diagonal, prism, net, perimeter, area, surface area, right triangle, triangular prism, congruency, similarity	Use Fundamentals of Algebra: square root, variable, co-efficient, absolute value, constant, expression, equation, terms, like terms, inequalities, evaluate, integers, inverse operations, simplify, integers, rational numbers, order of operations, ratio, proportional relationships, unit rate, dependent

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
	percent, rate, ratio <u>Properties of Numbers</u>: commutative property, associative property, identity property, distributive property, inverse property <u>Exponents</u>: base number, exponent, power, squares, square root, cubes, cube root, expanded form, exponential form, scientific notation							variable, independent variable

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
7	Divide Fractions: reciprocal, divisor, numerator, denominator, mixed number, fraction Learn The Basics of Decimals: decimal, mixed number Percents: percent, percent change Properties of Numbers: PEMDAS, (parentheses, exponents, multiplication, division, addition, subtraction) rational	Measurement Concepts: metric system, customary system, unit, length, decimeter, millimeter, conversion factor, angle, degree, acute angle, obtuse angle, right angle, angle measurement Money: discount, tax, price comparison, cost analysis, unit price, percent discount, mark-up, sales tax	Use Critical Thinking Skills to Solve Problems: data analysis, sufficient information, reasoning, multiple solutions, evaluate, unnecessary information, problem-solving , graphene, coordinate plane, absolute value, ratio, interest, unit rate, proportions, rate, time, distance, multi-step problems	Solve Problems Using Estimation: estimation, rounding, compatible numbers, front-end estimation, mental math, clustering, patterns, approximation	Interpret Graphs and Charts: graph, chart, scale drawing, misleading data, prediction, coordinate plane, negative coordinates, quadrant, bivariate data, scatter plot, bar graph, line graph, pie chart, histogram, coordinate plane, data points, association, correlation, positive relationship, negative relationship	Statistics: scatter plot, bivariate data, mean, median, mode, range, outlier Probability: data analysis	Learn Geometric Words: bisecting lines, congruent shapes, similar shapes, base, altitude, height, triangle, quadrilateral, area, circumference, vertical angle, adjacent angle, supplementary angle, polygon, surface area, volume, pythagorean theorem, right angle, nets	Use Fundamentals of Algebra: square root, absolute value, inequality, integer, rational numbers, expression, equation, simplification, order of operations, proportional relationships, unit rate, proportions, ratio, linear expressions, like terms, graphing inequalities, irrational numbers. Perfect square, perfect cube, slope, y-intercept, line equation

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
	numbers, integer <u>Exponents</u>: base, positive power, power of ten, exponential form, absolute value							

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
8	Percents: percent of change Exponents: exponent, base, positive exponents, negative exponents, power, square root, cube root, perfect square, exponent notation, standard form, expanded notation, rational number, irrational number, radical, perfect cube		Use Critical Thinking Skills to Solve Problems: justification, analyze, evaluate, interest (simple interest), principal (in interest problems), rate (interest rate), time (in interest problems, simple interest formulas (I-PRT), variable		Interpret Graphs and Charts: scatter plot, bivariate data, x-axis, y-axis, coordinate plane, correlation, association, positive association, negative association, trend, outlier, coordinate pair, independent variable, dependent variable	Statistics: bivariate data, scatter plot, data point, x-axis, y-axis, coordinate plane, correlation, association, trend, outlier, data set, mean, median, mode, range, independent variable, dependent variable	Learn Geometric Words: angle, vertex, line segment, ray, point, line, perpendicular, parallel, congruent, bisector, symmetry, polygon, radius, diameter, adjacent angles, right angle, acute angle, obtuse angle, angle bisector, pythagorean theorem, hypotenuse	Use Fundamentals of Algebra: constant, coefficient, rational numbers, square root, cube root, like terms, simplify, distributive property, inverse operations, integer exponents, negative exponents, irrational number scientific notation, linear equation, function, input, output, ordered pair, domain, range, function notation. Slope

Mathematical Terminology by Grade and Domain								
Grade	**Numbers, Numerations, Operations**	**Measurement**	**Problem Solving and Critical Thinking**	**Estimation**	**Graphs and Charts**	**Statistics and Probability**	**Geometry**	**Algebra**
								(m), y-intercept, linear function, nonlinear function, rate of change, slope-intercept form (y=mx+b), direct variation (y=mx)