# Grade 7 | Arkansas Academic Standards – Mathematics Correlation to *Eureka Math²*™

When the original *Eureka Math*® curriculum was released, it quickly became the most widely used K–5 mathematics curriculum in the country. Now, the Great Minds® teacher-writers have created *Eureka Math²*™, a groundbreaking new curriculum that helps teachers deliver exponentially better math instruction while still providing students with the same deep understanding of and fluency in math. *Eureka Math²* carefully sequences mathematical content to maximize vertical alignment—a principle tested and proven to be essential in students' mastery of math—from kindergarten through high school.

While this innovative new curriculum includes all the trademark *Eureka Math* aha moments that have been delighting students and teachers for years, it also boasts these exciting new features:

## Teachability

*Eureka Math²* employs streamlined materials that allow teachers to plan more efficiently and focus their energy on delivering high-quality instruction that meets the individual needs of their students. Differentiation suggestions, slide decks, digital interactives, and multiple forms of assessment are just a few of the resources built right into the teacher materials.

## Accessibility

*Eureka Math²* incorporates Universal Design for Learning principles so all learners can access the mathematics and take on challenging math concepts. Student supports are built into the instructional design and are clearly identified in the *Teach* book. Further, the curriculum carries a focus on readability. By eliminating unnecessary words and using simple, clear sentences, the *Eureka Math²* teacher-writers have created one of the most readable mathematics curricula on the market. The curriculum's readability and accessibility help all students see themselves as mathematical thinkers and doers who are fully capable of owning their mathematics learning.

## Digital Engagement

The digital elements of *Eureka Math²* add to students' engagement with the math. The curriculum provides teachers with digital slides for each lesson. In addition, each grade level includes wordless videos that spark students' interest and curiosity. Students at all levels work through mathematical explorations that help lead to their own mathematical discoveries. Digital lessons and videos provide opportunities for students to wonder, explore, and make sense of mathematics, which contributes to the development of a strong, positive mathematical identity.

| Standards for Mathematical Practice | Aligned Components of *Eureka Math²* |
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| **MP.1**<br><br>Make sense of problems and persevere in solving them. | Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson. |
| **MP.2**<br><br>Reason abstractly and quantitatively. | Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson. |
| **MP.3**<br><br>Construct viable arguments and critique the reasoning of others. | Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson. |
| **MP.4**<br><br>Model with mathematics. | Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson. |
| **MP.5**<br><br>Use appropriate tools strategically. | Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson. |
| **MP.6**<br><br>Attend to precision. | Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson. |
| **MP.7**<br><br>Look for and make use of structure. | Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson. |
| **MP.8**<br><br>Look for and express regularity in repeated reasoning. | Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson. |

## Ratios and Proportional Relationships
**AR.Math.Content.7.RP.A Analyze proportional relationships and use them to solve real-world and mathematical problems.**

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.RP.A.1**<br><br>Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. | 7 M1 Lesson 1: An Experiment with Ratios and Rates<br><br>7 M1 Lesson 2: Exploring Tables of Proportional Relationships<br><br>7 M1 Lesson 3: Identifying Proportional Relationships in Tables |
| **AR.Math.Content.7.RP.A.2**<br><br>Recognize and represent proportional relationships between quantities. Decide whether two quantities are in a proportional relationship (e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin). Identify unit rate (also known as the constant of proportionality) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. Represent proportional relationships by equations (e.g., If total cost $t$ is proportional to the number $n$ of items purchased at a constant price $p$, the relationship between the total cost and the number of items can be expressed as $t = pn$). Explain what a point $(x, y)$ on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where $r$ is the unit rate. | 7 M1 Topic A: Understanding Proportional Relationships<br><br>7 M1 Lesson 8: Relating Representations of Proportional Relationships<br><br>7 M1 Lesson 9: Comparing Proportional Relationships<br><br>7 M1 Lesson 10: Applying Proportional Reasoning<br><br>7 M1 Lesson 11: Constant Rates<br><br>7 M1 Lesson 12: Multi-Step Ratio Problems, Part 1<br><br>7 M1 Lesson 13: Multi-Step Ratio Problems, Part 2<br><br>7 M1 Lesson 14: Extreme Bicycles<br><br>7 M1 Lesson 16: Using a Scale Factor<br><br>7 M1 Lesson 18: Relating Areas of Scale Drawings<br><br>7 M5 Lesson 1: Proportionality and Scale Factor<br><br>7 M5 Lesson 4: Proportion and Percent<br><br>7 M5 Lesson 5: Common Denominators or Common Numerators |

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.RP.A.3**<br><br>Use proportional relationships to solve multi-step ratio and percent problems. | 7 M1 Lesson 7: Handstand Sprint<br>7 M1 Lesson 10: Applying Proportional Reasoning<br>7 M1 Lesson 11: Constant Rates<br>7 M1 Lesson 12: Multi-Step Ratio Problems, Part 1<br>7 M1 Lesson 13: Multi-Step Ratio Problems, Part 2<br>7 M5 Lesson 2: Racing for Percents<br>7 M5 Lesson 3: Percent as a Rate per 100<br>7 M5 Lesson 4: Proportion and Percent<br>7 M5 Lesson 5: Common Denominators or Common Numerators<br>7 M5 Topic B: Part of 100<br>7 M5 Lesson 10: Percent Increase<br>7 M5 Lesson 11: Percent Decrease<br>7 M5 Lesson 12: More Discounts<br>7 M5 Lesson 13: What Is the Best Deal?<br>7 M5 Topic D: Applications of Percent<br>7 M5 Lesson 20: Making Money, Day 1<br>7 M5 Lesson 21: Making Money, Day 2<br>7 M5 Lesson 22: Making Mixtures<br>7 M5 Lesson 23: Percents of Percents |

## The Number System
**AR.Math.Content.7.NS.A Apply and extend previous understandings of operations with fractions.**

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.NS.A.1**<br><br>Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers. Represent addition and subtraction on a horizontal or vertical number line diagram: describe situations in which opposite quantities combine to make $0$ and show that a number and its opposite have a sum of $0$ (additive inverses) (e.g., a hydrogen atom has $0$ charge because its two constituents are oppositely charged); understand $p + q$ as a number where $p$ is the starting point and $q$ represents a distance from $p$ in the positive or negative direction depending on whether $q$ is positive or negative; interpret sums of rational numbers by describing real-world contexts (e.g., $3 + 2$ means beginning at $3$, move $2$ units to the right and end at the sum of $5$. $3 + (-2)$ means beginning at $3$, move $2$ units to the left and end at the sum of $1$; $70 + (-30) = 40$ could mean after earning \$70, \$30 was spent on a new video game, leaving a balance of \$40); understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$; show that the distance between two rational numbers on the number line is the absolute value of their difference and apply this principle in real-world contexts (e.g., the distance between $-5$ and $6$ is $11$. $-5$ and $6$ are $11$ units apart on the number line). | 7 M2 Topic A: Adding Rational Numbers<br><br>7 M2 Topic B: Subtracting Rational Numbers |

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.NS.A.2**<br><br>Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. Understand that multiplication is extended from fractions to all rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number (e.g., If $p$ and $q$ are integers then $-\left(\frac{p}{q}\right) = \frac{-p}{q} = \frac{p}{-q}$). Interpret quotients of rational numbers by describing real-world contexts. Fluently multiply and divide rational numbers by applying properties of operations as strategies. Convert a fraction to a decimal using long division. Know that the decimal form of a fraction terminates in 0s or eventually repeats. | 7 M2 Topic C: Multiplying Rational Numbers<br><br>7 M2 Topic D: Dividing Rational Numbers<br><br>7 M2 Lesson 24: Order of Operations with Rational Numbers |
| **AR.Math.Content.7.NS.A.3**<br><br>Solve real-world and mathematical problems involving the four operations with rational numbers, including but not limited to complex fractions. | 7 M2 Lesson 25: Writing and Evaluating Expressions with Rational Numbers, Part 1<br><br>7 M2 Lesson 26: Writing and Evaluating Expressions with Rational Numbers, Part 2 |

## Expressions and Equations
**AR.Math.Content.7.EE.A Use properties of operations to generate equivalent expressions.**

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.EE.A.1**<br><br>Apply properties of operations as strategies to add, subtract, expand, and factor linear expressions with rational coefficients. | 7 M3 Topic A: Equivalent Expressions |
| **AR.Math.Content.7.EE.A.2**<br><br>Understand how the quantities in a problem are related by rewriting an expression in different forms. | 7 M3 Lesson 2: The Distributive Property and the Tabular Model<br><br>7 M3 Lesson 4: Adding and Subtracting Expressions<br><br>7 M3 Lesson 5: Factoring Expressions<br><br>7 M3 Lesson 6: Comparing Expressions<br><br>7 M3 Lesson 9: Solving Equations to Determine Unknown Angle Measures<br><br>7 M5 Lesson 10: Percent Increase<br><br>7 M5 Lesson 11: Percent Decrease<br><br>7 M5 Lesson 12: More Discounts<br><br>7 M5 Lesson 14: Scale Factor—Percent Increase and Decrease<br><br>7 M5 Lesson 15: Tips and Taxes<br><br>7 M5 Lesson 16: Markups and Discounts<br><br>7 M5 Lesson 23: Percents of Percents |

## Expressions and Equations

**AR.Math.Content.7.EE.B Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.EE.B.3**<br><br>Solve multi-step, real-life, and mathematical problems posed with positive and negative rational numbers in any form using tools strategically. Apply properties of operations to calculate with numbers in any form (e.g., $-\left(\frac{1}{4}\right)(n-4)$). Convert between forms as appropriate (e.g., if a woman making $25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or $2.50, for a new salary of $27.50). Assess the reasonableness of answers using mental computation and estimation strategies (e.g., if you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation). | 7 M2 Lesson 25: Writing and Evaluating Expressions with Rational Numbers, Part 1<br><br>7 M2 Lesson 26: Writing and Evaluating Expressions with Rational Numbers, Part 2<br><br>7 M3 Lesson 9: Solving Equations to Determine Unknown Angle Measures<br><br>7 M3 Lesson 10: Problem Solving with Unknown Angle Measures<br><br>7 M3 Lesson 11: Dominoes and Dominoes<br><br>7 M3 Lesson 16: Using Equations to Solve Rate Problems<br><br>7 M3 Lesson 17: Using Equations to Solve Problems |

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.EE.B.4**<br><br>Use variables to represent quantities in a real-world or mathematical problem. Construct simple equations and inequalities to solve problems by reasoning about the quantities. Solve word problems leading to equations of these forms $px + q = r$ and $p(x + q) = r$, where $p$, $q$, and $r$ are specific rational numbers. Solve equations of these forms fluently. Write an algebraic solution identifying the sequence of the operations used to mirror the arithmetic solution (e.g., The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? Subtract $2 \cdot 6$ from 54 and divide by 2; $(2 \cdot 6) + 2w = 54$). Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where $p$, $q$, and $r$ are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem (e.g., As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.). | 7 M3 Lesson 7: Angle Relationships and Unknown Angle Measures<br><br>7 M3 Lesson 8: Strategies to Determine Unknown Angle Measures<br><br>7 M3 Topic C: Solving Equations<br><br>7 M3 Topic D: Inequalities |

## Geometry

**AR.Math.Content.7.G.A Draw, construct, and describe geometrical figures and describe the relationships between them.**

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.G.A.1**<br><br>Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. | 7 M1 Lesson 15: Scale Drawings<br><br>7 M1 Lesson 16: Using a Scale Factor<br><br>7 M1 Lesson 17: Finding Actual Distances from a Scale Drawing<br><br>7 M1 Lesson 18: Relating Areas of Scale Drawings<br><br>7 M1 Lesson 19: Scale and Scale Factor<br><br>7 M1 Lesson 20: Creating Multiple Scale Drawings<br><br>7 M5 Lesson 1: Proportionality and Scale Factor<br><br>7 M5 Lesson 14: Scale Factor—Percent Increase and Decrease |
| **AR.Math.Content.7.G.A.2**<br><br>Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Given three measures of angles or sides of a triangle, notice when the conditions determine a unique triangle, more than one triangle, or no triangle. Differentiate between regular and irregular polygons. | 7 M4 Topic A: Constructing Geometric Figures<br><br>7 M4 Topic B: Constructing Triangles<br><br>7 M4 Lesson 9: Constructing a Circle<br><br>*Supplemental material is needed to fully address differentiating between regular and irregular polygons.* |
| **AR.Math.Content.7.G.A.3**<br><br>Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. | 7 M4 Lesson 22: Understanding Planes and Cross Sections<br><br>7 M4 Lesson 23: Cross Section Scavenger Hunt |

## Geometry

**AR.Math.Content.7.G.B Solve real-life and mathematical problems involving angle measure, area, surface area and volume.**

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.G.B.4**<br><br>Know the formulas for the area and circumference of a circle and use them to solve problems. Give an informal derivation of the relationship between the circumference and area of a circle. | 7 M4 Lesson 10: The Outside of a Circle<br><br>7 M4 Lesson 11: The Inside of a Circle<br><br>7 M4 Lesson 12: Exploring the Area and Circumference of a Circle<br><br>7 M4 Lesson 13: Finding Areas of Circular Regions<br><br>7 M4 Lesson 14: Composite Figures with Circular Regions<br><br>7 M4 Lesson 15: Watering a Lawn |
| **AR.Math.Content.7.G.B.5**<br><br>Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. | 7 M3 Lesson 7: Angle Relationships and Unknown Angle Measures<br><br>7 M3 Lesson 8: Strategies to Determine Unknown Angle Measures<br><br>7 M3 Lesson 10: Problem Solving with Unknown Angle Measures |
| **AR.Math.Content.7.G.B.6**<br><br>Solve real-world and mathematical problems involving area of two-dimensional objects and volume and surface area of three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. | 7 M4 Lesson 14: Composite Figures with Circular Regions<br><br>7 M4 Lesson 16: Solving Area Problems by Composition and Decomposition<br><br>7 M4 Lesson 17: Surface Area of Right Rectangular and Right Triangular Prisms<br><br>7 M4 Lesson 18: Surface Area of Right Prisms<br><br>7 M4 Lesson 20: Surface Areas of Right Pyramids<br><br>7 M4 Lesson 21: Surface Area of Other Solids<br><br>7 M4 Lesson 24: Volume of Prisms<br><br>7 M4 Lesson 25: Volume of Composite Solids<br><br>7 M4 Lesson 26: Designing a Fish Tank |

## Statistics and Probability
**AR.Math.Content.7.SP.A Use random sampling to draw inferences about a population.**

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.SP.A.1**<br><br>Understand that: statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population; random sampling tends to produce representative samples and support valid inferences. | 7 M6 Lesson 11: Populations and Samples<br><br>7 M6 Lesson 12: Selecting a Sample<br><br>7 M6 Lesson 13: Variability Between Samples<br><br>7 M6 Lesson 14: Sampling Variability When Estimating a Population Mean |
| **AR.Math.Content.7.SP.A.2**<br><br>Use data from a random sample to draw inferences about a population with a specific characteristic. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. | 7 M6 Lesson 13: Variability Between Samples<br><br>7 M6 Lesson 14: Sampling Variability When Estimating a Population Mean<br><br>7 M6 Lesson 15: Sampling Variability and the Effect of Sample Size<br><br>7 M6 Lesson 16: Sampling Variability When Estimating a Population Proportion |

## Statistics and Probability

**AR.Math.Content.7.SP.B Draw informal comparative inferences about two populations.**

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.SP.B.3**<br><br>Draw conclusions about the degree of visual overlap of two numerical data distributions with similar variability such as interquartile range or mean absolute deviation, expressing the difference between the centers as a multiple of a measure of variability such as mean, median, or mode. | 7 M6 Topic D: Comparing Populations |
| **AR.Math.Content.7.SP.B.4**<br><br>Draw informal comparative inferences about two populations using measures of center and measures of variability for numerical data from random samples. | 7 M6 Topic D: Comparing Populations |

## Statistics and Probability

**AR.Math.Content.7.SP.C Investigate chance processes and develop, use, and evaluate probability models.**

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.SP.C.5**<br><br>Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. A probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. | 7 M6 Lesson 1: What is Probability? |
| **AR.Math.Content.7.SP.C.6**<br><br>Collect data to approximate the probability of a chance event. Observe its long-run relative frequency. Predict the approximate relative frequency given the probability. | 7 M6 Lesson 2: Empirical Probability<br><br>7 M6 Lesson 3: Outcomes of Chance Experiments<br><br>7 M6 Lesson 6: Outcomes That Are Not Equally Likely<br><br>7 M6 Lesson 8: Picking Blue |

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.SP.C.7**<br><br>Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. Develop a uniform probability model, assigning equal probability to all outcomes, and use the model to determine probabilities of events (e.g., If a student is selected at random from a class of 6 girls and 4 boys, the probability that Jane will be selected is .10 and the probability that a girl will be selected is .60). Develop a probability model, which may not be uniform, by observing frequencies in data generated from a chance process (e.g., Find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?). | 7 M6 Lesson 4: Theoretical Probability<br><br>7 M6 Lesson 7: The Law of Large Numbers<br><br>7 M6 Lesson 8: Picking Blue |

| Arkansas Academic Standards – Mathematics | Aligned Components of *Eureka Math²* |
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| **AR.Math.Content.7.SP.C.8**<br><br>Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. Identify the outcomes in the sample space which compose the event. Generate frequencies for compound events using a simulation (e.g., What is the frequency of pulling a red card from a deck of cards and rolling a 5 on a die?). | 7 M6 Lesson 5: Multistage Experiments<br><br>7 M6 Lesson 9: Probability Simulations<br><br>7 M6 Lesson 10: Simulations with Random Number Tables |