Grade 5 | Indiana Academic Standards for Mathematics 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

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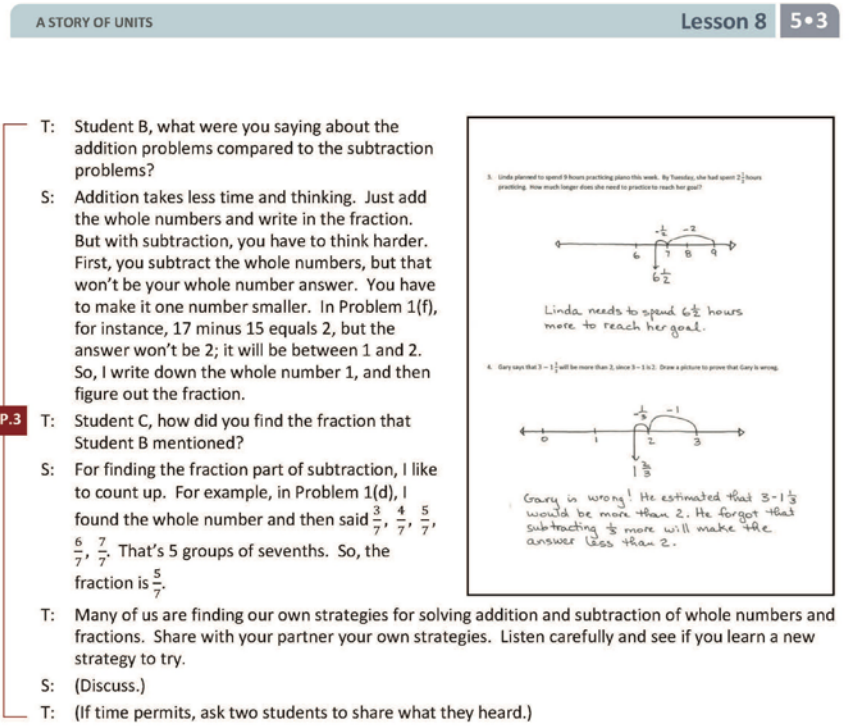
Mathematics Process Standards	Aligned Components of *Eureka Math*
PS.1 Make sense of problems and persevere in solving them.	Lessons in every module engage students in mathematical processes. These are designated in the Module Overview and labeled in lessons. For example: 
PS.2 Reason abstractly and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

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Number Sense

Students explore place value through representing powers of 10 as exponents, modeling percents as parts of 100, and comparing and ordering fractions, mixed numbers, and decimals to the thousandth.

Indiana Academic Standards for Mathematics	Aligned Components of *Eureka Math*
5.NS.1 Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. Write the results using $>$, $=$, and $<$ symbols. (E)	G4 M5 Topic C: Fraction Comparison G4 M5 Lesson 26: Compare fractions greater than 1 by reasoning using benchmark fractions. G4 M5 Lesson 27: Compare fractions greater than 1 by creating common numerators or denominators. G4 M5 Lesson 28: Solve word problems with line plots. 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. *Supplemental material is necessary to fully address this standard.*
5.NS.2 Explain different interpretations of fractions, including as parts of a whole, parts of a set, and division of whole numbers by whole numbers.	G5 M4 Topic B: Fractions as Division 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. G5 M4 Lesson 33: Create story contexts for numerical expressions and tape diagrams, and solve word problems.

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Indiana Academic Standards for Mathematics	Aligned Components of *Eureka Math*
5.NS.2 ***continued***	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. G5 M6 Lesson 28: Solidify fluency with Grade 5 skills.
5.NS.3 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use 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.NS.4 Model percents as parts of 100 using pictures or diagrams and identify the equivalent fraction.	G6 M1 Lesson 24: Percent and Rates per 100

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Computation and Algebraic Thinking

Students apply concepts and strategies of multiplication and division to solve real-world problems. Students add and subtract unlike fractions and use visual fraction models to multiply and divide fractions and whole numbers. Students apply conceptual models and strategies to all operations with decimals to solve real-world problems and represent real-world situations within the first quadrant of the coordinate plane.

Indiana Academic Standards for Mathematics	Aligned Components of *Eureka Math*
5.CA.1 Find whole-number quotients and remainders with up to four-digit dividends and two-digit divisors using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Describe the strategy and explain the reasoning used. (E)	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.
5.CA.2 Solve real-world problems involving multiplication and division of whole numbers (e.g., by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem. (E)	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.
5.CA.3 Add and subtract fractions and mixed numbers with unlike denominators using strategies or the standard algorithm.	G4 M5 Lesson 20: Use visual models to add two fractions with related units using the denominators 2, 3, 4, 5, 6, 8, 10, and 12. G4 M5 Lesson 21: Use visual models to add two fractions with related units using the denominators 2, 3, 4, 5, 6, 8, 10, and 12. G5 M3 Lesson 3: Add fractions with unlike units using the strategy of creating equivalent fractions.

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Indiana Academic Standards for Mathematics	Aligned Components of *Eureka Math*
5.CA.3 ***continued***	G5 M3 Lesson 4: Add fractions with sums between 1 and 2. G5 M3 Lesson 5: Subtract fractions with unlike units using the strategy of creating equivalent fractions. G5 M3 Lesson 6: Subtract fractions from numbers between 1 and 2. G5 M3 Topic C: Making Like Units Numerically G5 M3 Lesson 14: Strategize to solve multi-term problems. G5 M6 Lesson 26: Solidify writing and interpreting numerical expressions. G5 M6 Lesson 27: Solidify writing and interpreting numerical expressions.
5.CA.4 Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable. (E)	G4 M5 Lesson 29: Estimate sums and differences using benchmark numbers. G5 M3 Lesson 7: Solve two-step word problems. G5 M3 Lesson 9: Add fractions making like units numerically. G5 M3 Lesson 13: Use fraction benchmark numbers to assess reasonableness of addition and subtraction equations. 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
5.CA.5 Use visual fraction models to multiply a fraction by a fraction or a whole number. (E)	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.

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Indiana Academic Standards for Mathematics	Aligned Components of *Eureka Math*
5.CA.5 ***continued***	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. G5 M4 Lesson 33: Create story contexts for numerical expressions and tape diagrams, and solve word problems. 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.CA.6 Use visual fraction models and numbers to divide a fraction by a fraction or a whole number. (E)	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. G6 M2 Topic A: Arithmetic Operations Including Dividing by a Fraction
5.CA.7 Solve real-world problems involving multiplication of fractions, including mixed numbers (e.g., by using visual fraction models and equations to represent the problem). (E)	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

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5.CA.8 Solve real-world problems involving division of fractions and mixed numbers (e.g., by using visual fraction models and equations to represent the problem). (E)	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 G6 M2 Topic A: Arithmetic Operations Including Dividing by a Fraction
5.CA.9 Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.	G5 M1 Topic D: Adding and Subtracting Decimals 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 M4 Lesson 17: Relate decimal and fraction multiplication. G5 M4 Lesson 18: Relate decimal and fraction multiplication. G5 M4 Lesson 29: Connect division by a unit fraction to division by 1 tenth and 1 hundredth. G5 M4 Lesson 30: Divide decimal dividends by non-unit decimal divisors. G5 M4 Lesson 31: Divide decimal dividends by non-unit decimal divisors. G5 M6 Lesson 26: Solidify writing and interpreting numerical expressions. G5 M6 Lesson 28: Solidify fluency with Grade 5 skills.

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Indiana Academic Standards for Mathematics	Aligned Components of *Eureka Math*
5.CA.10 Solve real-world problems involving addition, subtraction, multiplication, and division with decimals to hundredths including problems that involve money in decimal notation (e.g., by using equations, models or drawings, and strategies based on place value or properties of operations to represent the problem). (E)	G5 M1 Topic D: Adding and Subtracting Decimals 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 M4 Lesson 17: Relate decimal and fraction multiplication. G5 M4 Lesson 18: Relate decimal and fraction multiplication. G5 M4 Lesson 29: Connect division by a unit fraction to division by 1 tenth and 1 hundredth. G5 M4 Lesson 30: Divide decimal dividends by non-unit decimal divisors. G5 M4 Lesson 31: Divide decimal dividends by non-unit decimal divisors. G5 M6 Lesson 21: Make sense of complex, multi-step problems, and persevere in solving them. Share and critique peer solutions.
5.CA.11 Represent real-world problems and equations by graphing ordered pairs in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	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. G5 M6 Lesson 19: Plot data on line graphs and analyze trends. G5 M6 Lesson 20: Use coordinate systems to solve real world problems.

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Geometry

Students use appropriate tools to investigate attributes of triangles and circles.

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5.G.1 Identify, describe, and draw triangles (right, acute, obtuse) and circles using appropriate tools (e.g., ruler or straightedge, compass, and technology). Define and model the relationship between radius and diameter.	G4 M4 Lesson 13: Analyze and classify triangles based on side length, angle measure, or both. G4 M4 Lesson 14: Define and construct triangles from given criteria. Explore symmetry in triangles. G4 M4 Lesson 15: Classify quadrilaterals based on parallel and perpendicular lines and the presence or absence of angles of a specified size. G4 M4 Lesson 16: Reason about attributes to construct quadrilaterals on square or triangular grid paper. G4 M7 Lesson 18: Practice and solidify Grade 4 vocabulary. *Supplemental material is necessary to address circles.*

Measurement

Students investigate the volume of rectangular prisms and solve real-world problems through the development and application of area formulas for rectangles, triangles, parallelograms, and trapezoids. Students investigate and convert measurements within the Customary and metric measurement systems.

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5.M.1 Convert among different-sized standard measurement units within a given measurement system and use these conversions in solving multi-step, real-world problems.	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.

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5.M.1 ***continued***	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.
5.M.2 Find the area of a rectangle with fractional side lengths by modeling with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	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.M.3 Develop and use formulas for the area of triangles, parallelograms, and trapezoids. Solve real-world and other mathematical problems that involve perimeter and area of triangles, parallelograms, and trapezoids, using appropriate units for measures. (E)	G6 M5 Topic A: Area of Triangles, Quadrilaterals, and Polygons G6 M5 Lesson 8: Drawing Polygons in the Coordinate Plane G6 M5 Lesson 9: Determining Perimeter and Area of Polygons on the Coordinate Plane

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Indiana Academic Standards for Mathematics	Aligned Components of *Eureka Math*
5.M.4 Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths or multiplying the height by the area of the base. (E)	G5 M5 Topic A: Concepts of Volume 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 M6 Lesson 29: Solidify the vocabulary of geometry. G5 M6 Lesson 30: Solidify the vocabulary of geometry.
5.M.5 Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for right rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths to solve real-world problems and other mathematical problems. (E)	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.

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Data Analysis

Students create questions appropriate to the data and answer the questions using multiple representations.

Indiana Academic Standards for Mathematics	Aligned Components of *Eureka Math*
5.DA.1 Formulate questions that can be addressed with categorical and numerical data and make predictions about the data. Collect, organize, and graph data from observations, surveys, and experiments using line plots with fractional intervals, histograms, or other graphical representations that appropriately represent the data set. (E)	G5 M4 Topic A: Line Plots of Fraction Measurements G6 M6 Lesson 2: Displaying a Data Distribution G6 M6 Lesson 3: Creating a Dot Plot G6 M6 Lesson 4: Creating a Histogram G6 M6 Lesson 5: Describing a Distribution Displayed in a Histogram *Supplemental material is necessary to address categorical data.*
5.DA.2 Calculate measures of central tendency (mean, median, and mode) to describe a data set. Analyze data sets to determine which measure of central tendency appropriately describes the distribution of data. (E)	G6 M6 Lesson 2: Displaying a Data Distribution G6 M6 Lesson 3: Creating a Dot Plot G6 M6 Lesson 4: Creating a Histogram G6 M6 Lesson 5: Describing a Distribution Displayed in a Histogram G6 M6 Topic B: Summarizing a Distribution that Is Approximately Symmetric Using the Mean and Mean Absolute Deviation G6 M6 Topic C: Summarizing a Distribution that is Skewed Using the Median and the Interquartile Range G6 M6 Topic D: Summarizing and Describing Distributions *Supplemental material is necessary to address mode.*

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