

Elementary Math Curriculum: (Grade 3)

– Place Value Comparisons and Ordering

- Compose numbers up to 100,000 from variety of representations.
- Decompose numbers up to 100,000.
- Represent whole numbers using expanded form.
- Represent the value of a digit in whole numbers using numerals.
- Represent the value of a digit in whole numbers using expanded notation.
- Describe the relationships between a digit's location and its value.
- Identify consecutive multiples of 10, 100, 1,000, and 10,000.
- Represent a number on a number line using consecutive multiples.
- Round a number based on its relationship to the benchmark multiples.
- Determine if a number is greater than or less than another number.
- Compare whole numbers using place value understanding.
- Represent the comparison using symbols $>$, $<$, and $=$.
- Order whole numbers using place value understanding.
- Order whole numbers on a number line

• One step and Two steps Addition and Subtraction Problems

- Round numbers to the nearest 10 or 100 to estimate solutions.
- Use compatible numbers to estimate solutions.
- Represent one-step problems involving addition and subtraction using
 - pictorial representations
 - number lines
 - equations
- Solve with fluency one-step problems involving addition and subtraction within 1,000 using various strategies.

• Addition and Subtraction with Money & Personal Financial Literacy

- Name a coin or bill and their value
- Represent the value of collection of coins using the cent symbol and the dollar symbol
- Represent the value of a collection of bills using the dollar symbol
- Determine the value of a collection of coins and bills and represent the value using the \$ sign
- Identify the coins and bills needed to pay for specific items.
- Explain the connection between human labor and income.
- Describe the relationship between scarcity of resources and how that impacts cost.
- Identify costs and benefits of planned and unplanned spending decisions.
- Explain that credit is used when wants and needs exceeds the ability to pay.
- Explain that it is the borrower's responsibility to pay back the lender with interest.
- List the reasons to save and explain the benefit of a savings plan (e.g. college savings).
- Identify decisions involving income, spending, saving, credit, and charitable giving.

• Understanding Multiplication

- Represent multiplication facts using a variety of strategies such as:
 - o repeated addition

- o equal-sized groups
- o arrays
- o area models equal jumps on a number line
- o skip counting
- Recall multiplication facts and connected division facts up to 10 by 10.
- Determine the total number of objects when equal sized groups of objects are combined or arranged in arrays.
- Describe multiplication expressions as a comparison (e.g. 3×24 is 3 times as much as 24).

• Understanding Division

- Determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or a missing product.
- Determine if a number is even or odd using divisibility rules.
- Determine a quotient using the relationship between multiplication and division.
- Determine the number of objects in each group when a set of objects is partitioned into equal shares or a set of objects is shared equally.

• Geometry & Measurement

- Time: Determine the solutions to problems involving addition and subtraction of time intervals in minutes using (e.g. A 15-minute event plus a 30-minute event equals 45 minutes)

- o Pictorial models

- o Tools

• Geometric 2-d Shapes classification and sorting:

- Uses attributes to describe various regular and irregular quadrilaterals.

- o rhombus

- o parallelogram

- o trapezoid

- o rectangle

- o square

- Identifies examples of quadrilaterals that do not belong to the groups listed above.

- Classify and sort three-dimensional figures (e.g. of three-dimensional figures: cones, cylinders, spheres, triangular prisms, rectangular prism, and cubes)

- o number of edges

- o number of vertices

- o number of faces

- o types of faces

• Area and Perimeter

- Determines the perimeter of a polygon with a missing length when given perimeter and remaining side lengths in problems.

- Determine the area of rectangles with whole number side lengths in problems using multiplication related to the number of rows times the number of unit squares in each row.

- Decompose composite figures formed by rectangles into non-overlapping rectangles to determine the area of the original figure using the additive property of area.

- **Volume and Weight**

- Determine liquid volume (capacity) or weight using
 - o units
 - o tools
- Determine when it is liquid volume (capacity) or weight.
- Determine when it is appropriate to use measurements of liquid volume (capacity) or weight.
- Determine liquid volume (capacity) or weight using
 - o units
 - o tools

- **Applying Multiplication and Division (Two-Step and Multi-Digit)**

- **Multi-digit multiplication**

- **Multiply a two-digit number by a one-digit number using strategies**
 - o mental math
 - o partial products
 - o operation properties
 - o place value strategies standard algorithm
- **Represent and solve one- and two-step multiplication and division problems within 100 using**
 - o arrays
 - o strip diagrams
 - o equations

- **Multi-Step Multiplication and Division**

- **Multiply a two-digit number by a one-digit number using strategies**
 - o mental math
 - o partial products
 - o operation properties
 - o place value strategies
 - o standard algorithm
- **Solve one-step and two-step problems involving multiplication and division within 100 using strategies with**
 - o objects
 - o arrays area models
 - o equal groups
 - o properties of operations
 - o recall of facts
- **Represent and solve one- and two-step multiplication and division problems within 100 using**
 - o arrays
 - o strip diagrams
 - o equations

- **Fractions**

- Compose and decompose fractions into unit fractions.
- Represent fractions greater than zero and less than or equal to one (with denominators 2, 3, 4, 6, and 8) using
 - o objects
 - o pictorial representations
 - o strip diagrams

- o number lines
- Explain the unit fraction as one part of the whole that has been divided into equal parts (e.g. $\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$)
- Solve problems involving partitioning among two or more recipients using pictorial representations of fractions
 - o partitioning an object
 - o partitioning a set of objects
 - o using pictorial representations of fractions
 - o using denominators of 2, 3, 4, 6, and 8
 - o between 0 and 1 and beyond one whole
- Compose and decompose fractions into unit fractions.
- Represent fractions greater than zero and less than or equal to one (with denominators 2, 3, 4, 6, and 8) using
 - o objects
 - o pictorial representations
 - o strip diagrams
 - o number lines
- Explain the unit fraction as one part of the whole that has been divided into equal parts. (e.g. $\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$)
- Solve problems involving partitioning among two or more recipients using pictorial representations of fractions
 - o partitioning an object
 - o partitioning a set of objects
 - o using pictorial representations of fractions
 - o using denominators of 2, 3, 4, 6, and 8
 - o between 0 and 1
 - o beyond one whole
- Represent equivalent fractions using a variety of objects and pictorial representations.
- Represents equivalent fractions with denominators of 2, 3, 4, 6, and 8
 - o using a variety of objects
 - o using a variety of pictorial models (including number lines)
 - o and justify how two fractions equivalent are using the model
- **Compare two fractions having the same numerator or denominator in problems by reasoning about their sizes and justifying the conclusion using**
 - o symbols
 - o words
 - o Objects
 - o pictorial mode
- **Input- Output Tables and Data Analysis**
 - **Input – Output Tables**
 - Represent real-world relationships using
 - o number pairs in a table
 - o verbal descriptions
 - Find the unknown whole number in a multiplication or division equation when the unknown is a missing product or a missing factor
 - **Data Analysis**
 - Solve one- and two-step problems using data with scaled intervals using

- o frequency tables
 - o dot plots
 - o pictographs
 - o bar graphs
- Create charts and graphs with multiple categories
 - o frequency tables
 - o dot plots
 - o pictographs
 - o bar graphs

Elementary Math Curriculum: (Grade 4)

• **Launching Mathematical Mindsets (Integrating Personal Financial Literacy)**

- Distinguish between fixed and variable expenses.
- Compare different savings options.
- Describe how to allocate a weekly allowance among spending, saving, and sharing.
- Describe the purpose of safety institutions.

• **Compare and Order Whole Numbers**

- Represent whole numbers using expanded notation.
- Represent the value of a digit in whole numbers using numerals and expanded notation
- Describe the relationships between a digit and the digit to its left.
- Use place value understanding to:
 - o Determine if a number is greater than or less than another number
 - o Compare whole numbers
 - o Order whole numbers
- Represent the comparison using symbols.

• **Adding and Subtracting Whole Numbers**

- Represent multi-step problems involving addition and subtraction using:
 - o Strip diagrams
 - o Equations
- Identify and describe a variable to represent the unknown quantity
- Explain how my representations connect to the problem situation.
- Solve one step addition or subtraction problems using:
 - o Place value strategies
 - o Expanded form
 - o Standard algorithm
- Explain the process for regrouping using place value understanding.
- Solve multi-step problems including addition and subtraction.
- Use estimation strategies and representations to justify solutions.

• **Multi-Digit Multiplication & Division**

• **Multi-Digit Multiplication**

- Represent a product using arrays, area models, and equations.
- Explain the connection between the product, factors, and the representations.
- Multiply up to a 3 digit by 2 digit or 4 digit by 1 digit number using:
 - o Partial products

- o Properties of operations

- Standard algorithm Explain the strategies or algorithms used to multiply whole numbers.
- Represent problems involving multiplication using strip diagrams or equations.
- Round to the nearest 10, 100, or 1,000 to estimate solutions.
- Use compatible numbers to estimate solutions.
- Explain how I estimated my solution.

- **Multi-Digit Division**

- Represent a quotient using arrays, area models, and equations.
- Round numbers to the nearest 10, 100, or 1,000.
- Determine compatible numbers to divide.
- Estimate quotients of one step division problems.
- Predict a range of solutions to support justifications.
- Use area models or partial quotients to solve division problems.
- Represent a quotient using arrays, area models, and equations.
- Round numbers to the nearest 10, 100, or 1,000.
- Determine compatible numbers to divide.
- Estimate quotients of one step division problems.
- Predict a range of solutions to support justifications.
- Use area models or partial quotients to solve division problems.

- **Applications of Multi-Digit Division**

- Represent multi-step problems involving the four operations using:
 - o strip diagrams
 - o equations
- Identify and describe a variable to represent the unknown quantity.
- Solve multi-step problems involving multiplication and division.
- Solve problems involving division and interpreting remainders.
- Use estimation strategies to solve problems involving multiplication and division of whole numbers.
- Calculate profit in a given situation.

- **Fractions**

- **Composing and Decomposing Fractions**

- Represent fractions using fraction strips and number lines.
- Decompose fractions as a sum of unit fractions.

- Write a number sentence that corresponds with the decomposed values.
- Describe the relationship between improper fractions and mixed numbers.
- Represent fractions on number lines as distances from zero.
- Prove equivalence using concrete or pictorial models.
- Prove equivalence by demonstrating the multiplicative relationship between the numerators and denominators are the same.
- Generate equivalent fractions from different representations.
- Write a fraction in simplest form.

- **Comparing Fractions**

- Compare fractions using concrete and pictorial models and numerical strategies.
- Represent the comparison of fractions using symbols.
- Represent fractions on number lines as distances from zero.
- Represent addition and subtraction of fractions using linear concrete and pictorial representations.
- Add and subtract fractions with a common denominator using concrete and pictorial representations.
- Describe reasonableness of sums and differences using benchmark fractions.

- **Decimals and Decimal Operations**

- **Relating Decimals to Fractions**

- Explain the relationship between fractions and decimals.
- Determine equivalent fractions and decimals to the tenths or hundredths.
- Represent fractions and decimals to the tenths or hundreds on number lines

- **Decimal Place Values**

- Interpret value of a place value to left or right of another place value.
- Represent the value of a decimal in expanded notation.
- Represent decimals using concrete or visual models.
- Represent decimals on number lines.
- Determine the corresponding decimal to a point on a number line.

- **Decimal Operations**

- **Compare and Order Decimals**

- Represent decimals using visual models and money.
- Compare decimals using visual models and money to the tenths and hundredths.
- Order decimals using visual models and money to the tenths and hundredths.

- Solve problems that include comparing and ordering decimals.

- **Adding and Subtracting Decimals**

- Represent decimals using concrete and pictorial models (including money).
- Add and subtract decimals using models.
- Add and subtract decimals using the standard algorithm.
- Solve problems involving addition and subtraction of decimals.

- **Algebraic Relationships & Measurement**

- **Generating Patterns**

- Generate input and output tables to match a scenario involving multiplication, division, addition, or subtraction.
- Generate a number pattern from rule that represent the relationship between the value and its position in the sequence.

- **Understanding conversions**

- Identify the units of measure being used.
- Describe the relationship between two units of measure.
- Represent conversions using input output tables.
- Convert between units of measure within the customary or metric system.

- **Solving problems involving units of measure**

- Determine the total hours and minutes spent on events when given various intervals of time spent
- Determine the missing time measurement when given:
 - o start time and end time
 - o end time and elapsed time
- Solve problems that require conversions within the same measurement system (may include the use of tables)
 - o CUSTOMARY
 - ♣ length (inches, feet, miles)
 - ♣ capacity (liquid ounces, cups, pints, quarts, gallons)
 - ♣ weight (ounces, pounds, tons)
 - o METRIC
 - ♣ length (millimeters, centimeters, meters, kilometers)
 - ♣ capacity (milliliters, liters)
 - ♣ mass (milligrams, grams, kilograms)

- **Geometry**

- **Measuring Angles**

- Define and represent a point, line, ray, angle, perpendicular and parallel lines.
 - Describe the relationship between cut out sections of a circle and angles.
 - Draw an angle with a given measure.
 - Measure angles in degrees using a protractor.
 - Determine if an angle is acute, obtuse, or right.
 - Solve to determine the measure of the unknown angle formed by two non-overlapping adjacent angles.

- **Classifying 2-d Figures**

- Identify, define, and draw parallel and perpendicular lines.
 - Draw lines of symmetry in a 2-dimensional figure.
 - Determine how many lines of symmetry 2-dimensional figures have.
 - Apply knowledge of acute, obtuse, and right angles to classify triangles.
 - Classify 2-dimensional figures based on the presence or absence of parallel and/or perpendicular lines.
 - Classify 2-dimensional figures based on the presence or absence of angles of a specified size.

- **Solving Area and Perimeter problems**

- Build models to represent perimeter.
 - Develop the formula for perimeter of a rectangle and square.
 - Build models to represent area.
 - Develop the formula for area of a rectangle and square.
 - Solve problems involving area and perimeter of a square.
 - Measure an objects length, liquid volume, or mass.
 - Tell time to the nearest minute.
 - Determine elapsed time.
 - Solve problems using the four operations involve different units of measure, including:
 - o Liquid volume
 - o Mass
 - o Length
 - o Intervals of time

- **Data Analysis**

- **Data Analysis**

- Represent data on a frequency table, dot plot, or stem and leaf plot.
 - Read and interpret data on a frequency table, dot plot, or stem and leaf plot.
 - Solve one- and two-step problems using data from dot plots, stem and leaf plots.

- **Review - Essential Understandings of 4th Grade**

- Represent multi-step problems involving addition and subtraction using:
 - o Strip diagrams
 - o Equations
 - Solve one step addition or subtraction problems using:
 - o Place value strategies
 - o Expanded form
 - o Standard algorithm
 - Solve multi-step problems including addition and subtraction.
 - Use estimation strategies and representations to justify solutions
 - Represent multi-step problems involving the four operations using:
 - o strip diagrams
 - o equations
 - Solve multi-step problems involving multiplication and division.
 - Solve problems involving division and interpreting remainders.
 - Use estimation strategies to solve problems involving multiplication and division of whole numbers.
 - Calculate profit in a given situation

Elementary Math Curriculum: (Grade 5)

• Review of Decimals and Fractions

- Use concrete and pictorial models to represent the value of a digit to the thousandths.
- Use expanded notation to represent the value of a digit to the thousandths.
- Use numerals to represent the value of a digit to the thousandths.
- Use place value understandings to round decimals to the tenths place.
- Use place value understandings to round decimals to the hundredths place.
- Identify between two decimals which is greater using place value understanding.
- Identify between two decimals which is less using place value understanding.
- Represent the comparison of two decimals with symbols.
- Justify the comparison of decimals.
- Justify the order of a set of decimals.
- Estimate decimals and fractions using number lines.
- Explain how to use benchmark decimals to estimate solutions.
- Add whole numbers and decimals using various strategies.
- Subtract whole numbers and decimals using various strategies.
- Add fractions with unequal denominators using concrete models.
- Subtract fractions with unequal denominators using concrete models.
- Add fractions with unequal denominators using pictorial models.
- Subtract fractions with unequal denominators using pictorial models.
- Estimate using benchmark fractions.
- Explain how to use benchmark fractions to estimate solutions.
- Use concrete and pictorial models to represent factors of whole numbers up to 50.
- Identify if a number is prime or composite.
- Add fractions with unequal denominators.
- Subtract fractions with unequal denominators.

• Adding and Subtracting Positive Rational Numbers

- Estimate using benchmark fractions and decimals.
- Explain how to use benchmark fractions and decimals to estimate solutions.
- Add fractions and decimals using various strategies.
- Subtract fractions and decimals using various strategies.
- Explain the process taken to add a decimal and fraction.

- **Multiplication & Division of Whole Numbers**

- **Writing Equations based on Multiplying and Dividing Whole Numbers**

- Represent a product using an equation with a variable.
 - Multiply a 3-digit by a 2-digit number using the standard algorithm.
 - Represent problems involving multiplication using strip diagrams or equations.
 - Represent a quotient using an equation with a variable.
 - Divide a 4-digit dividend by a 2-digit divisor using various strategies.
 - Divide a 4-digit dividend by a 2-digit divisor using standard algorithm.
 - Represent problems involving division using strip diagrams or equations.
 - Represent multi-step problems with strip diagrams and/or number lines.
 - Represent multi-step problems with equations using a letter standing for the unknown.
 - Solve multi-step problems using equations when the letter isolated on one side of the equal sign.
 - Explain how an equation or representation matches the problem situation.
 - Estimate to predict a solution and determine reasonableness of a solution.

- **Expressions and Equations**

- **Simplifying Numeric Expressions**

- Describe the meaning of parentheses and brackets in a numeric expression.
 - Explain the order in which to simplify a numeric expression.
 - Simplify expressions without grouping symbols.
 - Simplify expressions with grouping symbols.

- **Writing and Solving Equations**

- Represent a multi-step problem with strip diagrams.
 - Represent a multi-step problem with a number line.
 - Represent a multi-step problem with a letter standing for the unknown.
 - Solve a multi-step problem using equations.
 - Explain how an equation or representation matches the problem.

- **Algebraic Reasoning**

- **Graphing on a Coordinate Plan**

- Describe the key attributes of the coordinate plane, including the x- and y-axes and the origin.
 - Describe the location of a coordinate in reference to the origin.
 - Describe the process for graphing ordered pairs.
 - Explain how to move along a coordinate plane to get from one point to another.
 - Plot ordered pairs in the first quadrant of the coordinate plane.

- Plot ordered pairs generated from number patterns and input-output tables.
- Interpret real-world data represented in coordinate grids.
- Interpret real-world data to create a scatterplot.
- Draw conclusions and make predictions using information from a scatterplot.
- Generate questions using information from a scatterplot.

- **Additive and Multiplicative Relationships**

- Generate a numerical pattern when given a rule in the form $y = x + a$ and graph the results.
- Generate a numerical pattern when given a rule in the form $y = ax$ and graph the results.
- Describe the difference between additive and multiplicative patterns.
- Graph in the first quadrant of the coordinate plane.
- Interpret real-world data to create a scatterplot.
- Draw conclusions and make predictions using information from a scatterplot.
- Generate questions using information from a scatterplot.

- **Multiplication & Division of Fractions/Decimals**

- **Represent a fraction using concrete objects and pictorial models.**

- Use concrete objects and pictorial models to:
 - Multiply a whole number and a fraction
 - Divide a unit fraction by a whole number
 - Divide a whole number by a unit fraction

- **Multiplying and Dividing Decimals**

- Represent a decimal using concrete objects and pictorial models.
- Use concrete objects and pictorial models to:
 - Multiply a decimal and a whole number
 - Multiply a decimal and decimal
 - Divide a decimal by a whole number
- Multiply a decimal and a whole number using the standard algorithm.
- Multiply a decimal by a decimal using the standard algorithm.
- Divide a decimal by a whole number using the standard algorithm.

- **Geometry & Measurement**

- **Classifying 2-d Figures**

- Label shapes using markings for:
 - Congruent lines

- o Congruent angles
- o Parallel lines
- o Right angles

- Name polygons based on the number of sides.
- Name polygons based on the attributes of their sides Name a polygon based on their angle measure.
- Name a polygon with the most specific name and explain how I know.
- Sort polygons into graphic organizers using attributes and properties when given a picture.
- Sort polygons into a graphic organizer using attributes and properties when given a name.
- Explain why and how I sorted by shapes using formal geometric language.
- Describe the relationship between polygons within the graphic organizer.

• **Volumes, Areas and Perimeters**

- Represent volume using concrete objects and pictorial models.
- Fill rectangular prisms with cubes to determine the volume.
- Use the base of figures and the number of layers to determine the volume
- Describe perimeter and solve problems involving perimeter.
- Describe area and solve problems involving area.
- Explain the different between perimeter and area.
- Describe volume and solve problems involving volume.
- Explain the connection between area and perimeter and solve problems as it relates to volume.

• **Unit Conversions**

- Identify units of measure being used.
- Describe the relationship between two units of measure Represent conversions using tables.
- Convert between units of measure within the same system

• **Data Analysis and Personal Financial Literacy**

• **Data Analysis**

- Collect and sort data using a frequency table.
- Explain a frequency table, bar graph, stem-and-leaf, dot plot, and scatterplot is and why you use them.
- Answer questions using information from graphs.

- Generate questions using information from graphs
- **Personal Financial Literacy**
 - Define income tax, property tax, sales tax, and property tax
 - Identify gross income and net income.
 - Explain the difference between gross income and net income.
 - Identify different methods of payment including checks, credit card, debit card, and electronic payments.
 - Explain the advantages and disadvantages of different methods of payment.
 - Balance a simple budget.