COPPELL ISD MATHEMATICS YEAR-AT-A-GLANCE

MATHEMATICS | GRADE 4

Program Transfer Goals

- Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.
- Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.
- Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.
- Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

PACING

First Grading Period			Second Grading Period		Third Grading Period			Fourth Grading Period		
Unit 1: Place Value of Whole Numbers	Unit 2: Place Value of Decimals	Unit 3: Addition and Subtraction	Unit 4: Personal Financial Literacy	Unit 5: Fractions	Unit 6: Multiplication of Whole Numbers	Unit 7: Division of Whole Numbers	Unit 8: Measurement	Unit 9: Angles	Unit 10: Geometry Concepts	Unit 11: Application of Operations
BOY Screener					MOY Screener			EOY Screener		

Assurances for a Guaranteed and Viable Curriculum [STANDARDIZED ACROSS ALL CONTENT AREAS]

Adherence to this scope and sequence affords every member of the learning community clarity on the knowledge and skills on which each learner should demonstrate proficiency. In order to deliver a guaranteed and viable curriculum, our team commits to and ensures the following understandings:

Shared Accountability: Responding to the Needs of All Learners

- High levels of learning for all students.
- The district and course formative assessments aligned to the standards for this course support educators and learners in monitoring academic achievement and leveraging interventions.

Shared Understanding: Curriculum Design

- The district curriculum design weaves together the elements of content, skills and assessments in order to adhere to curriculum design at the macro and micro level, ensuring vertical alignment.
- The district curriculum incorporates standards, scope and sequence, enduring understandings, essential questions, performance assessments, and recommended resources.

Interdependence: Curriculum Units

Members of the learning community utilize the curriculum units, plan collaboratively, and reflect on results for continuous improvement.

UNIT 1: PLACE VALUE

TIMELINE: 2 WEEKS - 1ST GRADING PERIOD

Learners expand their understanding of place value as they apply their knowledge of the place value system to represent numbers up to 1,000,000,000 using numerals and expanded notation. Learners communicate the place value shift that occurs when moving left and right in the place value system, as well as to use this understanding to multiply a number by 10 and 100. An understanding of place value is used when comparing and ordering numbers, as well as rounding numbers using relative sizes of numbers as opposed to memorizing rounding "rules." Throughout this unit, learners will summarize data (that includes whole numbers) using a frequency table, stem and leaf, and dot plot. Learners solve 1-step problems using data (that include whole numbers and decimals) that is represented in frequency tables, stem and leaf, and dot plots.

- **Transfer Goal:**
  - Explain and represent the value of numbers based on the pattern of the place-value system
  - Communicate comparisons of numbers using written and oral language, and symbols
  - Select tools and an understanding of place value, to estimate, compare, and order numbers
  - Use written or oral language to explain and justify the order and comparisons of numbers
  - Select tools to collect, sort, and organize data
  - Use tables and graphs to communicate the organization of data

Students will know…

Place value is a system that follows patterns

Students will be skilled at…

Interpreting the value of each place-value position as 10 times the position to the right and as one-tenth of the value of the place to its left; representing the value of a digit in whole numbers through 1,000,000,000 using expanded notation and numerals; comparing and ordering whole number to 1,000,000,000 using symbols; rounding whole numbers to a given place value through the hundred thousands place; determining the product of a number and 10 or a number and 100; summarizing data using a frequency table, stem and leaf, and dot plot; solving problems using data

Unit 2: Place Value of Decimals

Timeline: 3 weeks - 1st Grading Period

Learners apply their knowledge of the place value system to interpret the value of decimals (to the hundredths place) and represent decimals using manipulatives, pictures, money, numerals, number lines, and expanded notation. Learners communicate the place value shift that occurs when moving left and right in the place value system, as well as to use this understanding to multiply a decimal by 10 and 100. An understanding of place value is used when comparing and ordering decimals and represent comparisons using manipulatives and pictures. Throughout this unit, learners will summarize data (that includes whole numbers) using a frequency table, stem and leaf, and dot plot. Learners solve 1-step problems using data (that include whole numbers and decimals) that is represented in frequency tables, stem and leaf, and dot plots.

- **Transfer Goal:**
    - Explain and represent the value of decimals based on the pattern of the place-value system
    - Communicate comparisons of decimals using written and oral language, and symbols
    - Select tools, such as a number line, and an understanding of place value, to estimate, compare, and order decimals
    - Use written or oral language to explain and justify the order and comparisons of numbers
    - Select tools to collect, sort, and organize data
    - Use tables and graphs to communicate the organization of data

Students will know…

The value of each place value position is 10 times the position to the right and one-tenth the value of the place to its left

Students will be skilled at…

Representing decimals using concrete and visual models and money; comparing and ordering decimals using concrete and visual modes to the hundredths; determining the corresponding decimals to the tenths or hundredths place of a specified point on a number line; representing decimals to the tenth and hundredths as distances from zero on a number line; summarizing data using a frequency table, stem and leaf, and dot plot; solving problems using data

UNIT 3: ADDITION AND SUBTRACTION

TIMELINE: 3 WEEKS - 1ST GRADING PERIOD

Learners continue to develop their understanding of addition and subtraction as they expand the application to one-step and multi-step problems involving adding and subtracting whole numbers, as well as decimals. Strip diagrams and equations (using a letter as the unknown) are used to represent the problem. Learners use reasoning and thought to estimate sums and differences, including the use of compatible numbers. Learners round numbers using the relative sizes of numbers as opposed to memorizing rounding "rules." Throughout this unit, learners will summarize data (that includes whole numbers) using a frequency table, stem and leaf, and dot plot. Learners solve 1-step problems using data (that include whole numbers and decimals) that is represented in frequency tables, stem and leaf, and dot plots.

- **Transfer Goal:**
  - Use written and oral language to communicate strategies used to add and subtract whole numbers and decimals
  - Use a problem-solving model to solve one-step and two-step addition and subtraction problems involving whole numbers and decimals
  - Communicate mathematical ideas being addressed in multi-step problems using representations, including strip diagrams and equations
  - Select tools, such as an understanding of place value to estimate sums and differences of whole numbers and decimals
  - Select tools to collect, sort, and organize data
  - Use graphs to communicate the organization of data

Students will know…
Problem-solving strategies to apply to addition and subtraction problems

Students will be skilled at…
Adding and subtracting whole numbers and decimals to the hundredths place using the standards; rounding to the nearest 10, 100, or 1,000 or using compatible numbers; representing multi-step problems involving the four operations; summarizing data using a frequency table, stem and leaf, and dot plot; solving problems using data

Unit 4: Personal Financial Literacy

Timeline: 2 weeks - 2nd Grading Period

Learners discover effects of financial decisions. Financial institutions and their benefits are explored. Learners plan for their financial future by recognizing the advantages and disadvantages of various saving options, and how they can distribute a weekly allowance for different purposes. Learners calculate profit while being mindful of fixed and variable expenses. Throughout this unit, learners will summarize data (that includes whole numbers and fractions) using a frequency table and dot plot. Learners solve 1-step problems using data (that include whole numbers, decimals, and fractions) that is represented in frequency tables, stem and leaf, and dot plots.

- **Transfer Goal:**
    - Explain purpose of financial institutions and their benefits
    - Explain and justify financial decisions using reasoning to explain implications of spending, saving and sharing
    - Select and use tools to calculate profit, while being mindful of fixed and variable expenses
    - Select tools to collect, sort, and organize data
    - Use graphs to communicate the organization of data

Students will know…

The difference between fixed and variable expenses; advantages and disadvantages of various saving options; how to allocate a weekly allowance among spending, saving, including for college, and share; the basic purpose of financial institutions, including keeping money safe, borrowing money, and lending

Students will be skilled at…

calculating profit in a given situation; summarizing data using a frequency table, stem and leaf, and dot plot; solving problems using data

UNIT 5: FRACTIONS

TIMELINE: 6 WEEKS - 2ND GRADING PERIOD

Learners begin by relating decimals (to the tenths and hundredths) to fractions (with a denominator of 10 or 100). Learners decompose fractions (including fractions greater than zero) using manipulatives and pictures, and represent the decomposed fraction as an expression (fractions with the same denominator being added together.) When given a word problem involving addition and subtraction of fractions (fractions represented as mixed numbers as well as fractions greater than zero may be included), learners represent word problems using manipulatives, pictures, and number lines. These representations, as well as an understanding of the properties of operations for addition and subtraction to solve problems. Learners also use benchmark fractions to determine reasonableness of the sums and differences of fractions. Learners use conceptual understanding, not procedural knowledge, to determine equivalency (if two fractions represent the same amount of a whole or are on the same place on a number line) using a variety of methods. Throughout this unit, learners will summarize data (that includes whole numbers and fractions) using a frequency table and dot plot. Learners solve 1-step problems using data (that include whole numbers, decimals, and fractions) that is represented in frequency tables, stem and leaf, and dot plots.

- **Transfer Goal:**
  - Select tools, including real objects, manipulatives, paper and pencil, and technology to represent and solve problems involving addition and subtraction of fractions
  - Use written and oral language to explain representations of fractions, including the decomposition of fractions
  - Use written and oral language to explain equivalence of fractions
  - Select tools to collect, sort, and organize data
  - Use graphs to communicate the organization of data

Students will know…

the definition of a fraction; the definition of the numerator of a fraction; the definition of the denominator of a fraction; properties of operations for addition and subtraction; the definition of a benchmark fraction

Students will be skilled at…

Relating decimals to fractions; representing a fraction; decomposing a fraction; determining equivalent fractions; comparing fractions; adding and subtracting fractions; using benchmark fractions to evaluate reasonableness; summarizing data using a frequency table, stem and leaf, and dot plot; solving problems using data

Unit 6: Multiplication of Whole Numbers

Timeline: 3 weeks - 3rd Grading Period

Learners use strategies, including the standard algorithm, to multiply up to a four-digit number by a one-digit number, and two two-digit whole numbers, and represent the product using arrays, area models, or equations, mental math, partial products, and properties of operations. Estimation strategies, including rounding and compatible numbers, are used to determine reasonableness of products. Learners also solve one-step and two-step problems that involve the multiplication of whole numbers, and represent the problems using strip diagrams and equations (using a letter as to represent the unknown). Throughout this unit, learners will summarize data (that includes whole numbers and fractions) using a frequency table, stem and leaf, and dot plot. Learners solve 1-step and 2-step problems using data (that include whole numbers, decimals, and fractions) that is represented in frequency tables, stem and leaf, and dot plots.

- **Transfer Goal:**
  - Use written and oral language to communicate strategies used to multiply whole numbers
  - Use a problem-solving model to solve one-step and two-step multiplication problems involving whole numbers
  - Communicate mathematical ideas being addressed in multi-step problems using representations, including strip diagrams and equations
  - Select tools, such as an understanding of place value to estimate products of whole numbers
  - Select tools to collect, sort, and organize data
  - Use graphs to communicate the organization of data

Students will know…
different strategies for solving multiplication problems; how to round to the nearest 10, 100, or 1,000

Students will be skilled at…
representing multiplication problems; using strategies and algorithms to solve problems; estimating solutions; summarizing data using a frequency table, stem and leaf, and dot plot; solving problems using data

Unit 7: Division of Whole Numbers

Timeline: 5 weeks - 3rd Grading Period

Learners use strategies, including the standard algorithm, to divide up to a four-digit number by a one-digit number, and represent the quotient using arrays, area models, or equations, mental math, partial quotients, and properties of operations. Estimation strategies, including rounding and compatible numbers, are used to determine reasonableness of products and quotients. Learners also solve one-step and two-step problems that involve the multiplication and division of whole numbers, and represent the problems using strip diagrams, equations (using a letter as to represent the unknown), and an input-output table and numerical expressions (to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence). Throughout this unit, learners will summarize data using a frequency table, dot plot, pictograph, and bar graph. Learners use the data to draw conclusions and solve one-step problems.

- **Transfer Goal:**
    - Use written and oral language to communicate strategies used to multiply and divide whole numbers
    - Use a problem-solving model to solve one-step and two-step multiplication and division problems involving whole numbers
    - Communicate mathematical ideas being addressed in multi-step problems using representations, including strip diagrams, equations, and input-output tables and numerical expressions
    - Select tools, such as an understanding of place value to estimate products and quotients of whole numbers Select tools to collect, sort, and organize data
    - Use graphs to communicate the organization of data

Students will know…

what division means and what situations involve division; there are different strategies for solving division problems; division vocabulary

Students will be skilled at…

representing division problems; using strategies and algorithms to solve problems; rounding to the nearest 10, 100, or 1,000 to estimate solutions; using compatible numbers to estimate solutions; summarizing data using a frequency table, stem and leaf, and dot plot; solving problems using data

Unit 8: Measurement

Timeline: 2 weeks - 3rd Grading Period

Learner use relative sizes of units (metric and customary) as they solve problems that involve the addition, subtraction, multiplication, and division of measurements, including length, intervals of time, liquid volumes, mass, and money. Conversions within the same system are calculated and represented in a table. Learners use models to determine formulas for perimeter and area of rectangles (including squares as special rectangles). Learners use these formulas to solve problems related to perimeter and area of rectangles. Throughout this unit, learners will summarize data using a frequency table, dot plot, pictograph, and bar graph. Learners use the data to draw conclusions and solve one-step and two-step problems.

- **Transfer Goal:**
    - Select and use tools to measure length, intervals of time, liquid volumes, mass, perimeter, and area using customary and metric units of measure
    - Use written and oral language to communicate measurements of length, intervals of time, liquid volumes, mass, area, and perimeter
    - Use a problem-solving model to solve problems that deal with the measurements of length, intervals of time, liquid volumes, mass, area, and perimeter
    - Use tables to represent the conversion of measurement within the same system
    - Explain and justify the property being measured
    - Select tools to collect, sort, and organize data
    - Use graphs to communicate the organization of data

Students will know…
relative sizes of measurement within the customary and metric systems

Students will be skilled at…
converting measurements within the same system; solving problems that deal with measurement; using models to determine a formula for perimeter and area; solving problems related to area and perimeter; summarizing data using a frequency table, stem and leaf, and dot plot; solving problems using data

UNIT 9: ANGLES

TIMELINE: 4 WEEKS - 4TH GRADING PERIOD

Learners define angles as the spread of the angle's rays and is composed of two rays that are infinite in length with a common vertex. Learners begin using non-standard units to measure angles before transitioning to using the unit of *degrees* as the standard unit of measurement. *Degrees* are used to describe the spread of the angle's rays, where one degree is 1/360 of a circle. Learners use a protractor to measure the number of degrees of an angle, and use reasonableness (such as determining if an angle is obtuse or acute) to decide which set of numbers to use. Learners also determine the measurement of unknown angles that are formed by two non-overlapping adjacent angles given one or both angle measures, including complementary and supplementary angles. Throughout this unit, learners will summarize data using a frequency table, dot plot, pictograph, and bar graph. Learners use the data to draw conclusions and solve one-step and two-step problems.

- **Transfer Goal:**
  - Select tools to measure and describe angles
  - Use a problem solving model to determine the measurement of unknown angles
  - Use written and oral language to describe the measurement of angles
  - Select tools to collect, sort, and organize data
  - Use graphs to communicate the organization of data

Students will know…
the definition of an angle; how an angle is formed

Students will be skilled at…
illustrating and drawing angles; using a protractor for measuring angles; determining the approximate measures of angles; determining the measure of an unknown angle formed by two non-overlapping adjacent angles; summarizing data using a frequency table, stem and leaf, and dot plot; solving problems using data

Unit 10: Geometry Concepts

Timeline: 3 weeks - 4th Grading Period

Learners use their knowledge of angles to classify triangles based on angle measurement. Learners apply knowledge about geometric properties, including lines, line segments, rays, angles, perpendicular lines, parallel lines, lines of symmetry, and angle types, to classify two-dimensional shapes. Learners use their knowledge of lines and angles to classify two-dimensional shapes based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. Learners find lines of symmetry in two-dimensional figures. Throughout this unit, learners will summarize data using a frequency table, dot plot, pictograph, and bar graph. Learners use the data to draw conclusions and solve one-step and two-step problems.

- **Transfer Goal:**
  - Select tools to measure and describe angles
  - Use written and oral language to describe and classify two-dimensional figures based on specific geometric attributes
  - Select tools to collect, sort, and organize data
  - Use graphs to communicate the organization of data

Students will know…

definitions of geometric properties (such as points, lines, line segments, rays, angles, and perpendicular and parallel lines); definition of an angle; names of two-dimensional shapes up to 12 sides

Students will be skilled at…

using a right angle as a benchmark to estimate acute and obtuse; identifying examples of geometric properties, types of triangles, and lines of symmetry; classifying two-dimensional figures; summarizing data using a frequency table, stem and leaf, and dot plot; solving problems using data

Unit 11: Application of Operations

Timeline: 3½ weeks - 4th Grading Period

Learners continue to develop their understanding of addition, subtraction, multiplication and division as they continue to apply it in various situations. Learners explore connections between the authentic situations and all four operations through various projects and experiences. Throughout this unit, learners will summarize data using a frequency table, dot plot, pictograph, and bar graph. Learners use the data to draw conclusions and solve one-step and two-step problems.

- **Transfer Goal:**
  - Select tools to model and solve contextual situations involving any or all of the four operations
  - Use written and oral language to communicate strategies to solve situations involving any or all of the four operations
  - Use written and oral language to communicate mathematical ideas in authentic situations that involving any or all of the four operations
  - Select tools to collect, sort, and organize data
  - Use graphs to communicate the organization of data

Students will know…

Addition, subtraction, multiplication, and division is applicable in authentic contexts; a variety of tools can be used to communicate and represent connected ideas

Students will be skilled at…

Connecting addition, subtraction, multiplication, and division to authentic situations; explaining ways that addition, subtraction, multiplication, and division are used in authentic situations; Recalling addition, subtraction, multiplication, and division facts; applying divisibility to authentic situations; solving problems involving addition, subtraction, multiplication, and division; representing problems using models; representing real-world relationships using number pairs in a table; summarizing data using a frequency table, stem and leaf, and dot plot; solving problems using data