EUREKA MATH[™]

ABOUT EUREKA MATH	Created by the nonprofit Great Minds, <i>Eureka Math</i> 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 <i>Eureka Math</i> find the trademark "Aha!" moments in <i>Eureka Math</i> to be a source of joy and inspiration, lesson after lesson, year after year.	
ALIGNED	<i>Eureka Math</i> is the only curriculum found by EdReports.org to align fully with the Common Core State Standards for Mathematics for all grades, Kindergarten through Grade 8. Great Minds offers detailed analyses which demonstrate how each grade of <i>Eureka Math</i> 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 <i>Eureka Math</i> . See their stories and data at greatminds.org/data.	
FULL SUITE OF RESOURCES	As a nonprofit, Great Minds offers the <i>Eureka Math</i> 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

GRADE 4 MATHEMATICS

The Grade 4 Arizona Mathematics Standards are fully covered by the Grade 4 *Eureka Math* curriculum. A detailed analysis of alignment is provided in the table below.

INDICATORS

Green indicates that the Arizona standard is fully addressed in *Eureka Math*.

Yellow indicates that the Arizona standard may not be completely addressed in *Eureka Math*.

Red indicates that the Arizona standard is not addressed in *Eureka Math*.

Blue indicates there is a discrepancy between the grade level at which this standard is addressed in the Arizona standards and in *Eureka Math*.

1: Make sense of problems and persevere in solving them.

Mathematically proficient students explain to themselves the meaning of a problem, look for entry points to begin work on the problem, and plan and choose a solution pathway. While engaging in productive struggle to solve a problem, they continually ask themselves, "Does this make sense?" to monitor and evaluate their progress and change course if necessary. Once they have a solution, they look back at the problem to determine if the solution is reasonable and accurate. Mathematically proficient students check their solutions to problems using different methods, approaches, or representations. They also compare and understand different representations of problems and different solution pathways, both their own and those of others. Lessons in every module engage students in making sense of problems and persevering in solving them as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 1, which is specifically addressed in the following modules:

G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction

G4 M2: Unit Conversions and Problem Solving with Metric Measurement

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2: Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. Students can contextualize and decontextualize problems involving quantitative relationships. They contextualize quantities, operations, and expressions by describing a corresponding situation. They decontextualize a situation by representing it symbolically. As they manipulate the symbols, they can pause as needed to access the meaning of the numbers, the units, and the operations that the symbols represent. Mathematically proficient students know and flexibly use different properties of operations, numbers, and geometric objects and when appropriate they interpret their solution in terms of the context.

Aligned Components of Eureka Math

Lessons in every module engage students in reasoning abstractly and quantitatively as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 2, which is specifically addressed in the following modules:

G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction

G4 M3: Multi-Digit Multiplication and Division

G4 M4: Angle Measure and Plane Figures

G4 M5: Fraction Equivalence, Ordering, and Operations

G4 M6: Decimal Fractions

G4 M7: Exploring Measurement with Multiplication

3: Construct viable arguments and critique the reasoning of others.

Mathematically proficient students construct mathematical arguments (explain the reasoning underlying a strategy, solution, or conjecture) using concrete, pictorial, or symbolic referents. Arguments may also rely on definitions, assumptions, previously established results, properties, or structures. Mathematically proficient students make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. Mathematically proficient students present their arguments in the form of representations, actions on those representations, and explanations in words (oral or written). Students critique others by affirming or questioning the reasoning of others. They can listen to or read the reasoning of others, decide whether it makes sense, ask questions to clarify or improve the reasoning, and validate or build on it. Mathematically proficient students can communicate their arguments, compare them to others, and reconsider their own arguments in response to the critiques of others.

Lessons in every module engage students in constructing viable arguments and critiquing the reasoning of others as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 3, which is specifically addressed in the following modules:

G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction

G4 M4: Angle Measure and Plane Figures

G4 M5: Fraction Equivalence, Ordering, and Operations

G4 M7: Exploring Measurement with Multiplication

4: Model with mathematics.

Mathematically proficient students apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. When given a problem in a contextual situation, they identify the mathematical elements of a situation and create a mathematical model that represents those mathematical elements and the relationships among them. Mathematically proficient students use their model to analyze the relationships and draw conclusions. They interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5: Use appropriate tools strategically.

Mathematically proficient students consider available tools when solving a mathematical problem. They choose tools that are relevant and useful to the problem at hand. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful; recognizing both the insight to be gained and their limitations. Students deepen their understanding of mathematical concepts when using tools to visualize, explore, compare, communicate, make and test predictions, and understand the thinking of others. Lessons in every module engage students in modeling with mathematics as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 4, which is specifically addressed in the following modules:

G4 M3: Multi-Digit Multiplication and Division

G4 M5: Fraction Equivalence, Ordering, and Operations

G4 M6: Decimal Fractions

Lessons in every module engage students in using appropriate tools strategically as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 5, which is specifically addressed in the following modules:

G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction

G4 M3: Multi-Digit Multiplication and Division

G4 M4: Angle Measure and Plane Figures

Standards for Mathematical Practice	Aligned Components of Eureka Math
6: Attend to precision. Mathematically proficient students clearly communicate to others using appropriate mathematical terminology, and craft explanations to convey their reasoning. When making mathematical arguments about a solution, strategy, or conjecture, they describe mathematical relationships and connect their words clearly to their representations. Mathematically proficient students understand meanings of symbols used in mathematics, calculate accurately and efficiently, label quantities appropriately, and record their work clearly and concisely.	 Lessons in every module engage students in attending to precision as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 6, which is specifically addressed in the following modules: G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction G4 M4: Angle Measure and Plane Figures G4 M6: Decimal Fractions
7: Look for and make use of structure. Mathematically proficient students use structure and patterns to assist in making connections among mathematical ideas or concepts when making sense of mathematics. Students recognize and apply general mathematical rules to complex situations. They are able to compose and decompose mathematical ideas and notations into familiar relationships. Mathematically proficient students manage their own progress, stepping back for an overview and shifting perspective when needed.	Lessons in every module engage students in looking for and making use of structure as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 7, which is specifically addressed in the following modules: G4 M2: Unit Conversions and Problem Solving with Metric Measurement G4 M5: Fraction Equivalence, Ordering, and Operations
	G4 M7: Exploring Measurement with Multiplication

8: Look for and express regularity in repeated reasoning.

Mathematically proficient students look for and describe regularities as they solve multiple related problems. They formulate conjectures about what they notice and communicate observations with precision. While solving problems, students maintain oversight of the process and continually evaluate the reasonableness of their results. This informs and strengthens their understanding of the structure of mathematics which leads to fluency. Lessons in every module engage students in looking for and expressing regularity in repeated reasoning as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 8, which is specifically addressed in the following modules:

G4 M2: Unit Conversions and Problem Solving with Metric Measurement

G4 M3: Multi-Digit Multiplication and Division

G4 M6: Decimal Fractions

G4 M7: Exploring Measurement with Multiplication

Domain	Standards for Mathematical Content	Aligned Components of Eureka Math		
Operations	Cluster: Use the four operations with whole numbers to solve problems.			
and Algebraic Thinking	4.0A.A.1	G4 M1 Topic A: Place Value of Multi-Digit Whole Numbers		
ппкіпд	Represent verbal statements of multiplicative comparisons as multiplication equations. Interpret a multiplication equation as a comparison (e.g., 35 is the number of objects in 5 groups, each containing 7 objects, and is also the number of objects in 7 groups, each containing 5 objects).	 G4 M3 Lesson 2: Solve multiplicative comparison word problems by applying the area and perimeter formulas. G4 M3 Topic D: Multiplication Word Problems G4 M7 Lesson 4: Solve multiplicative comparison word problems using measurement conversion tables. 		
	4.OA.A.2 Multiply or divide within 1,000 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, distinguishing multiplicative comparison from additive comparison).	 G4 M3 Topic A: Multiplicative Comparison Word Problems G4 M3 Lesson 11: Connect the area model and the partial products method to the standard algorithm. G4 M3 Topic D: Multiplication Word Problems G4 M3 Lesson 26: Divide multiples of 10, 100, and 1,000 by single-digit numbers. G4 M7 Lesson 4: Solve multiplicative comparison word problems using measurement conversion tables. G4 M7 Lesson 5: Share and critique peer strategies. G4 M7 Lesson 8: Solve problems involving mixed units of weight. G4 M7 Lesson 10: Solve multi-step measurement word problems. 		

Domain	Standards for Mathematical Content	Aligned Components of Eureka Math
	4.OA.A.3 Solve multistep word problems using the four operations, including problems in which remainders must be interpreted. Understand how the remainder is a fraction of the divisor. Represent these problems using equations with a letter standing for the unknown quantity.	 G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction G4 M3 Topic D: Multiplication Word Problems G4 M3 Lesson 29: Represent numerically four-digit dividend division with divisors of 2, 3, 4, and 5, decomposing a remainder up to three times. G4 M3 Lesson 31: Interpret division word problems as either <i>number of groups unknown</i> or <i>group size unknown</i>. G4 M7 Topic B: Problem Solving with Measurement G4 M7 Lesson 14: Solve multi-step word problems involving converting mixed number measurements to a single unit.
	Cluster: Gain familiarity with factors and 1	nultiples.
	4.OA.B.4 Find all factor pairs for a whole number in the range 1 to 100 and understand that a whole number is a multiple of each of its factors.	G4 M3 Topic F: Reasoning with Divisibility

Domain	Standards for Mathematical Content	Aligned Components of Eureka Math		
	Cluster: Generate and analyze patterns.			
	4.OA.C.5 Generate a number pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself and explain the pattern informally (e.g., given the rule "add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate	G4 M3 Topic F: Reasoning with Divisibility G4 M5 Topic H: Exploring a Fraction Pattern		
	between odd and even numbers).			
	4.OA.C.6 When solving problems, assess the	G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction		
	reasonableness of answers using mental computation and estimation strategies including rounding.	G4 M5 Topic F: Addition and Subtraction of Fractions by Decomposition		
		G4 M5 Lesson 39: Solve multiplicative comparison word problems involving fractions.		
		G4 M5 Lesson 40: Solve word problems involving the multiplication of a whole number and a fraction including those involving line plots.		

Domain	Standards for Mathematical Content Aligned Components of <i>Eureka Math</i>			
Number and	Cluster: Generalize place value understanding for multi-digit whole numbers.			
Operations in Base Ten	4.NBT.A.1		G4 M1 Topic A: Place Value of Multi-Digit Whole Numbers	
	Apply concepts of place value, multiplication, and division to understand that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.		G4 M3 Topic B: Multiplication by 10, 100, and 1,000 G4 M6 Lesson 8: Use understanding of fraction equivalence to investigate decimal numbers on the place value chart expressed in different units.	
	4.NBT.A.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.		G4 M1 Topic A: Place Value of Multi-Digit Whole Numbers G4 M1 Topic B: Comparing Multi-Digit Whole Numbers	
	4.NBT.A.3 Use place value understanding to round multi- digit whole numbers to any place.		G4 M1 Topic C: Rounding Multi-Digit Whole Numbers	
	Cluster: Use place value understanding and properties of operations to perform multi-digit arithmetic.			
	4.NBT.B.4		G4 M1 Topic D: Multi-Digit Whole Number Addition	
	Fluently add and subtract multi-digit whole numbers using a standard algorithm.		G4 M1 Topic E: Multi-Digit Whole Number Subtraction	

Domain	Standards for Mathematical Content	Aligned Components of Eureka Math
	4.NBT.B.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.	G4 M3: Multi-Digit Multiplication and Division
	4.NBT.B.6 Demonstrate understanding of division by finding whole-number quotients and remainders with up to four-digit dividends and one-digit divisors.	G4 M3 Topic E: Division of Tens and Ones with Successive RemaindersG4 M3 Topic G: Division of Thousands, Hundreds, Tens, and Ones
Number and	Cluster: Extend understanding of fraction	equivalence and ordering.
Operations— Fractions	4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \ge a)/(n \ge b)$ 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 understand and generate equivalent fractions.	 G4 M5 Lesson 5: Decompose unit fractions using area models to show equivalence. G4 M5 Lesson 6: Decompose fractions using area models to show equivalence. G4 M5 Topic B: Fraction Equivalence Using Multiplication and Division G4 M5 Lessons 20–21: Use visual models to add two fractions with related units using the denominators 2, 3, 4, 5, 6, 8, 10, and 12. G4 M6 Lesson 5: Model the equivalence of tenths and hundredths using the area model and place value disks.

Domain	Standards for Mathematical Content	Aligned Components of Eureka Math
	4.NF.A.2 Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators and by comparing to a benchmark fraction).	
	a. Understand that comparisons are valid only when the two fractions refer to the same size whole.	 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.
	b. Record the results of comparisons with symbols >, =, or <, and justify the conclusions.	 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.

Domain	Standards for Mathematical Content	Aligned Components of Eureka Math	
	Cluster: Build fractions from unit fractions by applying and extending previous understanding operations on whole numbers.		
	4.NF.B.3 Understand a fraction a/b with $a > 1$ as a sum of unit fractions $(1/b)$.		
	a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	G4 M5 Topic D: Fraction Addition and SubtractionG4 M5 Lesson 22: Add a fraction less than 1 to, or subtract a fraction less than 1 from, a whole number using decomposition and visual models.	
	b. Decompose a fraction into a sum of fractions with the same denominator in more than one way (e.g., $3/8 = 1/8 + 1/8 + 1/8$; 3/8 = 2/8 + 1/8; $2 1/8 = 1 + 1 + 1/8$; or $2 1/8 = 8/8 + 8/8 + 1/8$).	G4 M5 Topic A: Decomposition and Fraction Equivalence G4 M5 Lesson 25: Decompose and compose fractions greater than 1 to express them in various forms.	
	c. Add and subtract mixed numbers with like denominators (e.g., by using properties of operations and the relationship between addition and subtraction and/or by replacing each mixed number with an equivalent fraction).	G4 M5 Lesson 24: Decompose and compose fractions greater than 1 to express them in various forms.G4 M5 Topic F: Addition and Subtraction of Fractions by Decomposition	
	d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators.	G4 M5 Lesson 19: Solve word problems involving addition and subtraction of fractions.G4 M5 Lesson 28: Solve word problems with line plots.	

Domain	Standards for Mathematical Content		Aligned Components of Eureka Math
	4.NF.B.4 Build fractions from unit fractions.		
	a. Understand a fraction a/b as a multiple of a unit fraction $1/b$. In general, $a/b = a \times 1/b$.		G4 M5 Topic A: Decomposition and Fraction Equivalence G4 M5 Lesson 35: Represent the multiplication of <i>n</i> times a/b as $(n \times a)/b$ using the associative property and visual models.
	b. Understand a multiple of a/b as a multiple of a unit fraction $1/b$, and use this understanding to multiply a whole number by a fraction. In general, $n \times a/b = (n \times a)/b$.		G4 M5 Lesson 23: Add and multiply unit fractions to build fractions greater than 1 using visual models. G4 M5 Topic G: Repeated Addition of Fractions as Multiplication
	c. Solve word problems involving multiplication of a whole number by a fraction.		G4 M5 Topic G: Repeated Addition of Fractions as Multiplication
	Cluster: Understand decimal notation for	fra	actions, and compare decimal fractions.
	4.NF.C.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 (tenths) and 100 (hundredths).		G4 M6 Topic B: Tenths and Hundredths G4 M6 Topic D: Addition with Tenths and Hundredths G4 M6 Topic E: Money Amounts as Decimal Numbers
	4.NF.C.6 Use decimal notation for fractions with denominators 10 (tenths) or 100 (hundredths), and locate these decimals on a number line.		G4 M6: Decimal Fractions

Domain	Standards for Mathematical Content	Aligned Components of Eureka Math
	4.NF.C.7 Compare two decimals to hundredths by reasoning about their size. Understand that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <.	G4 M6 Topic C: Decimal Comparison
Measurement and Data	Cluster: Solve problems involving measur unit to a smaller unit.	rement and conversion of measurements from a larger
	4.MD.A.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 and in a smaller unit in terms of a larger unit.	 G4 M2: Unit Conversions and Problem Solving with Metric Measurement G4 M5 Lesson 40: Solve word problems involving the multiplication of a whole number and a fraction including those involving line plots. G4 M7: Exploring Measurement with Multiplication

Domain	Standards for Mathematical Content	Aligned Components of Eureka Math
	4.MD.A.2 Use the four operations to solve word problems and problems in real-world context involving distances, intervals of time (hr, min, sec), liquid volumes, masses of objects, and money, including decimals and problems involving fractions with like denominators, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using a variety of representations, including number lines that feature a measurement scale.	 G4 M2: Unit Conversions and Problem Solving with Metric Measurement G4 M6 Lesson 14: Solve word problems involving the addition of measurements in decimal form. G4 M6 Topic E: Money Amounts as Decimal Numbers G4 M7 Topic B: Problem Solving with Measurement G4 M7 Lesson 14: Solve multi-step word problems involving converting mixed number measurements to a single unit.
	4.MD.A.3 Apply the area and perimeter formulas for rectangles in mathematical problems and problems in real-world contexts including problems with unknown side lengths.	G4 M3 Topic A: Multiplicative Comparison Word Problems
	Cluster: Represent and interpret data.	
	4.MD.B.4 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.	G4 M5 Lesson 28: Solve word problems with line plots. G4 M5 Lesson 40: Solve word problems involving the multiplication of a whole number and a fraction including those involving line plots.

Domain	Standards for Mathematical Content	Aligned Components of Eureka Math	
	Cluster: Geometric measurement: Understand concepts of angle and measure angles.		
	4.MD.C.5		
	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand 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.	G4 M4 Topic B: Angle Measurement	
	b. An angle that turns through <i>n</i> one-degree angles is said to have an angle measure of <i>n</i> degrees.	G4 M4 Topic B: Angle Measurement	
	4.MD.C.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	G4 M4 Topic B: Angle Measurement	

Domain	Standards for Mathematical Content	Aligned Components of Eureka Math	
	4.MD.C.7 Understand angle measures as additive. (When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts.) Solve addition and subtraction problems to find unknown angles on a diagram within mathematical problems as well as problems in real-world contexts.	G4 M4 Topic C: Problem Solving with the Addition of Angle Measures	
Geometry	Cluster: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.		
	4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two- dimensional figures.	G4 M4: Angle Measure and Plane Figures	
	4.G.A.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size (e.g., understand right triangles as a category, and identify right triangles).	G4 M4 Topic D: Two-Dimensional Figures and Symmetry	
	4.G.A.3 Recognize a line of symmetry for a two- dimensional 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.	G4 M4 Topic D: Two-Dimensional Figures and Symmetry	