

4th Grade Math Overview 2020 - 2021

This document is designed to provide parents/guardians/community an overview of the curriculum taught in the FBISD classroom. This document supports families in understanding the learning goals for the course, and how students will demonstrate what they know and are able to do. The overview offers suggestions or possibilities to reinforce learning at home.

Included at the end of this document, you will find:

- A [glossary](#) of curriculum components
- The content area [instructional model](#)
- [Parent resources](#) for this content area

To advance to a particular grading period, click on a link below.

- [Grading Period 1](#)
- [Grading Period 2](#)
- [Grading Period 3](#)
- [Grading Period 4](#)

At Home Connections

The following are suggestions for reinforcing literacy/numeracy development at home. These ideas can be used throughout the school year. You will find additional ideas to reinforce learning at home within each unit below.

- *Engage students in problem solving during day-to-day decisions and help them reason through possible outcomes of decisions*
- *Explain the order or process to completing day-to-day tasks*
- *Encourage students to justify choices made in day-to-day activities*
- *Discuss scenarios involving math in everyday life and determine the operations needed to solve the problem*
- *Play games that require logic and reasoning skills or basic operations.*
- *Play Sudoku and other brain teaser type puzzles*
- *Practice multiplication facts with real world objects. (e.g. how many tires on the 5 cars in front of us?)*

Process Standards

The process standards describe ways in which students are expected to engage in the content. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use knowledge learned efficiently and effectively in daily life.

- 4.1A apply mathematics to problems arising in everyday life, society, and the workplace
- 4.1B 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
- 4.1C 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
- 4.1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate
- 4.1E create and use representations to organize, record, and communicate mathematical ideas
- 4.1F analyze mathematical relationships to connect and communicate mathematical ideas

4.1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication

Grading Period 1

Unit 1: Whole Numbers - Numeration, Addition and Subtraction

Estimated Date Range: 8/17/20-9/09/20

Estimated Time Frame: 17 days

Unit Overview: This unit begins with 8 days of Launching Mathematical Mindsets. The focus is on students getting used to classroom routines while engaging in math related activities that promote sense making, perseverance, and teamwork. Starting in concept 2, students will solidify their understanding of whole number place value by interpreting the value of the place to the left and right of a digit and representing numbers in expanded notation and numerals. Then students will build upon what they learned in third grade to round numbers to a specific place value. Students will use this place value understanding to compare, order, add, and subtract numbers. Within the addition and subtraction components, students will utilize estimation strategies such as rounding and compatible numbers to predict solutions and justify reasonableness of solutions.

At home connections:

- Use positive affirmations to build students self-confidence.
- Compare and order average salaries for jobs a student is interested in.
- Compare and order distances for flights on a dream vacation.
- Use rounding to estimate totals for situations involving addition and subtraction.
- Use estimation strategies to predict the total cost of a grocery bill in whole numbers.

Concepts within Unit #1 Link to TEKS	Success Criteria for this concept
Concept #1: Launching Mathematical Mindsets	<ul style="list-style-type: none"> • The focus of this concept is on students getting used to classroom routines while engaging in math related activities that promote sense making, perseverance, and teamwork.
Concept #2: Compare and Order Whole Numbers 4.2A, 4.2B, 4.2C, 4.2D, 4.4B	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ Determine if a number is greater than or less than another number ○ Compare whole numbers ○ Order whole numbers • Represent the comparison using symbols.
Concept #3: Adding and Subtracting Whole Numbers 4.4A, 4.5A, 4.4G, 4.10B	<ul style="list-style-type: none"> • Represent multi-step problems involving addition and subtraction using: <ul style="list-style-type: none"> ○ Strip diagrams ○ Equations • Identify and describe a variable to represent the unknown quantity. • Explain how my representations connect to the problem situation.

	<ul style="list-style-type: none"> Solve one step addition or subtraction problems using: <ul style="list-style-type: none"> Place value strategies Expanded form 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.
<p align="center">Unit 2: Understanding Multi-Digit Multiplication & Division Estimated Date Range: 9/10/20 – 10/16/20 Estimated Time Frame: 27 days</p>	
<p>Unit Overview: In this unit students will build off their understanding of arrays, partial products, and connection between multiplication and division to multiply numbers up to two digit by two digit four digit by one digit number; and divide a four digit by one digit number. Students will represent one and two-step problems using strip diagrams, arrays and equations to make connections between the actions taking place in the word problems to the operations being applied to the numbers. Students will apply their knowledge of multiplication and division to solve one and two-step problems including interpreting remainders.</p> <p>At home connections:</p> <ul style="list-style-type: none"> Practice skip counting by numbers up to 10 to help with multiplication facts. Create story problems that would require multiplication or division to solve. Discuss scenarios such as planning a party or a vacation. Determine what steps need to happen to figure out the total cost and what operations would be required for each step. 	
Concepts within Unit #2 Link to TEKS	Success Criteria for this concept
Concept #1: Multi-Digit Multiplication 4.4D, 4.4B, 4.4C, 4.4G, 3.4G	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> Partial products 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.
Concept #2: Multi-Digit Division 4.4F, 4.4E, 4.4G	<ul style="list-style-type: none"> 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.

<p>Concept #3: Multi-Step Problems Involving Multiplication and Division 4.4H, 4.5A, 4.4D, 4.4F, 4.8C, 4.4G, 4.10B</p>	<ul style="list-style-type: none"> • Represent multi-step problems involving the four operations using: <ul style="list-style-type: none"> ○ Strip diagrams ○ 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.
<p style="text-align: center;">Grading Period 2 Unit 3: Fractions & Fraction Operations Estimated Date Range: 10/19/20-11/13/20 Estimated Time Frame: 21 days</p>	
<p>Unit Overview: In this unit students will develop an understanding of fractions greater than one, equivalent fractions, and how to add and subtract fractions. Students will develop conceptual understanding of the value of fractions, improper fractions, and mixed numbers using linear models. Students will compare fractions utilizing models and their understanding of equivalent fractions. Then students will be able to compose and decompose fractions a variety of ways (including unit fractions) to build the foundation of addition and subtraction of fractions.</p> <p>At home connections:</p> <ul style="list-style-type: none"> • Compare amounts of ingredients needed for a recipe. • Estimate using benchmark fractions to determine total amounts of dry versus wet ingredients for a recipe. • Find situations or objects around the house that represent fractions. 	
<p>Concepts within Unit #3 Link to TEKS</p>	<p>Success Criteria for this concept</p>
<p>Concept #1: Equivalent Forms of Fractions 4.3B, 4.3A, 4.3C, 4.3G</p>	<ul style="list-style-type: none"> • 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.
<p>Concept #2: Working with Fractions 4.3D, 4.3B, 4.3C, 4.3E, 4.3G, 4.3F</p>	<ul style="list-style-type: none"> • 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.

	<ul style="list-style-type: none"> Add and subtract fractions with a common denominator using concrete and pictorial representations. Describe reasonableness of sums and differences using benchmark fractions.
<p align="center">Unit 4: Decimals & Decimal Operations Estimated Date Range: 11/18/20-12/18/20 Estimated Time Frame: 32 Days (GP2-18 Days and GP3-12 Days)</p>	
<p>Unit Overview (Concepts 1-3): In this unit students will develop the understanding of the relationships between fractions and decimals. They will represent decimals on number lines and determine the decimal that a point on a number line represents. Student will then expand their knowledge of place value from Unit 1 to include decimals and the relationship between the value of a place value position to the left of a digit. Students will use concrete and pictorial models to compare and order decimals to the hundredths.</p> <p>At home connections:</p> <ul style="list-style-type: none"> Make connections between different coins values and the part of a dollar they represent. (25 cents= $\frac{1}{4}$ of a dollar and 4 quarters equals a dollar) Represent decimal values using coins and bills. Compare and order prices of objects by representing their values using money or visual models. 	
<p align="center">Concepts within Unit #4 Link to TEKS</p>	<p align="center">Success Criteria for this concept</p>
<p>Concept #1: Relating Decimals to Fractions 4.2G, 4.2A, 4.2E, 4.2H, 4.3G</p>	<ul style="list-style-type: none"> 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.
<p>Concept #2: Decimals and Place Value 4.2A, 4.2B, 4.2E, 4.2H</p>	<ul style="list-style-type: none"> 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.
<p>Concept #3: Compare and Order Decimals 4.2E, 4.2F, 4.2H</p>	<ul style="list-style-type: none"> 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.
<p align="center">Grading Period 3 Unit 4: Decimals & Decimal Operations (continued) Estimated Date Range: 1/06/20-1/22/20 Estimated Time Frame: 34 Days (GP2-22 Days and GP3-12 Days)</p>	
<p>Unit Overview (Concept 4): After students compare and order decimals in Concept 3, Grading Period 2, students will make connections between what they know about adding and subtracting whole numbers to using models and the standard algorithm to add and subtract decimals.</p>	

At home connections:

- Find situations that involve addition and subtraction of decimals.

Concepts within Unit #4 Link to TEKS	Success Criteria for this concept
Concept #4: Adding and Subtracting Decimals 4.4A, 4.8C, 4.2A, 4.2E, 4.3G	<ul style="list-style-type: none"> 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.
Unit 5: Input and Output Tables Estimated Date Range: 1/25/21-2/11/21 Estimated Time Frame: 14 days	
Unit Overview: Students will represent problems using input output tables and numerical expressions. They will use the tables and expressions to generate a number pattern based on the relationship between the given value, the resulting values of the sequence, and their position in the sequence. Then, students will identify relative sizes of measurement units within the customary and metric systems and use their understanding of input output tables to convert between two measurements within the same system.	
At home connections: <ul style="list-style-type: none"> Generate number patterns and sequences using household items. Measure items length or capacity using different units of measure within the same system and represent the relationship in a table. 	
Concepts within Unit #5 Link to TEKS	Success Criteria for this concept
Concept #1: Personal Financial Literacy 4.5B, 4.8A, 4.8B	<ul style="list-style-type: none"> 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.
Concept #2: Understanding Conversions 4.8A, 4.8B	<ul style="list-style-type: none"> 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.
Unit 6: Angles and Polygons Estimated Date Range: 2/16/21-3/12/21 Estimated Time Frame: 19 days	
Unit Overview: In this unit, students will identify geometric attributes such as lines, rays, angles, etc. Students will use a protractor to determine the approximate measures of angles in degrees to the nearest whole number and apply knowledge of right angles to identify angles greater than, less than, or equal to 90°. Students will be able to identify lines of symmetry in two dimensional figures. Then, students will apply that knowledge to classify two-dimensional	

figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size.

At home connections:

- Find acute, obtuse, or right angles around the house or using road maps.
- Find parallel and perpendicular lines around the house or using road maps.
- Find 2 dimensional shapes around the house (can be a surface of a 3-d figures) sort them based on parallel and perpendicular lines or sizes of angles.
- Draw 2-dimensional shapes using a ruler and determine how many lines of symmetry the shape has.
- Create a shape with a specified number of lines of symmetry using pipe cleaners, craft sticks, or pencil and paper.

Concepts within Unit #6 Link to TEKS	Success Criteria for this concept
Concept #1: Understanding and Measuring Angles 4.7C, 4.6A, 4.7A, 4.7B, 4.7D, 4.7E	<ul style="list-style-type: none"> • 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.
Concept #2: Classifying Two-Dimensional Figures 4.6D, 4.7C, 4.6A, 4.6B, 4.6C	<ul style="list-style-type: none"> • 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.

Grading Period 4

Unit 7: Application of Geometry and Measurement

Estimated Date Range: 3/22/21-4/16/21

Estimated Time Frame: 19 days

Unit Overview: Students will use models to determine the formulas for area and the perimeter of a rectangle, including the special formula for perimeter of a square. Students will apply those formulas to solve problems involving area and perimeter of squares and rectangles. Then, students will identify relative sizes of measurement units within the customary and metric systems as well as convert measurements within the same measurement system, from a smaller unit to a larger unit or a larger unit into a smaller unit when given other equivalent measures. Students will solve problems that deal with measurements of length, intervals of time, liquid volumes, and mass, using all four operations

At home connections:

- Find rectangles and squares around the house and measure the side lengths to determine area and perimeter of the shapes. (can be measured using rulers or measuring tape or non-standard tools like number of spoons, Lego pieces etc.)
- Determine elapsed time between specified daily events.
- Determine what time you need to leave the house when given driving time and time of arrival.
- Determine number of gallons or quarts of punch or ice cream is needed for a party.

Concepts within Unit #7 Link to TEKS	Success Criteria for this concept
Concept #1: Solving Problems Involving Area and Perimeter 4.5D, 4.4H, 4.5A, 4.5C, 4.4C	<ul style="list-style-type: none"> • 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.
Concept #2: Solving Problems Involving Units of Measure 4.8C, 4.4H, 3.7C, 4.8A	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ Liquid volume ○ Mass ○ Length ○ Intervals of time
Unit 8: Data Analysis and Personal Financial Literacy Estimated Date Range: 4/20/21-5/14/21 Estimated Time Frame: 19 days	
<p>Unit Overview: In this unit students understand the differences between fixed and variable expenses, compare saving options, discuss allocating weekly allowances for different purposes, and explain the purposes of financial institutions. Then students will represent data on a frequency table, dot plot, or stem and leaf plot the graphs can be marked with whole numbers or decimals. Students will also analyze the data represented in the graphs to solve one and two step problems involving the data.</p> <p>At home connections:</p> <ul style="list-style-type: none"> • Discuss monthly expenses and sort by whether they are fixed or variable expenses. • Provide a specified amount of money and determine how to allocate it based on spending, saving or sharing. • Generate an idea of topic of interest such as average days in a month that it is sunny, rainy, cloudy etc. Create an appropriate graph to represent the data collected. • Generate and solve questions based on the graphs created above. • Look for frequency tables, stem and leaf plots, or dot plots in newspapers, magazines, or informational documents and describe what the graphs tell you. 	
Concepts within Unit #8 Link to TEKS	Success Criteria for this concept

<p>Concept #1: Personal Financial Literacy 4.5B, 4.8A, 4.8B</p>	<ul style="list-style-type: none"> 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.
<p>Concept #2: Data Analysis 4.9A, 4.4A, 4.9B, 4.3G, 4.3E</p>	<ul style="list-style-type: none"> 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.
<p align="center">Unit 9: Essential Understanding of 4th Grade Estimated Date Range: 5/17/21-5/26/21 Estimated Time Frame: 7 days</p>	
<p>Unit Overview: In this unit students will solidify their understanding of fractions greater than one, equivalent fractions, and comparing fractions. Students will leave fourth grade with a deep understanding of fraction equivalence and the value of fractions to provide a foundation for working with fractions in fifth grade and beyond.</p> <p>At home connections:</p> <ul style="list-style-type: none"> Compare amounts of ingredients needed for a recipe. Determine total amounts of dry versus wet ingredients for a recipe. Find situations or objects around the house that represent fractions. 	
<p align="center">Concepts within Unit #9 Link to TEKS</p>	<p align="center">Success Criteria for this concept</p>
<p>Concept #1: Equivalent Fractions and Comparisons 4.3D, 4.3A, 4.3B, 4.3C, 4.3G</p>	<ul style="list-style-type: none"> Compare fractions using concrete and pictorial models and numerical strategies. Represent the comparison of fractions using symbols. 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.

Glossary of Curriculum Components

Overview— The content in this document provides an overview of the pacing and concepts covered in a subject for the year.

TEKS – Texas Essential Knowledge and Skills (TEKS) are the state standards for what students should know and be able to do.

Unit Overview – The unit overview provides a brief description of the concepts covered in each unit.

Concept – A subtopic of the main topic of the unit.

Success Criteria—a description of what it looks like to be successful in this concept.

Competency—Standards-Based Grading communicates students’ understanding of the Texas Essentials Knowledge and Skills (TEKS). Using the TEKS, teachers developed grade-level competencies to communicate student progress in the Standards-Based gradebook. The competencies are the same for each grade-level content area (i.e. 1st grade math) across the district. Teachers report students’ progress on the competencies using learning progressions.

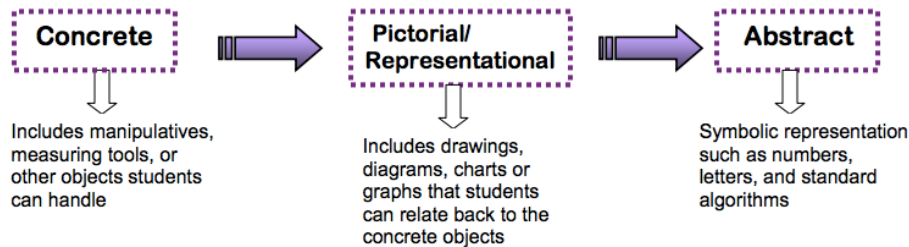
Parent Resources

The following resources provide parents with ideas to support students’ understanding. For sites that are password protected, your child will receive log-in information through their campus.

Resource	How it supports parent and students
Envision Math	This is the state adopted textbook for elementary school math. Click on the link for directions on accessing the textbook.
Didax Virtual Manipulatives Math Learning Center Math Apps	These online resources provide access to virtual manipulatives.
Parent Resources from youcubed.org	This resource from youcubed.org includes articles for parents on ways to support their students in learning and understanding mathematics.
Student Resources from youcubed.org	This resource from youcubed.org includes videos concerning growth mindset in mathematics
Math: Why Doesn't Yours Look Like Mine?	This resource provides an explanation of why math looks different now as opposed to how parents learned mathematics and how to support students in learning mathematics.
Math4Texas	This resources breaks down grade level standards, provides example questions, vocabulary, and links to online resources for students aligned to the standards.

Instructional Model

The structures, guidelines or model in which students engage in a particular content that ensures understanding of that content.



The instructional model for mathematics is the Concrete-Representational-Abstract Model (CRA).

The CRA model allows students to access mathematics content first through a concrete approach (“doing” stage) then representational (“seeing” stage) and then finally abstract (“symbolic” stage). The CRA model allows students to conceptually develop concepts so they have a deeper understanding of the mathematics and are able to apply and transfer their understanding across concepts and contents. The CRA model is implemented in grades K-12 in FBISD.