EUREKA MATH™

GREAT MINDS

ABOUT *EUREKA MATH*

Created by the nonprofit Great Minds, *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

Eureka Math 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 *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

As a nonprofit, 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

GEOMETRY

The majority of the Geometry Arkansas Mathematics Standards are fully covered by the Geometry *Eureka Math* curriculum. The areas where the Geometry Arkansas Mathematics Standards and Geometry *Eureka Math* do not align will require the use of *Eureka Math* content from another course or supplemental materials. A detailed analysis of alignment is provided in the table below. With strategic placement of supplemental materials, *Eureka Math* can ensure students are successful in achieving the proficiencies of the Geometry Arkansas Mathematics Standards while still benefiting from the coherence and rigor of *Eureka Math*.

INDICATORS

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

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

Red indicates that the Arkansas 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 Arkansas standards and in *Eureka Math*.

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Congruence	**Cluster: Investigate transformations in the plane**	
	AR.Math.Content.HSG.CO.A.1 Based on the undefined notions of *point*, *line*, *plane*, distance along a line, and distance around a circular arc, define: ▪ *Angle* ▪ *Line segment* ▪ *Circle* ▪ *Perpendicular lines* ▪ *Parallel lines*	Geometry M1 Topic A: Basic Constructions Geometry M1 Topic G: Axiomatic Systems
	AR.Math.Content.HSG.CO.A.2 ▪ Represent *transformations* in the *plane* (e.g., using transparencies, tracing paper, geometry software) ▪ Describe *transformations* as functions that take points in the plane as inputs and give other points as outputs ▪ Compare *transformations* that preserve distance and angle to those that do not. (e.g., *translation* versus *dilation*)	Geometry M1 Topic C: Transformations/Rigid Motions Geometry M2 Lesson 6: Dilations as Transformations of the Plane
	AR.Math.Content.HSG.CO.A.3 Given a *rectangle*, *parallelogram*, *trapezoid*, or *regular polygon*, describe the *rotations* and *reflections* that carry it onto itself	Geometry M1 Lesson 15: Rotations, Reflections, and Symmetry Geometry M1 Lesson 21: Correspondence and Transformations

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	AR.Math.Content.HSG.CO.A.4 Develop definitions of *rotations*, *reflections*, and *translations* in terms of *angles*, *circles*, *perpendicular lines*, *parallel lines*, and *line segments*	Geometry M1 Lesson 12: Transformations—The Next Level Geometry M1 Lesson 13: Rotations Geometry M1 Lesson 14: Reflections Geometry M1 Lesson 16: Translations
	AR.Math.Content.HSG.CO.A.5 ▪ Given a geometric figure and a *rotation*, *reflection*, or *translation*, draw the transformed figure (e.g., using graph paper, tracing paper, miras, geometry software) ▪ Specify a sequence of *transformations* that will carry a given figure onto another	Geometry M1 Topic C: Transformations/Rigid Motions
	Cluster: Understand congruence in terms of rigid motions	
	AR.Math.Content.HSG.CO.B.6 ▪ Use geometric descriptions of *rigid motions* to transform figures and to predict the effect of a given *rigid motion* on a given figure ▪ Given two figures, use the definition of congruence in terms of *rigid motions* to decide if they are congruent	Geometry M1 Lesson 15: Rotations, Reflections, and Symmetry Geometry M1 Lesson 16: Translations Geometry M1 Lesson 19: Construct and Apply a Sequence of Rigid Motions Geometry M1 Lesson 21: Correspondence and Transformations

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	AR.Math.Content.HSG.CO.B.7 Use the definition of congruence in terms of *rigid motions* to show that two triangles are *congruent* if and only if *corresponding* pairs of sides and *corresponding* pairs of angles are *congruent*	Geometry M1 Lesson 19: Construct and Apply a Sequence of Rigid Motions Geometry M1 Lesson 20: Applications of Congruence in Terms of Rigid Motions Geometry M1 Lesson 21: Correspondence and Transformations Geometry M1 Topic D: Congruence Geometry M1 Topic G: Axiomatic Systems
	AR.Math.Content.HSG.CO.B.8 Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of *rigid motions* Investigate congruence in terms of *rigid motion* to develop the criteria for triangle congruence (ASA, SAS, AAS, SSS, and HL)	Geometry M1 Topic D: Congruence Geometry M1 Topic G: Axiomatic Systems
	Cluster: Apply and prove geometric theorems	
	AR.Math.Content.HSG.CO.C.9 Apply and prove *theorems* about lines and angles	Geometry M1 Topic B: Unknown Angles Geometry M1 Lesson 18: Looking More Carefully at Parallel Lines Geometry M1 Topic G: Axiomatic Systems

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	AR.Math.Content.HSG.CO.C.10 Apply and prove *theorems* about triangles		Geometry M1 Lesson 23: Base Angles of Isosceles Triangles Geometry M1 Topic E: Proving Properties of Geometric Figures Geometry M1 Topic G: Axiomatic Systems
	AR.Math.Content.HSG.CO.C.11 Apply and prove *theorems* about quadrilaterals		Geometry M1 Lesson 28: Properties of Parallelograms Geometry M1 Topic G: Axiomatic Systems
	Cluster: Make geometric constructions		
	AR.Math.Content.HSG.CO.D.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software)		Geometry M1 Topic A: Basic Constructions Geometry M1 Topic C: Transformations/Rigid Motions
	AR.Math.Content.HSG.CO.D.13 Construct an equilateral triangle, a square, and a regular hexagon *inscribed* in a circle		Geometry M1 Lessons 1–2: Construct an Equilateral Triangle Geometry M1 Topic F: Advanced Constructions
	Cluster: Logic and Reasoning		
	AR.Math.Content.HSG.CO.E.14 Apply *inductive reasoning* and *deductive reasoning* for making predictions based on real-world situations using: ▪ *Conditional Statements* (*inverse*, *converse*, *and contrapositive*) ▪ *Venn Diagrams*		*Eureka Math* does not explicitly address inductive reasoning and deductive reasoning.

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Similarity, Right Triangles, and Trigonometry	**Cluster: Understand similarity in terms of similarity transformations**	
	AR.Math.Content.HSG.SRT.A.1 Verify experimentally the properties of *dilations* given by a center and a *scale factor* ▪ A *dilation* takes a line not passing through the center of the *dilation* to a *parallel line*, and leaves a line passing through the center unchanged ▪ The dilation of a *line segment* is longer or shorter in the ratio given by the *scale factor*	Geometry M2 Topic A: Scale Drawings Geometry M2 Topic B: Dilations
	AR.Math.Content.HSG.SRT.A.2 Given two figures: ▪ Use the definition of *similarity* in terms of similarity transformations to determine if they are *similar* ▪ Explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides	Geometry M2 Lesson 12: What Are Similarity Transformations, and Why Do We Need Them? Geometry M2 Lesson 13: Properties of Similarity Transformations Geometry M2 Lesson 14: Similarity
	AR.Math.Content.HSG.SRT.A.3 Use the properties of similarity transformations to establish the AA~, SAS~, SSS~ criteria for two triangles to be similar	Geometry M2 Lesson 15: The Angle-Angle (AA) Criterion for Two Triangles to Be Similar Geometry M2 Lesson 17: The Side-Angle-Side (SAS) and Side-Side-Side (SSS) Criteria for Two Triangles to Be Similar

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Apply and prove theorems involving similarity	
	AR.Math.Content.HSG.SRT.B.4 Use triangle similarity to apply and prove theorems about triangles	Geometry M2 Lesson 4: Comparing the Ratio Method with the Parallel Method Geometry M2 Lesson 5: Scale Factors Geometry M2 Topic B: Dilations Geometry M2 Lesson 17: The Side-Angle-Side (SAS) and Side-Side-Side (SSS) Criteria for Two Triangles to Be Similar Geometry M2 Lesson 18: Similarity and the Angle Bisector Theorem Geometry M2 Lesson 19: Families of Parallel Lines and the Circumference of the Earth Geometry M2 Topic D: Applying Similarity to Right Triangles
	AR.Math.Content.HSG.SRT.B.5 ▪ Use congruence (SSS, SAS, ASA, AAS, and HL) and similarity (AA~, SSS~, SAS~) criteria for triangles to solve problems ▪ Use congruence and similarity criteria to prove relationships in geometric figures	Geometry M2 Lesson 16: Between-Figure and Within-Figure Ratios Geometry M2 Lesson 17: The Side-Angle-Side (SAS) and Side-Side-Side (SSS) Criteria for Two Triangles to Be Similar Geometry M2 Lesson 18: Similarity and the Angle Bisector Theorem Geometry M2 Topic D: Applying Similarity to Right Triangles

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Define trigonometric ratios and solve problems involving right triangles	
	AR.Math.Content.HSG.SRT.C.6 Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles	Geometry M2 Lesson 25: Incredibly Useful Ratios Geometry M2 Lesson 26: The Definition of Sine, Cosine, and Tangent
	AR.Math.Content.HSG.SRT.C.7 Explain and use the relationship between the sine and cosine of complementary angles	Geometry M2 Lesson 27: Sine and Cosine of Complementary Angles and Special Angles Geometry M2 Lesson 28: Solving Problems Using Sine and Cosine Geometry M2 Lesson 29: Applying Tangents
	AR.Math.Content.HSG.SRT.C.8 Use trigonometric ratios, *special right triangles*, and the Pythagorean Theorem to find unknown measurements of right triangles in applied problems	Geometry M2 Topic E: Trigonometry
	Cluster: Apply trigonometry to general triangles	
	AR.Math.Content.HSG.SRT.D.11 Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles	Geometry M2 Lesson 33: Applying the Laws of Sines and Cosines Precalculus and Advanced Topics M4 Lesson 10: Putting the Law of Cosines and the Law of Sines to Use

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Circles	**Cluster: Understand and apply theorems about circles**	
	AR.Math.Content.HSG.C.A.1 Prove that all circles are similar	Geometry M5 Lesson 7: The Angle Measure of an Arc
	AR.Math.Content.HSG.C.A.2 Identify, describe, and use relationships among angles, *radii*, segments, lines, *arcs*, and *chords* as related to circles	Geometry M5: Circles With and Without Coordinates
	AR.Math.Content.HSG.C.A.3 ▪ Construct the *inscribed* and *circumscribed* circles of a triangle ▪ Prove properties of angles for a quadrilateral inscribed in a circle	Geometry M5 Lesson 1: Thales' Theorem Geometry M5 Lesson 3: Rectangles Inscribed in Circles Geometry M5 Lesson 12: Tangent Segments Geometry M5 Topic E: Cyclic Quadrilaterals and Ptolemy's Theorem
	Cluster: Find arc lengths and areas of sectors of circles	
	AR.Math.Content.HSG.C.B.5 ▪ Derive using similarity that the length of the *arc* intercepted by an angle is proportional to the *radius* ▪ Derive and use the formula for the area of a *sector* ▪ Understand the radian measure of the angle as a unit of measure	Geometry M5 Topic B: Arc and Sectors

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Expressing Geometric Properties with Equations	**Cluster: Translate between the geometric description and the equation of a conic section**	
	AR.Math.Content.HSG.GPE.A.1 ▪ Derive the equation of a circle of given center and radius using the Pythagorean Theorem ▪ Complete the square to find the center and radius of a circle given by an equation	Geometry M5 Topic D: Equations for Circles and Their Tangents
	Cluster: Use coordinates to prove simple geometric theorems algebraically	
	AR.Math.Content.HSG.GPE.B.4 Use coordinates to prove simple geometric theorems algebraically	Geometry M4: Connecting Algebra and Geometry Through Coordinates Geometry M5 Lesson 19: Equations for Tangent Lines to Circles
	AR.Math.Content.HSG.GPE.B.5 ▪ Prove the *slope* criteria for parallel and perpendicular lines ▪ Use the *slope* criteria for parallel and perpendicular lines to solve geometric problems	Geometry M4 Lesson 4: Designing a Search Robot to Find a Beacon Geometry M4 Topic B: Perpendicular and Parallel Lines in the Cartesian Plane Geometry M5 Lesson 19: Equations for Tangent Lines to Circles
	AR.Math.Content.HSG.GPE.B.6 Find the *midpoint* between two given points; and find the endpoint of a line segment given the midpoint and one endpoint	Geometry M4 Lesson 12: Dividing Segments Proportionately

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	AR.Math.Content.HSG.GPE.B.7 Use coordinates to compute *perimeters* of polygons and *areas* of triangles and rectangles	Geometry M4: Connecting Algebra and Geometry Through Coordinates
Geometric Measurement and Dimension	**Cluster: Explain volume formulas and use them to solve problems**	
	AR.Math.Content.HSG.GMD.A.1 Give an informal argument for the formulas for the *circumference* of a *circle*, *area* of a *circle*, *volume* and *surface area* of a *cylinder*, *pyramid*, and *cone*	Geometry M3: Extending to Three Dimensions
	AR.Math.Content.HSG.GMD.A.2 Give an informal argument using *Cavalieri's principle* for the formulas for the *volume* of a *sphere* and other solid figures	Geometry M3: Extending to Three Dimensions
	AR.Math.Content.HSG.GMD.A.3 ▪ Use *volume formulas* for *cylinders*, *pyramids*, *cones*, *spheres*, and to solve problems which may involve composite figures ▪ Compute the effect on *volume* of changing one or more dimension(s)	Geometry M3: Extending to Three Dimensions

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Visualize relationships between two-dimensional and three-dimensional objects	
	AR.Math.Content.HSG.GMD.B.4 ▪ Identify the shapes of two-dimensional *cross-sections* of three- dimensional objects ▪ Identify three-dimensional objects generated by rotations of two-dimensional objects	Geometry M3: Extending to Three Dimensions
Modeling with Geometry	**Cluster: Apply geometric concepts in modeling situations**	
	AR.Math.Content.HSG.MG.A.1 Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder)	Geometry M2 Lesson 19: Families of Parallel Lines and the Circumference of the Earth Geometry M2 Lesson 20: How Far Away Is the Moon? Geometry M3 Lesson 5: Three-Dimensional Space Geometry M3 Lesson 6: General Prisms and Cylinders and Their Cross-Sections Geometry M3 Lesson 11: The Volume Formula of a Pyramid and Cone Geometry M3 Lesson 12: The Volume Formula of a Sphere
	AR.Math.Content.HSG.MG.A.2 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot)	Geometry M3 Lesson 8: Definition and Properties of Volume Geometry M3 Lesson 11: The Volume Formula of a Pyramid and Cone

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	AR.Math.Content.HSG.MG.A.3 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios)	Geometry M2 Lesson 2: Making Scale Drawings Using the Ratio Method Geometry M3 Lesson 11: The Volume Formula of a Pyramid and Cone Geometry M3 Lesson 12: The Volume Formula of a Sphere Geometry M3 Lesson 13: How Do 3D Printers Work?