Dear Parent,

We're introducing a new mathematics curriculum, called *Eureka Math*.

WHAT IS EUREKA

The *Eureka Math* curriculum was created by Great Minds, a nonprofit that brought together teachers and experts to craft a program based on the world's most successful math programs. Eureka was built around the core principle that students need to know more than just what works when solving a problem—they need to understand why it works.

The curriculum goes beyond facts and formulas, teaching students to think about math conceptually. This helps students become not merely literate, but fluent in mathematics.

PARENT RESOURCES

Your involvement in your child's education can have a significant impact on his or her success in school, that's why the teacher-writers who developed the curriculum, also created a suite of parent support resources that will help you support your child at homework time. These resources include:

- **Homework Helpers** — A grade-level resource that provides step-by-step explanations of how to work problems similar to those found in *Eureka Math* homework assignments. There is a Homework Helper to go with every homework assignment in the curriculum.

- **Parent Tip Sheets** — Topic-level tip sheets that explain math strategies and models, provide key vocabulary, sample problems, and links to useful videos.
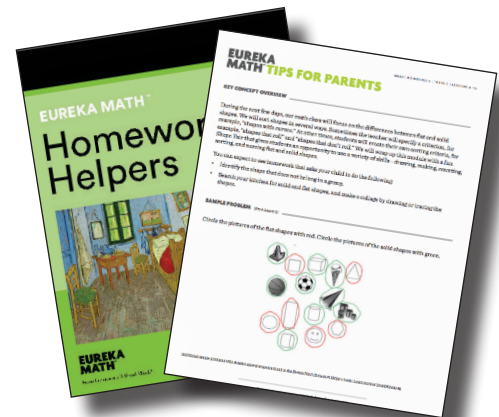
WHY EUREKA

Eureka has received high ratings from educators and reviewers nationwide. Schools and districts are seeing growth and impressive test scores after just one year of implementation.

Read more about *Eureka Math* success stories at schools and districts across the country at greatminds.org/data.

Accessing these free online resources is simple:

1   CREATE AN ACCOUNT

Visit GreatMinds.org/signup to sign up for your free parent account. Enter your name, email address, zip code, and select "PARENT" as your role. Then click the "CREATE" button. (Rest assured, your name and contact information will never be sold or shared with outside organizations.)
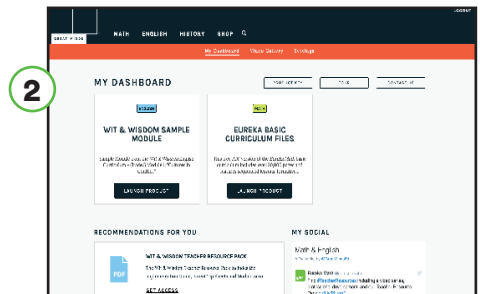
2   ACCESS YOUR DASHBOARD

Once you have created an account , you will have access to your personalized dashboard. (This is where you'll access or "launch" digital resources you check out with from the SHOP.)

3   VISIT THE SHOP

To add parent support resources, such as Parent Tip Sheets and Grade Roadmaps, to your Dashboard visit our SHOP at eurmath.link/parent/shop.
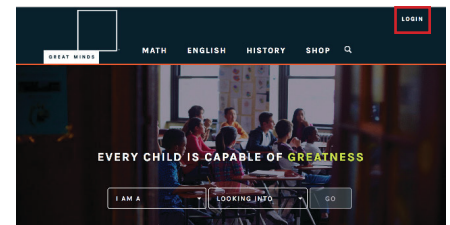
ACCESSING YOUR ACCOUNT

To access your account and products the next time you visit GreatMinds.org, select "LOGIN" in the right-hand corner of the site and enter your email and the password you selected when you created your account. Once you've logged in, you will automatically be directed to your Dashboard.

HAVE ANY QUESTIONS?

To learn more about how *Eureka Math* can set your child up for success, call (844) 853-1010 or visit www.eureka.support.

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EUREKA MATH™

Parent Letter
Geometry Eureka Math

Geometry Module 1 Topic A: Congruence, Proofs, and Construction

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math.

Module 1 of Eureka Math embodies critical changes in Geometry as outlined by the Common Core. The heart of the module is the study of transformations and the role transformations play in defining congruence.

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Focus Area Topic A: Basic Construction

Key words to Know

Construction" in **Geometry** means to draw shapes, angles or lines accurately. These constructions use only compass, straightedge (i.e. ruler) and a pencil.

Equilateral Triangle is a triangle in which all three sides are equal.

Focus Area Topic A: Basic Constructions

Lessons 1–2: Construct an Equilateral Triangle

Video Lesson

- https://www.khanacademy.org/math/geometry/hs-geo-circles/hs-geo-inscribed-polygons/v/constructing-equilateral-triangle-inscribed-in-circle

Lesson 3: Copy and Bisect an Angle

Video Lesson

- https://www.khanacademy.org/math/geometry/hs-geo congruence/modal/v/constructing-an-angle-bisector-using-a-compass-and-straightedge

Lesson 4: Construct a Perpendicular Bisector

Video Lesson

- https://www.khanacademy.org/math/geometry/hs-geo-congruence/modal/v/constructing-a-perpendicular-bisector-using-a-compass-and-straightedge

Lesson 5: Points of Concurrencies (E)

https://www.khanacademy.org/math/geometry-home/triangle-properties/triangle-property-review/v/review-of-triangle-properties

Geometry Module 1 Congruence, Proofs, and Construction Topic B: Unknown Angles

Math Parent Letter

Parent Letter
Geometry Eureka Math

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math.

Module 1 of Eureka Math embodies critical changes in Geometry as outlined by the Common Core. The heart of the module is the study of transformations and the role transformations play in defining congruence.

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Focus Area Topic B: Unknown Angles

Key words to Know

Perpendicular lines – two lines that intersect to form right angles.

Parallel lines – two lines are parallel if they are coplanar and do not intersect.

Skew lines – are non-coplanar lines they will not intersect.

Transversal is a line that passes through two lines in the same plane at two distinct points.

Geometry Module 1 Topic B: Unknown Angles

Lesson 6: Solve for Unknown Angles— Angles and Lines at a Point

Video Lesson

- https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1b-point/v/using-algebra-to-find-the-measures-of-vertical-angles

Lesson 7: Solve for Unknown Angles— Transversals

Video Lesson

- https://www.khanacademy.org/math/geometry/hs-geo-foundations/modal/v/angles-formed-by-parallel-lines-and-transversals

Lesson 8: Solve for Unknown Angles— Angles in a Triangle

Video Lesson

- https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1b-triangle/v/proof-sum-of-measures-of-angles-in-a-triangle-are-180

Lesson 9: Unknown Angle Proofs—Writing Proofs

Video Lesson

- https://www.khanacademy.org/math/geometry/hs-geo-foundations/modal/v/showing-angles-have-same-measure

Lesson 10: Unknown Angle Proofs—Proofs with Constructions

None

Lesson 11: Unknown Angle Proofs—Proofs of Known Facts

https://www.khanacademy.org/math/geometry/hs-geo-foundations/modal/v/showing-angles-have-same-measure

Parent Letter
Geometry Eureka Math

Geometry Module 1 Congruence, Proofs, and Construction Topic C: Transformations/Rigid Motions

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math.

Module 1 of Eureka Math embodies critical changes in Geometry as outlined by the Common Core. The heart of the module is the study of transformations and the role transformations play in defining congruence. .

Focus Area Topic C:
Transformations/Rigid Motions

Key words to Know

Reflection is a "flip" of an object over a line.

Rigid transformation is one in which the pre-image and the image both have the <u>exact same size and shape</u>.

Rotation is a transformation that is performed by "spinning" the object around a fixed point known as the *center of rotation*. You can rotate your object at any degree measure, but 90° and 180° are two of the most common. Also, rotations are done **counterclockwise.**

Translation is "every point of the pre-image is moved the same distance in the same direction to form the image."

Geometry Module 1 Topic C:
Transformations/Rigid Motions

Lesson 12: Transformations—The Next Level

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1c-trans-intro/v/introduction-to-transformations

Lesson 13: Rotations

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1c-rotations/v/points-after-rotation

Lesson 14: Reflections

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1c-reflections/v/reflecting-segments-over-line

Parent Letter
Geometry Eureka Math

Lesson 15: Rotations, Reflections, and Symmetry

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1c-symmetry/v/axis-of-symmetry

Lesson 16: Translations

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1c-translations/v/drawing-image-of-translation

Geometry Module 1 Congruence, Proofs, and Construction Topic D: Congruence

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math.

Module 1 of Eureka Math embodies critical changes in Geometry as outlined by the Common Core. The heart of the module is the study of transformations and the role transformations play in defining congruence.

Focus Area Topic D: Congruence

Key words to Know

SSS (Side Side Side)
If three sides of one triangle are congruent to three sides of another triangle, then the triangles are congruent.

SAS (Side Angle Side)
If two sides and the included angle of one triangle are congruentto two sides and the included angle of another triangle, then the triangles are congruent.

ASA (Angle Side Angle)
If two angles and the included side of one triangle are congruent to two angles and the included side of another triangle, then the triangles are congruent.

AAS (Angle Angle Side) If two angles and a non-included side in one triangle are congruent two angles and the corresponding non-included side in another triangle, then the triangles are congruent.

Geometry Module 1 Topic D: Congruence

Lesson 22: Congruence Criteria for Triangles—SAS

Lesson with Videos

https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1d-cong-criteria/v/other-triangle-congruence-postulates

Lesson 23: Base Angles of Isosceles Triangles

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-1/modal/v/congruent-legs-and-base-angles-of-isosceles-triangles

Lesson 24: Congruence Criteria for Triangles—ASA and SSS

Parent Letter
Geometry Eureka Math

https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1d-cong-criteria/v/congruent-triangles-and-sss

Lesson 25: Congruence Criteria for Triangles—AAS and HL

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-1/modal/v/finding-congruent-triangles

Lessons 26–27: Triangle Congruency Proofs

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1d-cong-proofs/v/proof-sum-of-measures-of-angles-in-a-triangle-are-180

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Geometry Module 1 Congruence, Proofs, and Construction Topic E: Proving Properties of Geometric Figures

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math.

Module 1 of Eureka Math embodies critical changes in Geometry as outlined by the Common Core. The heart of the module is the study of transformations and the role transformations play in defining congruence.

Focus Area Topic E: Proving Properties of Geometric Figures

Key words to Know

Median of a triangle – segment from the vertex of a triangle to the midpoint of the opposite side.

Altitude of a triangle – segment from the vertex of a triangle perpendicular to the line containing the opposite side.

Parallelogram – quadrilateral with both pairs of opposite sides parallel.

Rectangle – parallelogram with a right angle.

Rhombus – parallelogram with consecutive sides congruent.

Square – all sides congruent and all four right angles.

Trapezoid – quadrilateral with exactly one pair of opposite sides parallel.

Centroid of a Triangle is the point where the three medians of the triangle intersect.

FOCUS AREA Topic E: Proving Properties of Geometric Figure Lesson with Videos

Lesson 28: Properties of Parallelograms

https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1e/v/proof-opposite-sides-of-parallelogram-congruent

https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1e/v/proof-opposite-angles-of-parallelogram-congruent

https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1e/v/proof-rhombus-diagonals-are-perpendicular-bisectors

https://www.khanacademy.org/math/engageny-geo/geo-1/geo-1e/v/two-column-proof-showing-segments-are-perpendicular

Lessons 29–30: Special Lines in Triangles

Lesson with Videos

https://www.khanacademy.org/math/engageny-geo/geo-1/modal/v/triangle-medians-and-centroids

https://www.khanacademy.org/math/engageny-geo/geo-1/modal/v/proving-that-the-centroid-is-2-3rds-along-the-median

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Geometry Module 2: SIMILARITY, PROOF, AND TRIGONOMETRY Topic A: Scale Drawings

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math.

Module 2 of Eureka Math

Module 2 builds on students' working similarity of figures, dilation of figures, triangular proofs and trigonometry.

Focus Area Topic A: Scale Drawings

The Story of Trigonometry and Its Contexts

In Topic A**,** students begin with a review of scale drawings in Lesson 1, followed by two lessons on how to systematically create scale drawings. The study of scale drawings, specifically the way they are constructed under the ratio and parallel methods, gives us the language to examine dilations. The comparison of why both construction methods result in the same image leads to two theorems: the triangle side splitter theorem and the dilation theorem. Note that while dilations are defined in Lesson 2, it is the dilation theorem in Lesson 5 that begins to tell us how dilations behave.

Words to Know

Scale Drawing: is a drawing that shows a real object with accurate sizes reduced or enlarged by a certain amount

Scale factor of a similarity transformation is the product of the scale factors of the dilations in the composition; if there are no dilations in the composition, the scale factor is defined to be 1

Focus Area Topic A: Scale Drawings

Lesson 1: Scale Drawings

Lesson with Videos

https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-geometry/cc-7th-scale-drawings/v/scale-drawings-example

Lesson 2: Making Scale Drawings Using the Ratio Method

Lesson with Videos

https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-geometry/cc-7th-scale-drawings/v/constructing-scale-drawings

Lesson 3: Making Scale Drawings Using the Parallel Method

Lesson with Videos

https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-geometry/cc-7th-scale-drawings/v/scale-drawing-example-2

Lesson 4: Comparing the Ratio Method with the Parallel Method

No videos

Lesson 5: Scale Factors

https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-geometry/cc-7th-scale-drawings/v/identifying-scale-factors

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Parent Letter
Geometry Eureka Math

Geometry Module 2: SIMILARITY, PROOF, AND TRIGONOMETRY Topic B: Dilation

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math.

Module 2 of Eureka Math

Module 2 builds on students' working similarity of figures, dilation of figures, triangular proofs and trigonometry.

Focus Area Topic B: Dilation

The Story of Trigonometry and Its Contexts

Topic B establishes a firm understanding of how dilations behave. Students prove that a dilation maps a line to itself or to a parallel line and, furthermore, dilations map segments to segments, lines to lines, rays to rays, circles to circles, and an angle to an angle of equal measure. The lessons on proving these properties, Lessons 7–9, require students to build arguments based on the structure of the figure in question and a handful of related facts that can be applied to the situation). Students apply their understanding of dilations to divide a line segment into equal pieces and explore and compare dilations from different centers.

Words to Know

Dilation is a transformation that changes the size of a figure. It can become larger or smaller, but the shape of the figure does not change.

Focus Area Topic B: Dilations

Lesson 6: Dilations as Transformations of the Plane

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-2/geo-2b/v/dilating-from-an-arbitrary-point-example

Lesson 7: How Do Dilations Map Segments?

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-2/geo-2b/v/thinking-about-dilations

Lesson 8: How Do Dilations Map Lines, Rays, and Circles?

https://www.khanacademy.org/math/engageny-geo/geo-2/geo-2b/v/scaling-down-a-triangle-by-half

Lesson 9: How Do Dilations Map Angles?

Same as lesson 6

Lesson 10: Dividing the King's Foot into 12 Equal Pieces

No videos

Lesson 11: Dilations from Different Centers

No videos

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Parent Letter
Geometry Eureka Math

Geometry Module 2: SIMILARITY, PROOF, AND TRIGONOMETRY Topic C: Similarity and Dilations

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math.

Module 2 of Eureka Math

Module 2 builds on students' working similarity of figures, dilation of figures, triangular proofs and trigonometry.

Focus Area Topic C: Similarity and Dilations

In Topic C, students learn what a similarity transformation is and why, provided the right circumstances, both rectilinear and curvilinear figures can be classified as similar. Part of studying triangle similarity criteria (Lessons 15 and 17) includes understanding side length ratios for similar triangles, which begins to establish the foundation for trigonometry.

Words to Know

Dilation is a transformation that changes the size of a figure. It can become larger or smaller, but the shape of the figure does not change.

Similar (Two figures in a plane are similar if there exists a similarity transformation taking one figure onto the other figure. A congruence is a similarity with scale factor 1. It can be shown that a similarity with scale factor 1 is a congruence.)

Similarity Transformation (A similarity transformation (or similarity) is a composition of a finite number of dilations or basic rigid motions. The scale factor of a similarity transformation is the product of the scale factors of the dilations in the composition; if there are no dilations in the composition, the scale factor is defined to be 1. A similarity is an example of a transformation.)

Focus Area Topic A: Scale Drawings

Lesson 12: What Are Similarity Transformations, and Why Do We Need Them?

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-2/geo-2c-similarity/v/testing-similarity-through-transformations

Lesson 13: Properties of Similarity Transformations

Same as lesson 12

Lesson 14: Similarity

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-2/geo-2c-similarity/v/testing-similarity-through-transformations

Parent Letter
Geometry Eureka Math

Lesson 15: The Angle-Angle (AA) Criterion for Two Triangles to Be Similar

Video Lesson

- https://www.khanacademy.org/math/engageny-geo/geo-2/geo-2c-triangle-similarity/v/similar-triangle-basics
- https://www.khanacademy.org/math/engageny-geo/geo-2/geo-2c-triangle-similarity/e/similar_triangles_1

Lesson 16: Between-Figure and Within-Figure Ratios

Video Lesson

https://www.khanacademy.org/math/geometry/hs-geo-congruence/hs-geo-triangle-congruence/v/finding-congruent-triangles

Lesson 17: The Side-Angle-Side (SAS) and Side-Side-Side (SSS) Criteria for Two Triangles to Be Similar

Video Lesson

- https://www.khanacademy.org/math/geometry/hs-geo-congruence/hs-geo-triangle-congruence/v/congruent-triangles-and-sss
- https://www.khanacademy.org/math/geometry/hs-geo-congruence/hs-geo-triangle-congruence/v/finding-congruent-triangles

Lesson 18: Similarity and the Angle Bisector Theorem

Video Lesson

https://www.khanacademy.org/math/geometry/hs-geo-similarity/hs-geo-angle-bisector-theorem/v/angle-bisector-theorem-proof

Geometry Module 2: SIMILARITY, PROOF, AND TRIGONOMETRY Topic D: Applying Similarity to Right Triangles

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math.

Module 2 of Eureka Math

Module 2 builds on students' working similarity of figures, dilation of figures, triangular proofs and trigonometry.

Focus Area Topic D: Applying Similarity to Right Triangles

In Topic D, students are laying the foundation to studying trigonometry by focusing on similarity between right triangles in particular (the importance of the values of corresponding length ratios between similar triangles is particularly apparent.

Words to Know

Similar (Two figures in a plane are similar if there exists a similarity transformation taking one figure onto the other figure. A congruence is a similarity with scale factor 1. It can be shown that a similarity with scale factor 1 is a congruence.)

Sides of a Right Triangle (The hypotenuse of a right triangle is the side opposite the right angle; the other two sides of the right triangle are called the legs. Let θ be the angle measure of an acute angle of the right triangle. The opposite side is the leg opposite that angle. The adjacent side is the leg that is contained in one

Parent Letter
Geometry Eureka Math

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math.

Module 2 of Eureka Math

Module 2 builds on students' working similarity of figures, dilation of figures, triangular proofs and trigonometry.

Focus Area Topic D: Applying Similarity to Right Triangles

In Topic D, students will learn the three basic trigonometric concepts (Sine, Cosine and Tangent) and how to solve problems using the three basic trigonometric concepts

Words to Know

Cosine (Let θ be the angle measure of an acute angle of the right triangle. The cosine of θ of a right triangle is the value of the ratio of the length of the adjacent side (denoted adj) to the length of the hypotenuse (denoted hyp). As a formula, cos $\theta\theta$ = adj/hyp.)

Sine (Let θ be the angle measure of an acute angle of the right triangle. The sine of $\theta\theta$ of a right triangle is the value of the ratio of the length of the opposite side (denoted opp) to the length of the hypotenuse (denoted hyp). As a formula, sin $\theta\theta$ = opp/hyp.)

Tangent (Let θ be the angle measure of an acute angle of the right triangle. The tangent of θ of a right triangle is the value of the ratio of the length of the opposite side (denoted opp) to the length of the adjacent side (denoted adj). As a formula, tan $\theta\theta$ = opp/adj.)

of the two rays of that angle (the hypotenuse is contained in the other ray of the angle).)

Focus Area Topic D: Applying Similarity to Right Triangles

Lesson 21: Special Relationships within Right Triangles—Dividing into Two Similar Sub-Triangles

https://www.khanacademy.org/math/engageny-geo/geo-2/modal/v/similarity-example-where-same-side-plays-different-roles

Lesson 22: Multiplying and Dividing Expressions with Radicals

https://www.khanacademy.org/math/engageny-geo/geo-2/modal/v/simplifying-square-roots-1

Lesson 23: Adding and Subtracting Expressions with Radicals

https://www.khanacademy.org/math/algebra-home/alg-exp-and-log/miscellaneous-radicals/v/adding-and-simplifying-radicals

Lesson 24: Proving the Pythagorean Theorem Using Similarity

https://www.khanacademy.org/math/engageny-geo/geo-2/modal/v/pythagorean-theorem-proof-using-similarity

Geometry Module 2: SIMILARITY, PROOF, AND TRIGONOMETRY Topic E: Applying Similarity to Right Triangles

Math Parent Letter

Focus Area Topic E: **Applying Similarity to Right Triangles**

Lesson 25: Incredibly Useful Ratios

Video Lesson

https://www.khanacademy.org/math/engageny
-geo/geo-2/geo-2e-trig-intro/v/basic-
trigonometry

Lesson 26: The Definition of Sine, Cosine, and Tangent

Video Lesson

https://www.khanacademy.org/math/engageny
-geo/geo-2/geo-2e-trig-intro/v/basic-
trigonometry-ii

Lesson 27: Sine and Cosine of Complementary Angles and Special Angles

Video Lesson

https://www.khanacademy.org/math/engageny
-geo/geo-2/geo-2e-complement-
angles/v/showing-relationship-between-cosine-
and-sine-of-complements

Lesson 28: Solving Problems Using Sine and Cosine

Video Lesson

https://www.khanacademy.org/math/engageny
-geo/geo-2/geo-2e-trig-intro/v/example-trig-to-
solve-the-sides-and-angles-of-a-right-triangle

https://www.khanacademy.org/math/engageny
-geo/geo-2/modal/v/showing-relationship-
between-cosine-and-sine-of-complements

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Parent Letter
Geometry Eureka Math

Geometry Module 3: Extending to Three Dimensions Topic A: Area

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math.

Module 3 of Eureka Math

Module 3, Extending to Three Dimensions, builds on students' understanding of congruence in Module 1 and similarity in Module 2 to prove volume formulas for solids.

Focus Area Topic A: Area

Extending to Three Dimensions

In Topic A**,** students must revisit to have a conversation about figures in three dimensions; we first have the necessary discussion around area. We introduce area in Grade 3 but only consider figures that are easy to fill with units. Grade 5 introduces the need to use parts of unit squares for some figures, and students then apply that knowledge in Grade 6. In Grade 7, students realize that a figure may have an area even if, like the disk, it cannot be decomposed into a finite number of unit squares, but (appropriately) this is treated at the intuitive level.

Words to Know

Subset (A set A is a subset of a set B if every element of A is also an element of B.).

Union (The union of A and B is the set of all objects that are either elements of A or of B or of both. The union is denoted $A \cup B$.)

Focus Area Topic A: Area

Lesson 1: What Is Area?

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-3/geo-3a/v/introduction-to-area-and-unit-squares

Lesson 2: Properties of Area

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-3/geo-3a/v/area-breaking-up-shape

Lesson 3: The Scaling Principle for Area

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-3/geo-3a/v/perimeter-and-area-of-a-non-standard-polygon

Lesson 4: Proving the Area of a Disk

Video Lesson

https://www.youtube.com/watch?v=5nhgYO7le9g

Parent Letter
Geometry Eureka Math

Geometry Module 3: Extending to Three Dimensions Topic B: Volume

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math.

Module 3 of Eureka Math

Module 3, Extending to Three Dimensions, builds on students' understanding of congruence in Module 1 and similarity in Module 2 to prove volume formulas for solids.

Focus Area Topic B: Volume

Extending to Three Dimensions

With a reference to area established in Topic A, students study volume in Topic B.

Words to Know

Cone (Let B be a region in a plane E, and V be a point not in E. The cone with base B and vertex V is the union of all segments V for all points P in B. If the base is a polygonal region, then the cone is usually called a pyramid.)

General Cylinder (Let E and E' be two parallel planes, let B be a region in the plane E, and let L be a line which intersects E and E' but not B. At each point P of B, consider the segment P' parallel to L, joining P to a point P' of the plane E'. The union of all these segments is called a cylinder with base B.)

Inscribed Polygon (A polygon is inscribed in a circle if all of the vertices of the polygon lie on the circle.)

Intersection (The intersection of A and B is the set of all objects that are elements of A and also elements of B. The intersection is denoted $A \cap B$.)

Rectangular Pyramid (Given a rectangular region B in a plane E, and a point V not in E, the rectangular pyramid with base B and vertex V is the union of all segments V for points P in B.)

Right Rectangular Prism (Let EE and EE' be two parallel planes. Let B be a rectangular region in the plane E. At each point P of B, consider the segment P' perpendicular to E, joining P to a point P' of the plane E'. The union of all these segments is called a right rectangular prism.)

Solid Sphere or Ball (Given a point C in the three-dimensional space and a number $r > 0$, the solid sphere (or ball) with center C and radius rr is the set of all points in space whose distance from point C is less than or equal to rr.)

Sphere (Given a point C in the three-dimensional space and a number $r > 0$, the sphere with center C and radius r is the set of all points in space that are distance r from the point C.)

Focus Area Topic B: Volume

Lesson 5: Three-Dimensional Space

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-3/geo-3b-vol-properties/v/specifying-planes-in-three-dimensions

Lesson 6: General Prisms and Cylinders and Their Cross-Sections

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-3/modal/v/ways-to-cut-a-cube

Lesson 7: General Pyramids and Cones and Their Cross sections

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-3/modal/v/vertical-slice-of-rectangular-pyramid

Lesson 8: Definition and Properties of Volume

Video Lesson

https://www.khanacademy.org/math/basic-geo/basic-geo-volume-sa/volume-rect-prism/v/how-we-measure-volume

Lesson 9: Scaling Principle for Volumes

Video Lesson

https://www.khanacademy.org/math/basic-geo/basic-geo-volume-sa/volume-rect-prism/v/measuring-volume-with-unit-cubes

Lesson 10: The Volume of Prisms and Cylinders and Cavalieri's Principle

Video Lesson

- https://www.khanacademy.org/math/engageny-geo/geo-3/modal/v/solid-geometry-volume
- https://www.khanacademy.org/math/engageny-geo/geo-3/modal/v/cylinder-volume-and-surface-area

Lesson 11: The Volume Formula of a Pyramid and Cone

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-3/modal/v/volume-cone-example

Lesson 12: The Volume Formula of a Sphere

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-3/modal/v/volume-of-a-sphere

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Déjenos saber si necesita servicios de interpretación y/o traducción.
Cho chúng tôi biết nếu quý vị cần Thông dịch viên/ hay Dịch vụ Thông dịch.
و التفسيرالفوري خدمات إلى بحاجة كنت إذا نعرف أن لنا اسمحوا الترجمة أو

Parent Letter
Geometry Eureka Math

Geometry Module 4 Topic A: Rectangular and Triangular Regions Defined by Inequalities

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math which is taught in the classroom.

Module 4 of Eureka Math has students will explore and experience the utility of analyzing algebra and geometry challenges through the framework of coordinates. .

Focus Area Topic A: Rectangular and Triangular Regions Defined by Inequalities

Words to Know

Focus Area Topic A: Rectangular and Triangular Regions Defined by Inequalities

Lesson 1: Searching a Region in the Plane

Video Lesson

- http://www.youtube.com/watch?v=gvQKGev56qU.
- https://www.youtube.com/watch?v=BIzAbnG2qOw
- file:///C:/Users/class/Downloads/geometry-m4-student-materials.pdf

Lesson 4: Designing a Search Robot to Find a Beacon

Video Lesson

file:///C:/Users/class/Downloads/geometry-m4-topic-a-lesson-4-teacher.pdf

Geometry Module 4 Topic B: Perpendicular and Parallel Lines in the Cartesian plane

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math which is taught in the classroom.

Module 4 of Eureka Math has students will explore and experience the utility of analyzing algebra and geometry challenges through the framework of coordinates. .

Focus Area Topic B: Perpendicular and Parallel Lines in the Cartesian plane

Words to Know

None

Focus Area Topic B: Perpendicular and Parallel Lines in the Cartesian plane

Lesson 5: Criterion for Perpendicularity

Video Lesson

- https://www.khanacademy.org/math/engageny-geo/geo-4/geo-4b/v/parallel-and-perpendicular-lines-intro
- https://www.khanacademy.org/math/engageny-geo/geo-4/geo-4b/v/classify-lines

Lesson 6: Segments That Meet at Right Angles

Same as lesson five

Lesson 7: Equations for Lines Using Normal Segments

Parallel Lines

https://www.khanacademy.org/math/engageny-geo/geo-4/modal/v/parallel-lines

Perpendicular Lines

https://www.khanacademy.org/math/engageny-geo/geo-4/modal/v/perpendicular-lines

Lesson 8: Parallel and Perpendicular Lines

Parallel Lines

https://www.khanacademy.org/math/engageny-geo/geo-4/modal/v/proving-that-parallel-lines-have-the-same-slope

Perpendicular Lines

https://www.khanacademy.org/math/engageny-geo/geo-4/modal/v/proof-that-perpendicular-lines-have-negative-reciprocal-slope

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Geometry Module 4 Topic C: Perimeters and Areas of Polygonal Regions in the Cartesian plane

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math which is taught in the classroom.

Module 4 of Eureka Math has students will explore and experience the utility of analyzing algebra and geometry challenges through the framework of coordinates. .

Focus Area Topic C: Perimeters and Areas of Polygonal Regions in the Cartesian plane

Words to Know

Focus Area Topic C: Perimeters and Areas of Polygonal Regions in the Cartesian plane

Lesson 9: Perimeter and Area of Triangles in the Cartesian Plane

Parent Letter
Geometry Eureka Math

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-4/geo-4c/v/area-of-trapezoid-on-coordinate-plane

Practice

https://www.khanacademy.org/math/engageny-geo/geo-4/geo-4c/e/find-area-and-perimeter-on-the-coordinate-plane

Lesson 10: Perimeter and Area of Polygonal Regions in the Cartesian Plane

Video Lesson from Eureka

https://www.youtube.com/watch?v=cs79lyY2S1U

Lesson 11: Perimeters and Areas of Polygonal Regions Defined by Systems of Inequalities

Video Lesson from Eureka

https://www.youtube.com/watch?v=QR8zApe4240

Geometry Module 4 Topic D: Partitioning and Extending Segments and Parameterization of Lines

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math which is taught in the classroom.

Module 4 of Eureka Math has students will explore and experience the utility of analyzing algebra and geometry challenges through the framework of coordinates. .
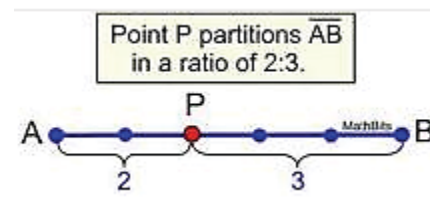
Focus Area Topic D: Partitioning and Extending Segments and Parameterization of Lines

Words to Know

Partitioning a line is a line segment can be **partitioned** into smaller segments which are compared as ratios. **Partitions** occur on line segments that are referred to as directed segments.

Point P partitions $\overline{AB}$ in a ratio of 2:3.

Parameterization is process of finding parametric equations of a curve, a surface, or, more generally, a manifold or a variety, defined by an implicit equation**.**

Focus Area Topic D: Partitioning and Extending Segments and Parameterization of Lines

Lesson 12: Dividing Segments Proportionately

https://www.youtube.com/watch?v=ffepyiL_9to

Lesson 13: Analytic Proofs of Theorems Previously Proved by Synthetic Means

https://www.engageny.org/sites/default/files/downloadable-resources/2014/Aug/geometry-m4-topic-d-lesson-13-teacher.pdf

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Parent Letter
Geometry Eureka Math

Geometry Module 5 Topic A: Central and Inscribed Angles

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math which is taught in the classroom.

Module 5 of Eureka Math has students focus is on the possible geometric relationships between a pair of intersecting lines and a circle drawn on the page.

In Topic A, through a hands-on activity, leads students first to Thales' theorem (an angle drawn from a diameter of a circle to a point on the circle is sure to be a right angle), then to possible converses of Thales' theorem, and finally to the general inscribed-central angle theorem. Through this work, students construct triangles and rectangles inscribed in circles and study their properties.

Focus Area Topic A: Central and Inscribed Angles

Words to Know

Inscribed Angle (An inscribed angle is an angle whose vertex is on a circle, and each side of the angle intersects the circle in another point.)

Inscribed Polygon (A polygon is inscribed in a circle if all vertices of the polygon lie on the circle.)

Secant Line (A secant line to a circle is a line that intersects a circle in exactly two points.)

Focus Area Topic A: Central and Inscribed Angles

Lesson 1: Thales' Theorem

Video Lesson

https://www.youtube.com/watch?v=mtgIOOGMF8k

Lesson 2: Circles, Chords, Diameters, and Their Relationships

Video Lesson

https://www.youtube.com/watch?v=V_WEH35Uycs

Lesson 3: Rectangles Inscribed in Circles

Video Lesson

https://www.khanacademy.org/math/geometry/hs-geo-circles/hs-geo-inscribed-polygons/v/constructing-square-inscribed-in-circle

Lesson 4: Experiments with Inscribed Angles

Video Lesson

https://www.youtube.com/watch?v=DtqGCz1iGQ4

Parent Letter
Geometry Eureka Math

Lesson 5: Inscribed Angle Theorem and Its Applications

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-5/modal/v/inscribed-angles-exercise-example

Lesson 6: Unknown Angle Problems with Inscribed Angles in Circles

Video Lesson

https://www.khanacademy.org/math/engageny-geo/geo-5/modal/v/constructing-square-inscribed-in-circle

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Geometry Module 5 Topic B: Arcs and Sectors

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math which is taught in the classroom.

Module 5 of Eureka Math has students focus is on the possible geometric relationships between a pair of intersecting lines and a circle drawn on the page.

In Topic A, through a hands-on activity, leads students first to Thales' theorem (an angle drawn from a diameter of a circle to a point on the circle is sure to be a right angle), then to possible converses of Thales' theorem, and finally to the general inscribed-central angle theorem. Students use this result to solve unknown angle problems. Through this work, students construct triangles and rectangles inscribed in circles and study their properties.

Focus Area Topic B: Arcs and Sectors

Words to Know

Inscribed Angle (An inscribed angle is an angle whose vertex is on a circle, and each side of the angle intersects the circle in another point.)

Secant Line (A secant line to a circle is a line that intersects a circle in exactly two points.)

Sector (Let A be an arc of a circle. The sector of a circle with arc A is the union of all radii

Focus Area Topic B: Arcs and Sectors

Lesson 7: The Angle Measure of an Arc

Video

https://www.khanacademy.org/math/engageny-geo/geo-5/geo-5b-arcs/v/intro-arc-measure

Practice

https://www.khanacademy.org/math/engageny-geo/geo-5/geo-5b-arcs/e/arc-measure-with-equations

Lesson 8: Arcs and Chords

https://www.youtube.com/watch?v=lez0G54bfbU

Lesson 9: Arc Length and Areas of Sectors

Parent Letter
Geometry Eureka Math

Video

https://www.khanacademy.org/math/engageny-geo/geo-5/geo-5b-arc-length-sector-area/v/length-of-an-arc-that-subtends-a-central-angle

Practice

https://www.khanacademy.org/math/engageny-geo/geo-5/geo-5b-arc-length-sector-area/e/circles_and_arcs

Geometry Module 5 Topic C: Secants and Tangents

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math which is taught in the classroom.

Module 5 of Eureka Math has students focus is on the possible geometric relationships between a pair of intersecting lines and a circle drawn on the page.

In Topic C, students explore geometric relations in diagrams of two secant lines, or a secant and tangent line (possibly even two tangent lines), meeting a point inside or outside of a circle. They establish the secant angle theorems and tangent-secant angle theorems. By drawing auxiliary lines, students also notice similar triangles and thereby discover relationships between lengths of line segments appearing in these diagrams .

Focus Area Topic C: Secants and Tangents

Words to Know

Secant Line (A secant line to a circle is a line that intersects a circle in exactly two points.)

Tangent Line (A tangent line to a circle is a line in the same plane that intersects the circle in one and only one point. This point is called the point of tangency.)

Focus Area Topic C: Secants and Tangents

Lesson 11: Properties of Tangents

Video Lesson

- https://www.khanacademy.org/math/engageny-geo/geo-5/geo-5c/v/proving-radius-is-perpendicular-to-tangent-line
- https://www.youtube.com/watch?v=L8kz1ZnqBlA

Lesson 12: Tangent Segments

Video Lesson

https://www.khanacademy.org/math/geometry/hs-geo-circles/hs-geo-tangents/v/example-with-tangent-and-radius

Lesson 13: The Inscribed Angle Alternate—A Tangent Angle

file:///C:/Users/class/Downloads/geometry-m5-topic-c-lesson-13-teacher.pdf

Parent Letter
Geometry Eureka Math

Lesson 14: Secant Lines; Secant Lines That Meet Inside a Circle

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Lesson 15: Secant Angle Theorem, Exterior Case

file:///C:/Users/class/Downloads/geometry-m5-topic-c-lesson-15-teacher.pdf

Lesson 16: Similar Triangles in Circle-Secant (or Circle-Secant-Tangent) Diagrams

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Geometry Module 5 Topic D: Equations for Circles and Their Tangents

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math which is taught in the classroom.

Module 5 of Eureka Math has students focus is on the possible geometric relationships between a pair of intersecting lines and a circle drawn on the page.

In Topic D, Students solve problems to find the equations of specific tangent lines or the coordinates of specific points of contact. They also express circles via analytic equations

Focus Area Topic D: Equations for Circles and Their Tangents

Words to Know

Circle equation is in the format $(x - h)^2 + (y - k)^2 = r^2$, with the center being at the point (h, k) and the radius being "r". This form of the **equation** is helpful, since you can easily find the center and the radius.

Focus Area Topic D: Equations for Circles and Their Tangents

Lesson 17: Writing the Equation for a Circle

Video lesson

https://www.khanacademy.org/math/engageny-geo/geo-5/geo-5d/v/radius-and-center-for-a-circle-equation-in-standard-form

Practice

https://www.khanacademy.org/math/engageny-geo/geo-5/geo-5d/e/equation_of_a_circle_1

Lesson 18: Recognizing Equations of Circles

https://www.khanacademy.org/math/engageny-geo/geo-5/geo-5d/v/writing-standard-equation-of-circle

https://www.khanacademy.org/math/engageny-geo/geo-5/modal/v/completing-the-square-to-write-equation-in-standard-form-of-a-circle

Lesson 19: Equations for Tangent Lines to Circles

file:///C:/Users/class/Downloads/geometry-m5-topic-d-lesson-19-teacher.pdf

Parent Letter
Geometry Eureka Math

Geometry using Algebra II Module 4 Topic A: Probability

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math which is taught in the classroom.

Module 4 of Eureka Math has students will explore and experience the utility of analyzing algebra and geometry challenges through the framework of coordinates.

In Topic A, fundamental ideas from Grade 7 are revisited and extended to allow students to build a more formal understanding of probability. More complex events are considered (unions, intersections, and complements). Students calculate probabilities based on two-way data tables and interpret them in context.

Focus Area Topic A: Probability

Words to Know

Conditional Probability (The probability of an event given that some other event occurs. The conditional probability of ಄ given ಅ is denoted by

Experiment (An experiment is a study in which subjects are assigned to treatments for the purpose of seeing what effect the treatments have on some response.)

 A **hypothetical 1000 table** is a two-way table that is constructed using

given probability information. It represents a hypothetical population of 1000 individuals that is consistent with the given probability distribution and also allows calculation of other probabilities of interest.)

Focus Area Topic A: Probability

Lesson 1: Chance Experiments, Sample Spaces, and Events.

Video

https://www.khanacademy.org/math/engageny-alg2/alg2-4/alg2-4a-basic-probability/v/basic-probability

Practice

https://www.khanacademy.org/math/engageny-alg2/alg2-4/alg2-4a-basic-probability/e/probability_1

Lesson 2: Calculating Probabilities of Events Using Two-Way Tables

Video

https://www.khanacademy.org/math/engageny-alg2/alg2-4/alg2-4a-basic-probability/e/probability_1

Practice

https://www.khanacademy.org/math/engageny-alg2/alg2-4/alg2-4a-twoway-conditional-independence/a/conditional-probability-using-two-way-tables

Lessons 3-4: Calculating Conditional Probabilities and Evaluating Independence Using Two-Way Tables

Video Lesson

https://www.khanacademy.org/math/engageny
-alg2/alg2-4/modal/v/testing-independence-
from-experimental-data

Lesson 5: Events and Venn Diagrams

Video Lesson

https://www.khanacademy.org/math/engageny
-alg2/alg2-4/alg2-4a-venn-probability-
rules/v/intersection-and-union-of-sets

https://www.khanacademy.org/math/engageny
-alg2/alg2-4/alg2-4a-venn-probability-
rules/v/probability-with-playing-cards-and-
venn-diagrams

Lessons 6-7: Probability Rules
Video

https://www.khanacademy.org/math/engageny
-alg2/alg2-4/alg2-4a-venn-probability-
rules/v/addition-rule-for-probability

Practice

https://www.khanacademy.org/math/engageny
-alg2/alg2-4/alg2-4a-venn-probability-
rules/a/addition-rule-for-probability-basic

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