KPBSD MATH CURRICULUM
4th GRADE
Year at a Glance

This document provides a birds-eye view of the Fourth Grade math "curriculum map." Please note, some standards are partially taught in early units and re-visited throughout the year. For complete understanding of content to be taught, please visit the Fourth Grade "curriculum map."

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Time
Title	Building a Mathematical Community Through Data	Explore Multiplicative Comparison, Area and Perimeter, Factors, and Multiples	Use Place Value Strategies to Add and Subtract Whole Numbers	Develop Multiplication /Division Strategies	Extending the Understanding of Fractions	Connect Fractions to Decimal Notation	Understand Operations with Fractions and Decimals	Apply Geometric Concepts	Measurement	Time-Zoning Out- A Math/ Social Studies integration
Duration	3-4 weeks	5-6 weeks	1-2 weeks	4-5 weeks	4-5 weeks	2-3 weeks	1-2 weeks	2-3 weeks	2-3 weeks	1-2 weeks
Content Standards	4.MD.6 4.NB.4	4.OA.1 4.OA.2 4. OA.4 4.OA.6 4.MD.3	4.OA.3 4.OA.5 4.NB.1 4.NB.2 4.NB.3 4.NB.4	4.OA.1 4.OA.3 4. OA.5 4.NB.1 4.NB.5 4.NB.6 4.MD.3	4.NF.1 4.NF.2 4.NF.5	4.NF.6 4.NF.7	4.NF.3 4.NF.4 4.NF.6 4.MD.5	4.G.1 4.G.2 4.G.3 4.MD.7 4.MD.8 4.MD.9	4.NF.6 4.MD.1 4.MD.2 4.MD.3	4.MD.4
Practice Standards		1,2,3,4,67,8	1,2,3,4,6,7	1,2,3,4,5,6,7	1,2,4,6,7	2,4,5,6,7,8	1,2,3,4,6	1,2,3,4,6	1,4,5,6,7	1,2,3,6

KPBSD MATH CURRICULUM
4th GRADE
TIME - MINI CLUSTER 3.5

Desired Results	

Priority Standards	Transfer
4.MD.4. Solve real-world problems involving elapsed time between U.S. time zones (including Alaska Standard time). (L)	Students will be able to independently use their learning to… Understand units of measurement (including time) and how to apply them to real-life scenarios.

Meaning	
ENDURING UNDERSTANDINGS Students will understand that… • Time is a unit of measure.	**ESSENTIAL QUESTIONS** Students will keep considering… • How does time change depending on my location in North America?

Acquisition	
Students will know… • There are 6 time zones in America that correspond to established boundaries.	Students will be skilled at… • I can read local time and calculate local time of different time zones. • I can calculate elapsed time between time zones. • Tell and write time to the nearest minute and measure time intervals in minutes. • Solve word problems involving addition and subtraction of time intervals in minutes or hours.

Evidence

Vocabulary
- Time
- Eastern time zone
- Mountain time zone
- Pacific time zone
- Central zone
- Alaska time zone
- Hawaii/Aluetian time zone

Mathematical Practices (Bolded practices are priority for this unit)
- **Make sense of problems and persevere in solving them.**
- **Reason abstractly and quantitatively.**
- **Construct viable arguments and critique the reasoning of others.**
- **Model with mathematics.**
- Use appropriate tools strategically.
- **Attend to precision.**
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

KPBSD MATH CURRICULUM
4th GRADE
UNIT 1 – BUILDING A MATHEMATICAL COMMUNITY THROUGH DATA

Desired Results	

Priority Standards

4.MD.6. Explain the classification of data from real-world problems shown in graphical representations including the use of terms range and mode with a given set of data. (Local Standard)

Supporting Standards

4.NBT.4. Fluently add and subtract multi-digit whole numbers using any algorithm. Verify the reasonableness of the results.

Transfer

Students will be able to independently use their learning to…
Build a community of mathematical problem solvers through collecting and interpreting data for real-world use.

Meaning

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that… • Graphical representations can be used to organize and interpret data. • Numerical and categorical data can help me learn about my world.	Students will keep considering… • What are ways I display numerical vs. categorical data? • What does a quality survey look like? • How does data help me better understand my world?

Acquisition

Students will know…	Students will be skilled at…
• Numerical or categorical data can be collected by asking relevant questions. • Different ways to represent data. • Which types of survey questions yield categorical or numerical data. • Range and mode help us to interpret data.	• I can determine the appropriate method for collecting data. • I can make a line plot. • I can make inferences and draw conclusions about data. • I can solve problems by using information on a line plot. • I can use various methods to display data. • I can interpret data through various graphical representations. • I can calculate range and mode.

KPBSD MATH CURRICULUM
4th GRADE
UNIT 1 – BUILDING A MATHEMATICAL COMMUNITY THROUGH DATA

Evidence	
Vocabulary	**Mathematical Practices (Bolded practices are priority for this unit)**
- Survey - Reliable - Relevant - Frequency - Line plot - Bar graph - Frequency table - Mode - Range - Numerical data - Categorical data	- Make sense of problems and persevere in solving them. **Reason abstractly and quantitatively.** **Construct viable arguments and critique the reasoning of others.** **Model with mathematics.** **Use appropriate tools strategically.** **Attend to precision.** - Look for and make use of structure. - Look for and express regularity in repeated reasoning.

KPBSD MATH CURRICULUM
4TH GRADE
UNIT 2 – EXPLORE MULTIPLICATIVE COMPARISON, AREA AND PERIMETER, FACTORS, AND MULTIPLES

Desired Results

Priority Standards

4.OA.4. Find all factor pairs for a whole number in the range 1–100. Explain the correlation/differences between multiples and factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

Supporting Standards

4.MD.3. Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

4.OA.1. Interpret a multiplication equation as a comparison (e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 groups of 7 and 7 groups of 5). (Commutative property) Represent verbal statements of multiplicative comparisons as multiplication equations.

4.OA.2. Multiply or divide to solve word problems involving multiplicative comparison (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem or missing numbers in an array). Distinguish multiplicative comparison from additive comparison.

4.OA.6. Extend patterns that use addition, subtraction, multiplication, division, or symbols, up to 10 terms, represented by models (function

Transfer

Students will be able to independently use their learning to…
Identify and solve real-world problems using multiplication & division facts and/or properties.

Meaning

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that… • There are multiple ways to solve problems using multiplication properties. • Reasonableness can be assessed through estimation strategies. • The difference between prime and composite numbers. • Solving problems may require more than one calculation in a specific order. • Multiples are infinite while factors are not. • Area and perimeter are determined through multiplication strategies. • The commutative property can be used in multiplication.	Students will keep considering… • When solving word problems, what strategies can I use to identify whether I add, subtract, multiply, or divide? • How do multiplication, factors, and multiples help me solve problems including area and perimeter?

Acquisition

Students will know…	Students will be skilled at…
• Any whole number is a product of each of its factors. • The difference between prime and composite numbers. • Arrays can help us better understand area and perimeter. • There are various ways to model multiplication and division.	• I can use multiplication to determine the area and perimeter of real-world mathematical problems. • I can determine the factors of natural numbers from 1- 100. • I can determine the multiples of any given one-digit number. • I can determine whether a number is prime or composite.

machines), tables, sequences, or in problem situations. (Local Standard)	• Strategies to create and identify patterns in multiplication and division. • Using mental computation and estimation strategies including rounding help us assess the reasonableness of answers. • Whole numbers are factors of their product.	• I can use the commutative property to evaluate multiplication equations. • I can solve multi-step word problems. • I can explain the differences between multiples and factors. • I can create and identify multiplication and division problems. • I can use estimation strategies in my problem solving to assess reasonableness along the way.

Evidence

Vocabulary	**Mathematical Practices (Bolded practices are priorities for this unit)**
• Factor • Product • Quotient • Multiples • Prime • Composite • Variable	• **Make sense of problems and persevere in solving them.** • **Reason abstractly and quantitatively.** • **Construct viable arguments and critique the reasoning of others.** • **Model with mathematics.** • Use appropriate tools strategically. • **Attend to precision.** • **Look for and make use of structure.** • **Look for and express regularity in repeated reasoning.**

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KPBSD MATH CURRICULUM 4TH GRADE UNIT 2 – EXPLORE MULTIPLICATIVE COMPARISON, AREA AND PERIMETER, FACTORS, AND MULTIPLES
rev. 1/31/19

KPBSD MATH CURRICULUM
4TH GRADE
UNIT 3 – USE PLACE VALUE STRATEGIES TO ADD AND SUBTRACT WHOLE NUMBERS

Desired Results	

Priority Standards

4.NBT.1 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. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*

4.NBT.2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on the value of the digits in each place using >, =, and < symbols to record the results of comparisons.

4.OA.3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

4.NBT.4. Fluently add and subtract multi-digit whole numbers using any algorithm. Verify the reasonableness of the results.

Supporting Standards

4.NBT.3. Use place value understanding to round multi-digit whole numbers to any place using a variety of estimation methods; be able to describe, compare, and contrast solutions.

4.OA.5. Generate a number, shape pattern, table, t-chart, or input/output function that follows a given rule. Identify apparent features of the pattern

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Transfer

Students will be able to independently use their learning to…
Use the base ten system to understand mathematical operations to solve real-world problems

Meaning

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that… • Each digit has a specific place value. • Algorithms help solve problems. • Estimation helps solve problems and check for reasonableness. • There is more than one way to add and subtract numbers. • Unknown values are represented by variables. • Variables can be found by using the inverse operation.	Students will keep considering… • How can inverse operations help me solve for a given variable? • How do I use place value to add and subtract?

Acquisition

Students will know…	Students will be skilled at…
• Numbers can be represented in various forms (expanded form, standard form, and word form). • Each digit in a multi-digit number has ten times the value of the digit directly on the right and 1/10 of the value of the digit directly on the left. • There are a variety of ways to compare numbers. • There are a variety of strategies used to add and subtract numbers. • The Commutative and Associative Properties of Addition can be used to solve problems.	• I can identify the value of each digit in a multi-digit whole number up to one million. • I can describe the structure of the base ten number system. • I can read, write, and compare multi-digit whole numbers using >, =, < symbols. • I can write and explain the expanded, word, and standard form of multi-digit numbers. • I can add and subtract multi-digit numbers. • I can add or subtract to solve multi-step word problems. • I can check my answers using an inverse operation.

that were not explicit in the rule itself. Be able to express the pattern in algebraic terms. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*	• Mental math, fact families, and estimation help solve problems and check for reasonableness. • Variables represent an unknown quantity. • The standard addition and subtraction algorithms for multi-digit numbers break the calculation into simpler calculations using place value starting with the ones, then the tens…	• I can use estimation strategies in my problem solving to assess reasonableness along the way. • I can generate a number, shape pattern, table, t-chart, or input/output function that follows a given rule.

Evidence

Vocabulary

- Whole number
- Place value
- Multi-digit numbers
- Compare
- Base-ten
- Expanded form
- Standard form
- Word form
- Equivalent
- Greater than
- Less than
- Equal to
- Round
- Inverse
- Variable

Mathematical Practices (Bolded practices are priorities for this unit)

- **Make sense of problems and persevere in solving them.**
- **Reason abstractly and quantitatively.**
- **Construct viable arguments and critique the reasoning of others.**
- **Model with mathematics.**
- Use appropriate tools strategically.
- **Attend to precision.**
- **Look for and make use of structure.**
- **Look for and express regularity in repeated reasoning.**

LEARNING PLAN

Cluster 1

KPBSD MATH CURRICULUM
4TH GRADE
UNIT 4 – DEVELOP MULTIPLICATION/DIVISION STRATEGIES

Desired Results	

Priority Standards	Transfer
4.NBT.5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	Students will be able to independently use their learning to… Apply multiplication and division skills to real-world situations.

	Meaning	
4.NBT.6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	**ENDURING UNDERSTANDINGS** Students will understand that… • There are a variety of strategies used to multiply and divide numbers. • There is a relationship between multiplication and division. • Multiplication or division can be used to find the area if one factor is unknown.	**ESSENTIAL QUESTIONS** Students will keep considering… • How does place value help me multiply and divide? • What is the relationship between multiplication and division? • In what real-world situations can area and perimeter be applied?

	Acquisition	
4.OA.3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. **4.MD.3**. Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. For example, *find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*	Students will know… • The Properties of Operations. • There are a variety of strategies to solve multiplication and division problems. • The formula for calculating area is A = l x w. • Perimeter can be calculated by adding the length of each side.	Students will be skilled at… • I can multiply a number up to four digits by a one-digit number and explain the process. • I can multiply a two-digit number by a two-digit number and explain the process. • I can solve multiplication and division problems in more than one way. • I can use models to explain how I produced a product or quotient. • I can solve division problems with up to four-digit dividends and one-digit divisors. • I can solve multiplication and division problems with variables. • I can explain my thinking when solving a multistep problem. • I can find the area and perimeter of rectangles by using formulas.

KPBSD MATH CURRICULUM
4TH GRADE
UNIT 4 – DEVELOP MULTIPLICATION/DIVISION STRATEGIES

Supporting Standards		
4.NBT.1. 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. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.* **4.OA.1.** Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 groups of 7 and 7 groups of 5 (Commutative property). Represent verbal statements of multiplicative comparisons as multiplication equations. **4.OA.5**. Generate a number, shape pattern, table, t-chart, or input/output function that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. Be able to express the pattern in algebraic terms. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*		• I can use mental math and estimation to solve problems and check for reasonableness. • I can generate a number, shape pattern, table, t-chart, or input/output function that follows a given rule.

KPBSD MATH CURRICULUM
4TH GRADE
UNIT 4 – DEVELOP MULTIPLICATION/DIVISION STRATEGIES

Evidence

<table>
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<u>Vocabulary</u>

- Place value
- Repeated addition
- Distributive property
- Digit
- Product
- Factor/factors
- Strategy
- Array
- Equation
- Area
- Whole number
- Quotient
- Remainder
- Dividend
- Divisor
- Array
- Area model
- Rectangle
- Perimeter
- Formula
- Dimension
- Square units
- Length
- Width
- Variables
- Multiples
- Multiply
- Divide

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<u>Mathematical Practices (Bolded practices are priorities for this unit)</u>

- **Make sense of problems and persevere in solving them.**
- **Reason abstractly and quantitatively.**
- **Construct viable arguments and critique the reasoning of others.**
- **Model with mathematics.**
- **Use appropriate tools strategically.**
- **Attend to precision.**
- **Look for and make use of structure.**
- Look for and express regularity in repeated reasoning.

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KPBSD MATH CURRICULUM
4th GRADE
UNIT 5 – EXTENDING THE UNDERSTANDING OF FRACTIONS

Desired Results	
Priority Standards	**Transfer**
4.NF.2. Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2). Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions (e.g., by using a visual fraction model).	Students will be able to independently use their learning to… Represent and compare fractions within real-world setting.

	Meaning	
	ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
4.NF.2. (continued)	Students will understand that… • Fractions represent parts of a whole. • There are many ways to represent and model fractions.	Students will keep considering… • How do I use fractions in the real-world? • How does finding equivalent fractions help me compare and order fractions?

Supporting Standards

4.NF.5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*

4.NF.1. Explain why a fraction *a/b* is equivalent to a fraction (*n* × *a*)/(*n* × *b*) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

Acquisition	
Students will know… • The denominator represents the number of equal parts that make the whole. • The numerator represents the selected parts of a whole. • Comparisons are valid only when the two fractions refer to the same whole. • Benchmark fractions can be used when making comparisons. • Fractions can be equivalent even though numerators and denominators aren't the same. • There are a variety of strategies to compare fractions. • How fractions are composed and decomposed.	Students will be skilled at… • I can explain that a fraction is equal to another fraction by using manipulatives/models. • I can determine if a fraction is greater than, less than, or equal to a benchmark fraction such as 1/2. • I can use >,<, = symbols to compare two fractions. • I can create common denominators to compare two fractions. • I can identify and label fractions as representations of equal parts of a whole or of a set. • I can compare fractions using manipulatives/models.

KPBSD MATH CURRICULUM
4ᵗʰ GRADE
UNIT 5 – EXTENDING THE UNDERSTANDING OF FRACTIONS

Evidence	
Vocabulary	**Mathematical Practices (Bolded practices are priority for this unit)**
• Numerator • Denominator • Fraction • Manipulate • Equivalent • Multiply • Divide • Compare • Greater than • Less than • Fraction bar	• **Make sense of problems and persevere in solving them.** • **Reason abstractly and quantitatively.** • Construct viable arguments and critique the reasoning of others. • **Model with mathematics.** • Use appropriate tools strategically. • **Attend to precision.** • **Look for and make use of structure.** • Look for and express regularity in repeated reasoning.

KPBSD MATH CURRICULUM
4th GRADE
UNIT 6 – CONNECT FRACTIONS TO DECIMAL NOTATION

Desired Results

Priority Standards	Transfer
4.NF.6. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*	Students will be able to independently use their learning to… Understand the relationship between decimals and fractions in real-world situations.

	Meaning

Priority Standards

4.NF.6. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*

Supporting Standards

4.NF.7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions (e.g., by using a visual model).

ENDURING UNDERSTANDINGS
Students will understand that…
- Fractions and decimals represent parts of a whole.
- Fractions can be written as an equivalent decimal.
- The position of a digit in relation to the decimal point determines its value.

ESSENTIAL QUESTIONS
Students will keep considering…
- What is the relationship between fractions and decimals?
- How does place value help me to represent fractions and decimals?
- What are strategies I can use to compare fractions and decimals?

Acquisition

Students will know…
- Denominator indicates the number of parts of a whole or set.
- Fractions with denominators of 10 and 100 can be represented as decimals of tenths and hundredths.
- There is a relationship between fractions with denominators in powers of ten (tenths and hundredths).
- Comparisons of decimals are only valid when the two decimals refer to the same whole.

Students will be skilled at…
- I can write a fraction with a base ten value as a decimal.
- I can write a decimal as a base ten fraction.
- I can use visuals/models as representations to compare fractions and decimals.
- I can compare fractions and decimals using >, =, or < symbols.
- I can convert a fraction with a denominator of 10 to an equivalent fraction with a denominator of 100.

KPBSD MATH CURRICULUM
4th GRADE
UNIT 6 – CONNECT FRACTIONS TO DECIMAL NOTATION

Evidence	
Vocabulary	**Mathematical Practices (Bolded practices are priority for this unit)**
- Fractions - Denominator - Equivalency - Numerator - Multiples - Place value - Fraction - Decimal - Decimal notation - Tenths - Hundredths - Equivalent - Decimal point	- Make sense of problems and persevere in solving them. **Reason abstractly and quantitatively.** - Construct viable arguments and critique the reasoning of others. **Model with mathematics.** **Use appropriate tools strategically.** **Attend to precision.** **Look for and make use of structure.** **Look for and express regularity in repeated reasoning.**

KPBSD MATH CURRICULUM
4th GRADE
UNIT 7 – UNDERSTAND OPERATIONS WITH FRACTIONS AND DECIMALS

Desired Results	

Priority Standards

4.NF.3. Understand a fraction *a/b* with *a* > 1 as a sum of fractions 1/*b*.

  a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

  b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions (e.g., by using a visual fraction model). *For example: 3/8 = 1/8 + 1/8 + 1/8 ;3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.*

  c. Add and subtract mixed numbers with like denominators (e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction).

  d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators (e.g., by using visual fraction models and equations to represent the problem).

4.NF.4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

  a. Understand a fraction *a/b* as a multiple of 1/*b*. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).*

Transfer

Students will be able to independently use their learning to…
Understand that fractions and decimals are all around us and are an integral part of the real-world.

Meaning

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that… - A fraction can be decomposed in more than one way. - When adding or subtracting fractions with like denominators, only the numerator is added or subtracted. - Mixed numbers and improper fractions are ways of representing a fraction greater than a unit whole.	Students will keep considering… - How are fractions used in problem-solving situations? - How are fractions composed, decomposed, compared, and represented?

Acquisition

Students will know…	Students will be skilled at…
- Whole numbers can be written as fractions. - Fractions with like denominators can be added or subtracted. - Improper fractions are greater than a whole. - Improper fractions and mixed numbers are interchangeable. - When a whole number is divided into fractions, each fraction is an equal part of the whole.	- I can explain the difference between a whole number and a fraction. - I can solve word problems that include fractions and whole numbers. - I can model and explain that fractions are parts of a whole that can be added or subtracted. - I can compose and decompose fractions and mixed numbers. - I can add and subtract fractions and mixed numbers that have the same denominator. - I can model multiplication through repeated addition of a fraction to make a whole number.

b. Understand a multiple of *a/b* as a multiple of 1/*b*, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b).* *c.* Solve word problems involving multiplication of a fraction by a whole number (e.g., by using visual fraction models and equations to represent the problem). Check for the reasonableness of the answer. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?* ### Supporting Standards ***4.NF.6.*** Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.* ***4.MD.5.*** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). *Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*		• I can multiply a fraction by a whole number. • I can use fraction models, equations, and line plots to represent and solve real-world problems.

KPBSD MATH CURRICULUM
4th GRADE
UNIT 7 – UNDERSTAND OPERATIONS WITH FRACTIONS AND DECIMALS

Evidence

Vocabulary	**Mathematical Practices (Bolded practices are priority for this unit)**
- Numerator - Denominator - Multiple - Equation - Equivalent - Factor - Whole number - Fraction - Product - Commutative property - Associative property - Improper fraction - Mixed number - Decomposition - Composition fraction	**Make sense of problems and persevere in solving them.** **Reason abstractly and quantitatively.** **Construct viable arguments and critique the reasoning of others.** **Model with mathematics.** - Use appropriate tools strategically. **Attend to precision.** - Look for and make use of structure. - Look for and express regularity in repeated reasoning.

KPBSD MATH CURRICULUM
4th GRADE
UNIT 8 – APPLY GEOMETRIC CONCEPTS

Desired Results

Priority Standards

4.G.1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular, parallel, and intersecting line segments. Identify these in two-dimensional (plane) figures.

4.MD.8. Measure and draw angles in whole-number degrees using a protractor. Estimate and sketch angles of specified measure.

Supporting Standards

4.G.2. Classify two-dimensional (plane) figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

4.G.3. Recognize a line of symmetry for a two-dimensional (plane) figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

4.MD.7. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand the following concepts of angle measurement:

  a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.

  b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.

4.MD.9. Recognize angle measure as additive. When an angle is divided into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of

Transfer

Students will be able to independently use their learning to…
Demonstrate their ability to solve mathematical and real-world problems using measurement and geometric models.

Meaning

ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
Students will understand that… • Objects in our world are comprised of points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular, parallel, and intersecting line segments and two-dimensional figures. • Objects can be classified based on their attributes.	Students will keep considering… • How do I use measurement and geometric models to solve real-world problems?

Acquisition

Students will know…	Students will be skilled at…
• Lines, angles, and shapes are named, described, analyzed, and classified based on their attributes. • Angles are classified and named by their measurement. • Rays can share common endpoints. • A circle has 360 degrees. • A degree represents a fraction of a circle. • A protractor and other tools can be used to measure angles. • Angles can be measured, added, and subtracted from each other. • Lines of symmetry divide an object into matching parts. • Figures may have zero lines of symmetry.	• I can draw and identify points, lines, line segments, and rays in two-dimensional figures. • I can draw and identify angles (acute, obtuse, right) in two-dimensional figures. • I can draw and identify parallel and perpendicular line segments in two-dimensional figures. • I can classify and sort shapes based on their attributes. • I can tell the difference between right triangles and other triangles. • I can identify a line of symmetry in a variety of figures. • I can draw a line(s) of symmetry.

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the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems (e.g., by using an equation with a symbol for the unknown angle measure).	• Figures may have more than one line of symmetry. • Two-dimensional figures can be decomposed into lines, line segments, rays, acute angles, right angles, obtuse angles, parallel, and perpendicular lines. • An angle can be measured finding the sum of each non-overlapping part of an angle.	• I can identify angles as two rays that share a point. • I can measure an angle in units called degrees. • I can use fractions of a circle to measure an angle. • I can count the number of one-degree turns to measure an angle. • I can use a protractor and other tools to measure and draw angles.

Evidence

Vocabulary

- Acute angle
- Acute triangle
- Angle
- Line
- Line of symmetry
- Line segment
- Obtuse angle
- Obtuse triangle
- Parallel lines
- Perpendicular lines
- Point
- Ray
- Right angle
- Right triangle
- Symmetry
- Two-dimensional figures
- Intersecting line
- Protractor
- Whole number
- Degree

Mathematical Practices (Bolded practices are priority for this unit)

- **Make sense of problems and persevere in solving them.**
- **Reason abstractly and quantitatively.**
- **Construct viable arguments and critique the reasoning of others.**
- **Model with mathematics.**
- **Use appropriate tools strategically.**
- **Attend to precision.**
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

KPBSD MATH CURRICULUM
4th GRADE
UNIT 9 – MEASUREMENT

Desired Results

Priority Standards

4.MD.1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4-ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36).*

4.MD.2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

4.MD.3. Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

Supporting Standards

4.NF.6. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*

Transfer

Students will be able to independently use their learning to…
Understand units of measurement and how to apply them to real life scenarios.

Meaning

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that… - Different units of measure are used for different types of measurement (e.g., liters for volume, inches for length). - Standard units of measure enable us to interpret results or data. - What I measure influences how I measure.	Students will keep considering… - How do I use tools to measure? - How can I use measurement to help solve world problems? - What are systems I use to measure? - Why do I use standard units to measure?

Acquisition

Students will know…	Students will be skilled at…
- Ways to estimate, measure, and convert customary units of length, volume, and mass. - A formula can be used to find the perimeter and area of rectangles. - Measurements can be converted within a measurement system (e.g., 1 foot = 12 inches). - Some measurement units are more appropriate to use than others in a specific context. - There is a relationship between units of measure within a system (e.g., seconds, minutes, hours). - A formula can be used to find the perimeter and area of rectangles. - Multiplication or division can be used to find the area if one factor is unknown. - Line plots and other tools help solve measurement problems.	- I can solve problems involving measurement. - I can use a diagram such as a number line to show measurement. - I can use the appropriate tool to accurately measure. - I can use any of the four operations (+,-,x,÷) to solve measurement problems. - I can convert units of measurement. - I can find the area and perimeter of rectangles by using a formula. - I can find the missing length or width of a rectangle using the area formula.

KPBSD MATH CURRICULUM
4th GRADE
UNIT 9 – MEASUREMENT

Evidence	
Vocabulary	**Mathematical Practices (Bolded practices are priority for this unit)**
- Rectangle - Area - Perimeter - Formula - Dimension - Square units - Length - Width - Distance - Interval - Time - Volume - Mass - Simple fractions - Decimals - Quantities - Diagrams - Number line - Scale - Meters - Centimeters - Kilograms - Grams - Pound - Ounce - Milliliter - Liter - Second - Minute - Hour - Inch	**Make sense of problems and persevere in solving them.** - Reason abstractly and quantitatively. - Construct viable arguments and critique the reasoning of others. **Model with mathematics.** **Use appropriate tools strategically.** **Attend to precision.** **Look for and make use of structure.** - Look for and express regularity in repeated reasoning.

• Foot • Equivalent	

Learning Plan
Consider integrating these concepts and skills into other areas, such as science, art, and social studies.