Grade 5 | Arkansas Mathematics Standards Correlation to *Eureka Math*®

About *Eureka Math*

Created by Great Minds®, a mission-driven Public Benefit Corporation, *Eureka Math*® helps teachers deliver unparalleled math instruction that provides students with a deep understanding and fluency in math. Crafted by teachers and math scholars, the curriculum carefully sequences the mathematical progressions to maximize coherence from Prekindergarten through Precalculus—a principle tested and proven to be essential in students' mastery of math.

Teachers and students using *Eureka Math* find the trademark "Aha!" moments in *Eureka Math* to be a source of joy and inspiration, lesson after lesson, year after year.

Aligned

Great Minds offers detailed analyses that demonstrate how each grade of *Eureka Math* aligns with specific state standards. Access these free alignment studies at greatminds.org/state-studies.

Data

Schools and districts nationwide are experiencing student growth and impressive test scores after using *Eureka Math*. See their stories and data at greatminds.org/data.

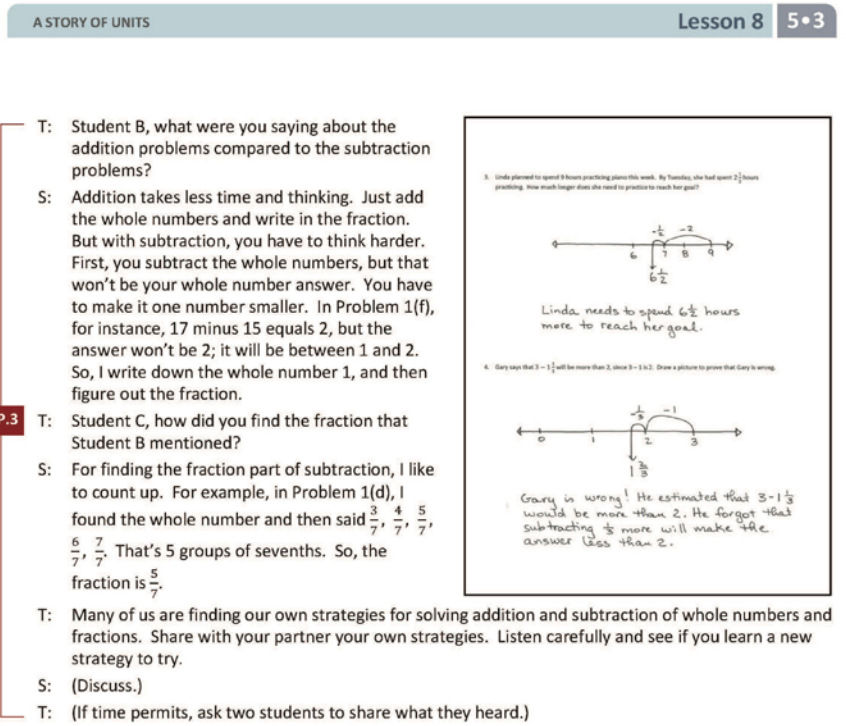
Full Suite of Resources

Great Minds offers the *Eureka Math* curriculum as PDF downloads for free, noncommercial use. Access the free PDFs at greatminds.org/math/curriculum.

The teacher–writers who created the curriculum have also developed essential resources, available only from Great Minds, including the following:

- Printed material in English and Spanish
- Digital resources
- Professional development
- Classroom tools and manipulatives
- Teacher support materials
- Parent resources

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
MP.1 Make sense of problems and persevere in solving them.	Lessons in every module engage students in mathematical practices. These are designated in the Module Overview and labeled in lessons. For example:
MP.2 Reason abstractly and quantitatively.	
MP.3 Construct viable arguments and critique the reasoning of others.	
MP.4 Model with mathematics.	
MP.5 Use appropriate tools strategically.	
MP.6 Attend to precision.	
MP.7 Look for and make use of structure.	
MP.8 Look for and express regularity in repeated reasoning.	



A STORY OF UNITS Lesson 8 5•3

T: Student B, what were you saying about the addition problems compared to the subtraction problems?

S: Addition takes less time and thinking. Just add the whole numbers and write in the fraction. But with subtraction, you have to think harder. First, you subtract the whole numbers, but that won't be your whole number answer. You have to make it one number smaller. In Problem 1(f), for instance, 17 minus 15 equals 2, but the answer won't be 2; it will be between 1 and 2. So, I write down the whole number 1, and then figure out the fraction.

MP.3 T: Student C, how did you find the fraction that Student B mentioned?

S: For finding the fraction part of subtraction, I like to count up. For example, in Problem 1(d), I found the whole number and then said $\frac{3}{7}$, $\frac{4}{7}$, $\frac{5}{7}$, $\frac{6}{7}$, $\frac{7}{7}$. That's 5 groups of sevenths. So, the fraction is $\frac{5}{7}$.

Linda needs to spend $6\frac{1}{2}$ hours more to reach her goal.

Gary is wrong! He estimated that $3-1\frac{1}{3}$ would be more than 2. He forgot that subtracting $\frac{1}{3}$ more will make the answer less than 2.

T: Many of us are finding our own strategies for solving addition and subtraction of whole numbers and fractions. Share with your partner your own strategies. Listen carefully and see if you learn a new strategy to try.

S: (Discuss.)

T: (If time permits, ask two students to share what they heard.)

Number & Place Value

Place Value

Students understand the base ten place value system.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.NPV.1 Recognize that, in a multi-digit number, a digit in a given place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.	G5 M1 Lesson 1: Reason concretely and pictorially using place value understanding to relate adjacent base ten units from millions to thousandths. G5 M1 Lesson 2: Reason abstractly using place value understanding to relate adjacent base ten units from millions to thousandths. G5 M2 Topic A: Mental Strategies for Multi-Digit Whole Number Multiplication G5 M2 Lesson 16: Use divide by 10 patterns for multi-digit whole number division.
5.NPV.2 Explain patterns in the number of zeros and/or the decimal point when multiplying or dividing a number by a power of 10, using whole-number exponents to denote powers of 10.	G5 M1 Lesson 3: Use exponents to name place value units and explain patterns in the placement of the decimal point. G5 M1 Lesson 4: Use exponents to denote powers of 10 with application to metric conversions. G5 M1 Lesson 12: Multiply a decimal fraction by single-digit whole numbers, including using estimation to confirm the placement of the decimal point. G5 M2 Topic A: Mental Strategies for Multi-Digit Whole Number Multiplication G5 M2 Lesson 16: Use divide by 10 patterns for multi-digit whole number division. G5 M2 Lesson 24: Divide decimal dividends by multiples of 10, reasoning about the placement of the decimal point and making connections to a written method.
5.NPV.3 Read and write decimals to thousandths, using base-ten numerals, word form, and a variety of expanded forms.	G5 M1 Lesson 5: Name decimal fractions in expanded, unit, and word forms by applying place value reasoning. G5 M1 Topic D: Adding and Subtracting Decimals G5 M1 Topic E: Multiplying Decimals G5 M6 Lesson 28: Solidify fluency with Grade 5 skills.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.NPV.4 Apply place value understanding to round decimals to any place up to the thousandths.	G5 M1 Topic C: Place Value and Rounding Decimal Fractions G5 M6 Lesson 28: Solidify fluency with Grade 5 skills. *Supplemental material is necessary to address rounding to the nearest thousandth.*

Number & Place Value

Comparison

Students use place value understanding to compare numbers.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.NPV.5 Compare two decimals to thousandths based on the value of the digits in each place, using symbols (<, =, >) to record the results of comparisons.	G5 M1 Lesson 6: Compare decimal fractions to the thousandths using like units, and express comparisons with >, <, =. G5 M6 Lesson 28: Solidify fluency with Grade 5 skills.

Number & Place Value

Fraction Foundations

Students build a conceptual understanding of fractions.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.NPV.6 Use visual models to explain the product of multiplying a whole number by a fraction greater than and less than one.	G5 M4 Lesson 21: Explain the size of the product, and relate fraction and decimal equivalence to multiplying a fraction by 1. G5 M4 Lesson 22: Compare the size of the product to the size of the factors. G5 M4 Lesson 23: Compare the size of the product to the size of the factors.

Computation & Algebraic Reasoning

Operations & Properties

Students perform operations using place value understanding and properties of operations.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.CAR.1 Use computational fluency to multiply multi-digit whole numbers by using strategies and algorithms, including the standard algorithm, with mastery by the end of fifth grade.	G5 M2 Lesson 5: Connect visual models and the distributive property to partial products of the standard algorithm without renaming. G5 M2 Lesson 6: Connect area models and the distributive property to partial products of the standard algorithm with renaming. G5 M2 Lesson 7: Connect area models and the distributive property to partial products of the standard algorithm with renaming. G5 M2 Lesson 8: Fluently multiply multi-digit whole numbers using the standard algorithm and using estimation to check for reasonableness of the product. G5 M2 Lesson 9: Fluently multiply multi-digit whole numbers using the standard algorithm to solve multi-step word problems. G5 M2 Lesson 13: Use whole number multiplication to express equivalent measurements. G5 M2 Lesson 15: Solve two-step word problems involving measurement conversions. G5 M6 Lesson 26: Solidify writing and interpreting numerical expressions.
5.CAR.2 Calculate whole number quotients of whole numbers with up to four-digit dividends and two-digit divisors using strategies based on place value, properties of operations, divisibility rules, and the relationship between multiplication and division.	G5 M2 Topic E: Mental Strategies for Multi-Digit Whole Number Division G5 M2 Topic F: Partial Quotients and Multi-Digit Whole Number Division G5 M2 Lesson 28: Solve division word problems involving multi-digit division with group size unknown and the number of groups unknown. G5 M6 Lesson 26: Solidify writing and interpreting numerical expressions. *Supplemental material is necessary to address divisibility rules.*

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.CAR.3 Add and subtract decimals to the hundredths using concrete models or drawings and strategies based on place value, properties of operations, or the relationship between addition and subtraction.	G5 M1 Topic D: Adding and Subtracting Decimals G5 M6 Lesson 26: Solidify writing and interpreting numerical expressions. G5 M6 Lesson 28: Solidify fluency with Grade 5 skills.
5.CAR.4 Multiply and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, or the relationship between multiplication and division.	G5 M1 Topic E: Multiplying Decimals G5 M1 Topic F: Dividing Decimals G5 M2 Topic C: Decimal Multi-Digit Multiplication G5 M2 Topic D: Measurement Word Problems with Whole Number and Decimal Multiplication G5 M2 Topic G: Partial Quotients and Multi-Digit Decimal Division G5 M2 Topic H: Measurement Word Problems with Multi-Digit Division G5 M6 Lesson 26: Solidify writing and interpreting numerical expressions. G5 M6 Lesson 28: Solidify fluency with Grade 5 skills.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.CAR.5 Add and subtract fractions with like and unlike denominators by using equivalent fractions $\{\frac{a}{b} = \frac{n \times a}{n \times b}\}$ to create common denominators; include real-world problems.	G4 M5 Topic D: Fraction Addition and Subtraction G5 M3 Lesson 2: Make equivalent fractions with sums of fractions with like denominators. G5 M3 Topic B: Making Like Units Pictorially G5 M3 Topic C: Making Like Units Numerically G5 M3 Lesson 14: Strategize to solve multi-term problems. G5 M3 Lesson 15: Solve multi-step word problems; assess reasonableness of solutions using benchmark numbers. G5 M3 Lesson 16: Explore part-to-whole relationships. G5 M6 Topic E: Multi-Step Word Problems G5 M6 Lesson 26: Solidify writing and interpreting numerical expressions. G5 M6 Lesson 27: Solidify writing and interpreting numerical expressions.
5.CAR.6 Interpret and solve fractions as division problems, ($\frac{a}{b} = a \div b$), where a and b are natural numbers.	G5 M4 Topic B: Fractions as Division G5 M6 Lesson 28: Solidify fluency with Grade 5 skills.
5.CAR.7 Use visual models and equations to multiply whole numbers by fractions and fractions by fractions, including mixed numbers and fractions greater than one.	G5 M4 Lesson 6: Relate fractions as division to fraction of a set. G5 M4 Lesson 7: Multiply any whole number by a fraction using tape diagrams. G5 M4 Lesson 8: Relate a fraction of a set to the repeated addition interpretation of fraction multiplication. G5 M4 Lesson 10: Compare and evaluate expressions with parentheses. G5 M4 Lesson 13: Multiply unit fractions by unit fractions. G5 M4 Lesson 14: Multiply unit fractions by non-unit fractions. G5 M4 Lesson 15: Multiply non-unit fractions by non-unit fractions. G5 M4 Lesson 17: Relate decimal and fraction multiplication. G5 M4 Lesson 18: Relate decimal and fraction multiplication.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.CAR.7 ***continued***	G5 M4 Lesson 33: Create story contexts for numerical expressions and tape diagrams, and solve word problems. G5 M5 Lesson 10: Find the area of rectangles with whole-by-mixed and whole-by-fractional number side lengths by tiling, record by drawing, and relate to fraction multiplication. G5 M5 Lesson 11: Find the area of rectangles with mixed-by-mixed and fraction-by-fraction side lengths by tiling, record by drawing, and relate to fraction multiplication. G5 M5 Lesson 12: Measure to find the area of rectangles with fractional side lengths. G5 M5 Lesson 13: Multiply mixed number factors, and relate to the distributive property and the area model. G5 M6 Lesson 26: Solidify writing and interpreting numerical expressions. G5 M6 Lesson 27: Solidify writing and interpreting numerical expressions. G5 M6 Lesson 28: Solidify fluency with Grade 5 skills.
5.CAR.8 Apply previous understanding of division to divide unit fractions by whole numbers and whole numbers by unit fractions.	G5 M4 Lesson 25: Divide a whole number by a unit fraction. G5 M4 Lesson 26: Divide a unit fraction by a whole number. G5 M6 Lesson 28: Solidify fluency with Grade 5 skills.

Computation & Algebraic Reasoning

Problem Solving

Students solve real-world problems.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.CAR.9 Solve and create real-world problems involving multiplication of fractions and mixed numbers.	G5 M4 Lesson 11: Solve and create fraction word problems involving addition, subtraction, and multiplication. G5 M4 Lesson 12: Solve and create fraction word problems involving addition, subtraction, and multiplication. G5 M4 Lesson 16: Solve word problems using tape diagrams and fraction-by-fraction multiplication. G5 M4 Lesson 24: Solve word problems using fraction and decimal multiplication. G5 M5 Lesson 14: Solve real-world problems involving area of figures with fractional side lengths using visual models and/or equations. G5 M5 Lesson 15: Solve real-world problems involving area of figures with fractional side lengths using visual models and/or equations. G5 M6 Topic E: Multi-Step Word Problems
5.CAR.10 Solve real-world problems involving the division of natural numbers leading to answers in the form of fractions or mixed numbers using visual models and equations.	G5 M4 Topic B: Fractions as Division G5 M6 Topic E: Multi-Step Word Problems G5 M6 Lesson 28: Solidify fluency with Grade 5 skills.
5.CAR.11 Solve real-world problems involving the division of unit fractions by whole numbers and whole numbers by unit fractions, using visual fraction models and equations.	G5 M4 Lesson 27: Solve problems involving fraction division. G5 M4 Lesson 28: Write equations and word problems corresponding to tape and number line diagrams. G5 M4 Lesson 33: Create story contexts for numerical expressions and tape diagrams, and solve word problems. G5 M6 Topic E: Multi-Step Word Problems

Computation & Algebraic Reasoning

Algebraic Concepts

Students develop and apply an understanding of foundational algebraic concepts.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.CAR.12 Evaluate numerical expressions with parentheses or brackets and exponents with the base of ten, using the Order of Operations.	G5 M2 Lesson 3: Write and interpret numerical expressions, and compare expressions using a visual model. G5 M2 Lesson 4: Convert numerical expressions into unit form as a mental strategy for multi-digit multiplication. G5 M4 Lesson 10: Compare and evaluate expressions with parentheses. G5 M4 Lesson 32: Interpret and evaluate numerical expressions including the language of scaling and fraction division. G5 M6 Lesson 26: Solidify writing and interpreting numerical expressions. G5 M6 Lesson 27: Solidify writing and interpreting numerical expressions. G6 M4 Topic B: Special Notations of Operations G6 M4 Lesson 16: Write Expressions in Which Letters Stand for Numbers
5.CAR.13 Write simple expressions that record calculations with numbers, interpreting numerical expressions without evaluating them.	G5 M2 Lesson 3: Write and interpret numerical expressions, and compare expressions using a visual model. G5 M2 Lesson 4: Convert numerical expressions into unit form as a mental strategy for multi-digit multiplication. G5 M4 Lesson 10: Compare and evaluate expressions with parentheses. G5 M4 Lesson 32: Interpret and evaluate numerical expressions including the language of scaling and fraction division. G5 M6 Lesson 7: Plot points, use them to draw lines in the plane, and describe patterns within the coordinate pairs. G5 M6 Lesson 8: Generate a number pattern from a given rule, and plot the points. G5 M6 Lesson 9: Generate two number patterns from given rules, plot the points, and analyze the patterns.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.CAR.13 ***continued***	G5 M6 Lesson 26: Solidify writing and interpreting numerical expressions. G5 M6 Lesson 27: Solidify writing and interpreting numerical expressions.
5.CAR.14 Generate two numerical patterns given two rules, identifying the relationship between the corresponding terms by graphing the terms in the first quadrant of the coordinate grid.	G5 M6 Topic B: Patterns in the Coordinate Plane and Graphing Number Patterns from Rules G5 M6 Lesson 18: Draw symmetric figures on the coordinate plane. G5 M6 Lesson 31: Explore the Fibonacci sequence. G5 M6 Lesson 32: Explore patterns in saving money.

Geometry & Measurement

Shapes

Students expand knowledge of shapes by analyzing sides and angles.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.GM.1 Classify two-dimensional figures in a hierarchy based on properties with the focus on quadrilaterals and triangles when teaching hierarchies.	G5 M5 Topic D: Drawing, Analysis, and Classification of Two-Dimensional Shapes G5 M6 Lesson 29: Solidify the vocabulary of geometry. G5 M6 Lesson 30: Solidify the vocabulary of geometry. *Supplemental material is necessary to fully address this standard.*

Geometry & Measurement

Area & Volume

Students solve the area of rectangles and volume of rectangular prisms.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.GM.2 Find the area of a rectangle with fractional and/or mixed number side lengths by using models and multiplying the fractional side lengths showing that both strategies produce the same area.	G5 M5 Lesson 10: Find the area of rectangles with whole-by-mixed and whole-by-fractional number side lengths by tiling, record by drawing, and relate to fraction multiplication. G5 M5 Lesson 11: Find the area of rectangles with mixed-by-mixed and fraction-by-fraction side lengths by tiling, record by drawing, and relate to fraction multiplication. G5 M5 Lesson 12: Measure to find the area of rectangles with fractional side lengths. G5 M5 Lesson 13: Multiply mixed number factors, and relate to the distributive property and the area model.
5.GM.3 Measure volumes by counting unit cubes using cubic cm (cm^3), cubic in (in^3), cubic ft (ft^3), and improvised units (u^3).	G5 M5 Topic A: Concepts of Volume
5.GM.4 Solve real-world and mathematical problems involving the volume of rectangular prisms with whole number side lengths by applying the formulas ($V = l \cdot w \cdot h$ or $V = b \cdot h$) and the properties of operations.	G5 M5 Lesson 3: Compose and decompose right rectangular prisms using layers. G5 M5 Lesson 4: Use multiplication to calculate volume. G5 M5 Lesson 5: Use multiplication to connect volume as packing with volume as filling. G5 M5 Lesson 7: Solve word problems involving the volume of rectangular prisms with whole number edge lengths. G5 M6 Lesson 28: Solidify fluency with Grade 5 skills. G5 M6 Lesson 33: Design and construct boxes to house materials for summer use. G5 M6 Lesson 34: Design and construct boxes to house materials for summer use.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.GM.5 Solve real-world problems by calculating volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts.	G5 M5 Lesson 6: Find the total volume of solid figures composed of two non-overlapping rectangular prisms. G5 M5 Lesson 8: Apply concepts and formulas of volume to design a sculpture using rectangular prisms within given parameters. G5 M5 Lesson 9: Apply concepts and formulas of volume to design a sculpture using rectangular prisms within given parameters.

Geometry & Measurement

Conversions

Students apply measurement knowledge to solve real-world problems.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.GM.6 Convert among different-sized standard measurement units within the same system, including both the metric and customary systems, and solve multi-step, real-world problems using conversions.	G5 M1 Lesson 4: Use exponents to denote powers of 10 with application to metric conversions. G5 M2 Topic D: Measurement Word Problems with Whole Number and Decimal Multiplication G5 M4 Lesson 8: Relate a fraction of a set to the repeated addition interpretation of fraction multiplication. G5 M4 Lesson 9: Find a fraction of a measurement, and solve word problems. G5 M4 Lesson 19: Convert measures involving whole numbers, and solve multi-step word problems. G5 M4 Lesson 20: Convert mixed unit measurements, and solve multi-step word problems. G5 M6 Lesson 21: Make sense of complex, multi-step problems, and persevere in solving them. Share and critique peer solutions. G5 M6 Lesson 28: Solidify fluency with Grade 5 skills.

Geometry & Measurement

Coordinate Plane System

Students develop an understanding of the coordinate system.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.GM.7 Graph points with whole number coordinates on a coordinate plane in the first quadrant, explaining how the coordinates relate to the horizontal and vertical axes to describe the location of points in the plane.	G5 M6 Topic A: Coordinate Systems G5 M6 Lesson 7: Plot points, use them to draw lines in the plane, and describe patterns within the coordinate pairs. G5 M6 Lesson 14: Construct parallel line segments, and analyze relationships of the coordinate pairs. G5 M6 Lesson 16: Construct perpendicular line segments, and analyze relationships of the coordinate pairs.
5.GM.8 Represent real-world and mathematical problems by graphing points in the first quadrant on a coordinate plane, interpreting coordinate values of points in the context of the situation.	G5 M6 Lesson 14: Construct parallel line segments, and analyze relationships of the coordinate pairs. G5 M6 Lesson 16: Construct perpendicular line segments, and analyze relationships of the coordinate pairs. G5 M6 Lesson 19: Plot data on line graphs and analyze trends. G5 M6 Lesson 20: Use coordinate systems to solve real world problems.

Data Analysis

Charts, Graphs, & Tables

Students organize and analyze data.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.DA.1 Collect and interpret data from observations, surveys, and experiments; represent data using frequency tables, scaled bar graphs, and scaled line graphs.	*Supplemental material is necessary to address this standard.*

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
5.DA.2 Use a line plot to display a data set of measurements in fractions of a unit solving problems involving all four operations with fractions (excluding division of a fraction by fraction) using data presented in line plots.	G5 M4 Topic A: Line Plots of Fraction Measurements