



FOURTH GRADE MATH

Approved by KSD Board of Education: May 19, 2025

Course Description:

In Grade 4, instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

Grade Level: 4th Grade

Unit Scope and Sequence

Unit 1: Factors and Multiples

Unit 2: Fraction Equivalence and Comparison

Unit 3: Extending Operations to Fractions

Unit 4: From Hundreths to Hundred Thousands

Unit 5: Multiplicative Comparison and Measurement

Unit 6: Multiplying and Dividing Multi-Digit Numbers

Unit 7: Angles and Properties of Shapes

Course Enduring Understandings:

- Adding, subtracting, and multiplying fractions is similar to adding, subtracting and multiplying whole numbers.
- Place value extends to numbers less than 1 and greater than 1,000.

Course Essential Questions:

- How can you compare fractions made up of different-sized parts?
- What strategies can you use to multiply and divide multi-digit numbers?

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Unit 1: Factors and Multiples

Students explore patterns and rectangular area diagrams to identify multiples, factor pairs, and prime and composite numbers.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
• Patterns can be used to identify factors and multiples of a number. • Whole numbers are multiples of their factors.	• What are factors and multiples of a number? • What patterns can be seen in the factors and multiples of a number? • How do rectangles represent factors and multiples?
<i>Students must know:</i>	<i>Students must be able to:</i>
• Vocabulary ○ Common Multiple ○ Composite Number ○ Multiple ○ Factor ○ Prime Number	• Generate and extend shape and number patterns. • Determine whether a number is prime or composite. • Relate the side lengths and area of a rectangle to factors and multiples. • Apply multiplication fluency within 100 and the relationship between multiplication and division to identify factor pairs and multiples. • Multiply or divide to solve problems with or without context.

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Unit 1: Factors and Multiples

Missouri Learning Standards

Priority Standards

- Generate a number pattern that follows a given rule (4.RA.C.6)
- Use words or mathematical symbols to express a rule for a given pattern. (4.RA.C.7)

Supporting Standards

- Recognize that a whole number is a multiple of each of its factors and find the multiples for a given whole number. (4.RA.B.4)
- Determine if a whole number within 100 is composite or prime, and find all factor pairs for whole numbers within 100. (4.RA.B.5)

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Unit 2: Fraction Equivalence and Comparison

Students apply and extend their prior understanding of equivalent fractions and comparison of fractions to new cases.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
Fractions can be represented through visual models to determine equivalence.	- How do you know whether 2 fractions are equivalent without drawing a model? - How can you compare fractions made up of different-sized parts?
<i>Students must know:</i>	<i>Students must be able to:</i>
- Vocabulary - Common Denominator - Common Numerator - Hundredth - Tenth	- Make sense of fractions as numbers using physical representations and diagrams. - Generate and identify equivalent fractions. - Explain and justify fraction equivalence using visual representations or numerical processes. - Compare and order fractions with different numerators and denominators using visual representations, benchmark reasoning, or numerical processes.

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Unit 2: Fraction Equivalence and Comparison

Missouri Learning Standards

Priority Standards

- Explain and/or illustrate why two fractions are equivalent. (4.NF.A.1)
- Recognize and generate equivalent fractions. (4.NF.A.2)
- Compare two fractions using the symbols $>$, $=$, or $<$, and justify the solution. (4.NF.A.3)

Supporting Standard

- Multiply a whole number of up to four digits by a one-digit whole number and multiply two-digit numbers, and justify the solution. (4.NBT.A.6)

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Unit 3: Extending Operations to Fractions

Students extend understanding of addition, subtraction, and multiplication to include fractions and mixed numbers.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
Adding, subtracting, and multiplying fractions is similar to adding, subtracting and multiplying whole numbers.	- How is adding and subtracting fractions like adding and subtracting whole numbers? - How is multiplying with fractions like multiplying whole numbers?
<i>Students must know:</i>	<i>Students must be able to:</i>
- Vocabulary - Mixed Number	- Represent and solve problems that involve the addition and subtraction of fractions and mixed numbers. - Use various strategies to add and subtract fractions and mixed numbers with like denominators. - Recognize that $n \times \frac{a}{b} = \frac{(n \times a)}{b}$. - Represent and explain that a fraction $\frac{a}{b}$ is a multiple of $\frac{1}{b}$, namely $a \times \frac{1}{b}$. - Represent and solve problems involving multiplication of a fraction by a whole number. - Reason about equivalence to add tenths and hundredths. - Create and analyze line plots that display measurement data in halves, fourths, and eighths.

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Unit 3: Extending Operations to Fractions

Missouri Learning Standards

Priority Standards

- Solve problems involving adding and subtracting fractions and mixed numbers with like denominators. (4.NF.B.6)
- Solve problems involving multiplication of a fraction by a whole number. (4.NF.B.8)
- Analyze the data in a frequency table, line plot, bar graph, or picture graph. (4.DA.A.3)

Supporting Standards

- Understand addition and subtraction of fractions as joining/composing and separating/decomposing parts referring to the same whole. (4.NF.B.4)
- Decompose a fraction into a sum of fractions with the same denominator and record each decomposition with an equation and justification. (4.NF.B.5)

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Unit 4: From Hundredths to Hundred Thousands

Students extend their understanding of place value to include decimal numbers and multi-digit numbers within 1,000,000.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
Place value extends to numbers less than 1 and greater than 1,000.	- How does place value extend to numbers less than 1? - How does place value extend to numbers greater than 1,000?
<i>Students must know:</i>	<i>Students must be able to:</i>
- Vocabulary - Decimal - Decimal Point - Hundred Thousand - Million - Ten Thousand	- Represent, compare, and order decimals to the hundredths by reasoning about their size. - Write tenths and hundredths in decimal notation. - Read, represent, and describe the relative magnitude of multi-digit whole numbers up to 1,000,000. - Recognize that in a multi-digit whole number, the value of a digit in one place represents 10 times what it represents in the place to its right. - Compare and round multi-digit whole numbers within 1,000,000. - Add and subtract multi-digit whole numbers using the standard algorithm.

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Unit 4: From Hundredths to Hundred Thousands

Missouri Learning Standards

Priority Standards

- Understand that fractions and decimals are equivalent representations of the same quantity. (4.NF.C.10)
- Compare two decimals to the hundredths place using the symbols $>$, $=$, or $<$, and justify the solution. (4.NF.C.12)

Supporting Standards

- Use decimal notation for fractions with denominators of 10 or 100. (4.NF.C.9)
- Round multi-digit whole numbers to any place. (4.NBT.A.1)
- Read, write and identify multi-digit whole numbers up to one million using number names, base ten numerals and expanded form. (4.NBT.A.2)
- Compare two multi-digit numbers using the symbols $>$, $=$, or $<$, and justify the solution. (4.NBT.A.3)
- Understand that in a multi-digit number, a digit represents 10 times what it would represent in the place to its right. (4.NBT.A.4)
- Demonstrate fluency with addition and subtraction of whole numbers. (4.NBT.A.5)

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Unit 5: Multiplicative Comparison and Measurement

Students understand multiplication as a way to compare quantities and convert measurements.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
• Measurement involves using standard units to accurately describe the size or quantity of an object. • Understanding the relationships between different units within a system (like inches, feet, and yards) is key to making accurate comparisons and conversions.	• What does it mean to compare numbers or amounts using multiplication? • How can we use multiplication to rewrite a measurement using a different unit?
<i>Students must know:</i>	<i>Students must be able to:</i>
• Vocabulary ○ Kilometer ○ Milliliter ○ Ounce ○ Pound ○ Second ○ Yard	• Analyze, describe, and represent multiplicative comparison situations. • Solve one-step and two-step problems involving multiplicative comparison. • Convert from larger units to smaller units within a given system of measurement. • Understand the relative sizes of kilometers, meters, and centimeters, and yards, feet, and inches. • Understand the relative sizes of liters and milliliters, kilograms and grams, pounds and ounces, and hours, minutes, and seconds. • Solve multi-step problems involving multiplicative comparison and measurement.

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Unit 5: Multiplicative Comparison and Measurement

Missouri Learning Standards

Priority Standards

- Solve multi-step whole number problems involving the four operations and variables and using estimation to interpret the reasonableness of the answer. (4.RA.A.2)
- Solve whole number division problems involving variables in which remainders need to be interpreted, and justify the solution. (4.RA.A.3)
- Use the four operations to solve problems involving distances, intervals of time, liquid volume, weight of objects and money. (4.GM.C.7)

Supporting Standards

- Understand that in a multi-digit whole number, a digit represents 10 times what it would represent in the place to its right. (4.NBT.A.4)
- Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers, and justify the solution. (4.NBT.A.6)
- Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, and justify the solution. (4.NBT.A.7)
- Multiply or divide to solve problems involving a multiplicative comparison. (4.RA.A.1)
- Know relative sizes of measurement units within one system of units. (4.GM.C.6.a)
- Apply the area and perimeter formulas for rectangles to solve problems. (4.GM.C.8)

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Unit 6: Multiplying and Dividing Multi-Digit Numbers

Students multiply and divide multi-digit whole numbers using partial products and partial quotients strategies.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
- Place-value patterns can be used to multiply and divide multi-digit numbers. - Multiplication and division have an inverse relationship.	- What strategies can you use to multiply and divide multi-digit numbers? - What are some different ways to interpret remainders in division?
<i>Students must know:</i>	<i>Students must be able to:</i>
- Vocabulary - Partial Products - Partial Quotients - Remainder	- Multiply a whole number up to 4 digits by a one-digit whole number and 2 two-digit numbers using strategies based on place value and the properties of operations. - Divide numbers up to 4 digits by one-digit divisors to determine whole number quotients using strategies based on place value, properties of operations, and the relationship between multiplication and division. - Use the 4 operations to solve problems that involve multi-digit whole numbers and assess the reasonableness of answers, including division with remainders.

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Unit 6: Multiplying and Dividing Multi-Digit Numbers

Missouri Learning Standards

Priority Standards

- Solve multi-step whole number problems involving the four operations and variables and using estimation to interpret the reasonableness of the answer. (4.RA.A.2)
- Solve whole number division problems involving variables in which remainders need to be interpreted, and justify the solution. (4.RA.A.3)
- Apply the area and perimeter formulas for rectangles to solve problems. (4.GM.C.8)

Supporting Standards

- Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers, and justify the solution. (4.NBT.A.6)
- Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, and justify the solution. (4.NBT.A.7)

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Unit 7: Angles and Properties of Shapes

Students explore angle measurements, parallel and perpendicular lines, and symmetry as attributes of shapes.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
• The unit for measuring the size of the opening of an angle is 1 degree. • Angles are formed by two intersecting lines by rays with a common endpoint and are classified by size. • Polygons can be described and classified by their sides and angles.	• How can the sizes of angles be compared? • What attributes must a parallelogram have, and what other attributes can a parallelogram have?
<i>Students must know:</i>	<i>Students must be able to:</i>
• Vocabulary ○ Line ○ Line Segment ○ Point ○ Ray ○ Intersecting Lines ○ Parallel Lines ○ Perpendicular Lines ○ Angle ○ Vertex of an Angle ○ Degree ○ Protractor ○ Acute Angle ○ Obtuse Angle ○ Right Angle ○ Straight Angle ○ Equilateral Triangle ○ Isosceles Triangle ○ Scalene Triangle ○ Parallelogram ○ Line of Symmetry ○ Line Symmetry	• Draw and identify points, lines, rays, segments, and parallel and intersecting lines in geometric figures. • Measure angles using a protractor as well as operations, and draw angles with given measurements. • Classify angles as acute, right, obtuse, or straight. • Classify triangles and quadrilaterals based on the properties of their side lengths and angles. • Identify and draw lines of symmetry in two-dimensional figures.

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Unit 7: Angles and Properties of Shapes

Missouri Learning Standards

Priority Standards

- Classify two-dimensional shapes by their sides and/or angles. (4.GM.A.2)
- Identify and estimate angles and their measure. (4.GM.A.4)

Supporting Standards

- Draw and identify points, lines, line segments, rays, angles, perpendicular lines and parallel lines. (4.GM.A.1)
- Construct lines of symmetry for a two-dimensional figure. (4.GM.A.3)
- Draw and measure angles in whole-number degrees using a protractor. (4.GM.B.5)