Mathematics
Geometry: Year at a Glance
2018 - 2019

Q1	Q2	Q3	Q4
Aug. 6 – Oct. 5	Oct. 16 - Dec. 19	Jan. 7 – Mar. 8	Mar. 18 – May 24 TN Ready Testing Apr. 22 - May23
Tools of Geometry, Reasoning and Proof, Transformations and Congruence, Transformations and Symmetry, Lines and Angles	Triangle Congruence with Applications, Properties of Triangles, Special Segments in Triangles, Properties of Quadrilaterals with Coordinate Proofs	Similarity and Transformations, Using Similar Triangles, Trigonometry with Right Triangles, Trigonometry with All Triangles, Properties of Angles and Segments in Circles	Properties of Circles, Arc Length, Sector Area, and Equations of Circles, Measurement and Modeling in Two and Three Dimensions, Volume Formulas, Visualizing Solids, Trigonometry with All Triangles
G.CO.A.1	G.CO.B.7	G.CO.A.1	G.CO.D.12
G.CO.A.2	G.CO.B.8	G. SRT.A.1	G.C.A.2
G.CO.A.3	G.CO.C.10	G. SRT.A.2	G.C.A.3
G.CO.A.4	G.CO.C.11	G. SRT.A.3	G.C.B.4
G.CO.A.5	G.CO.D.12	G. SRT.B.4	G. GPE.A.1
G.CO.B.6	G. SRT.B.4	G. SRT.B.5	G. GPE.B.2
G.CO.B.7	G. SRT.B.5	G. SRT.C.6	G. GPE.B.3
G.CO.C.9	G. GPE.B.2	G. SRT.C.7	G. GPE.B.4
G.CO.D.12	G. GPE.B.5	G. SRT.C.8	G.MG.A.1
G. GPE.B.2	G.MG.A.1	G. MG.A.2	G. MG.A.2
G. GPE.B.3	G.MG.A.2	G. GMD.A.1	G. GMD.A.1
		G.C.A.1	G. GMD.A.2
		G.C.A.2	

Key: Major Content | Supporting Content

*** (asterisk) Indicates a standard with differences between the TN State Standards' numbering and/or verbiage and the standards in Eureka**

Note: Please use this suggested pacing as a guide. It is understood that teachers may be up to 1 week ahead or 1 week behind depending on the needs of their students.

Introduction

Destination 2025, Shelby County Schools' 10-year strategic plan, is designed not only to improve the quality of public education, but also to create a more knowledgeable, productive workforce and ultimately benefit our entire community.

What will success look like?

In order to achieve these ambitious goals, we must collectively work to provide our students with high quality, college and career ready aligned instruction. The Tennessee State Standards provide a common set of expectations for what students will know and be able to do at the end of a grade. The State of Tennessee provides two sets of standards, which include the Standards for Mathematical Content and The Standards for Mathematical Practice. The Content Standards set high expectations for all students to ensure that Tennessee graduates are prepared to meet the rigorous demands of mathematical understanding for college and career. The eight Standards for Mathematical Practice describe the varieties of expertise, habits of mind, and productive dispositions that educators seek to develop in all students. The Tennessee State Standards also represent three fundamental shifts in mathematics instruction: **focus, coherence and rigor**.

Curriculum and Instruction – Mathematics

Quarter 2 Geometry

The **Standards for Mathematical Practice** describe varieties of expertise, habits of minds and productive dispositions that mathematics educators at all levels should seek to develop in their students. These practices rest on important National Council of Teachers of Mathematics (NCTM) "processes and proficiencies" with longstanding importance in mathematics education. Throughout the year, students should continue to develop proficiency with the eight Standards for Mathematical Practice. The following are the eight Standards for Mathematical Practice:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of them.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

This curriculum map is designed to help teachers make effective decisions about what mathematical content to teach so that ultimately our students can reach Destination 2025. Throughout this curriculum map, you will see resources as well as links to tasks that will support you in ensuring that students are able to reach the demands of the standards in your classroom. In addition to the resources embedded in the map, there are some high-leverage resources around the content standards and mathematical practice standards that teachers should consistently access. For a full description of each, click on the links below.

- Tennessee Mathematics Content Standards
- Standards for Mathematical Practice
- Literacy Skills for Mathematical Proficency

Structure of the Standards

Structure of the TN State Standards include:

- **Content Standards** - Statements of what a student should know, understand, and be able to do.
- **Clusters** - Groups of related standards. Cluster headings may be considered as the big idea(s) that the group of standards they represent are addressing. They are therefore useful as a quick summary of the progression of ideas that the standards in a domain are covering and can help teachers to determine the focus of the standards they are teaching.
- **Domains** - A large category of mathematics that the clusters and their respective content standards delineate and address. For example, Number and Operations – Fractions is a domain under which there are a number of clusters (the big ideas that will be addressed) along with their respective content standards, which give the specifics of what the student should know, understand, and be able to do when working with fractions.
- **Conceptual Categories** – The content standards, clusters, and domains in the 9th-12th grades are further organized under conceptual categories. These are very broad categories of mathematical thought and lend themselves to the organization of high school course work. For example, Algebra is a conceptual category in the high school standards under which are domains such as Seeing Structure in Expressions, Creating Equations, Arithmetic with Polynomials and Rational Expressions, etc.

How to Use the Maps

Overview
An overview is provided for each quarter and includes the topics, focus standards, intended rigor of the standards and foundational skills needed for success of those standards.

Your curriculum map contains four columns that each highlight specific instructional components. Use the details below as a guide for information included in each column.

Tennessee State Standards
TN State Standards are located in the left column. Each content standard is identified as Major Content or Supporting Content. A key can be found at the bottom of the map.

Content
This section contains learning objectives based upon the TN State Standards. Best practices tell us that clearly communicating measurable objectives lead to greater student understanding. Additionally, essential questions are provided to guide student exploration and inquiry.

Instructional Support
District and web-based resources have been provided in the Instructional Support column. You will find a variety of instructional resources that align with the content standards. The additional resources provided should be used as needed for content support and scaffolding.

Vocabulary and Fluency
The inclusion of vocabulary serves as a resource for teacher planning and for building a common language across K-12 mathematics. One of the goals for Tennessee State Standards is to create a common language, and the expectation is that teachers will embed this language throughout their daily lessons. In order to aid your planning, we have also included a list of fluency activities for each lesson. It is expected that fluency practice will be a part of your daily instruction. (Note: Fluency practice is not intended to be speed drills, but rather an intentional sequence to support student automaticity. Conceptual understanding must underpin the work of fluency.

Instructional Calendar
As a support to teachers and leaders, an instructional calendar is provided ***as a guide***. Teachers should use this calendar for effective planning and pacing, and leaders should use this calendar to provide *support* for teachers. Due to variances in class schedules and differentiated support that may be needed for students' adjustment to the calendar may be required.

Topics Addressed in Quarter

- **Triangle Congruence with Applications**
- **Properties of Triangles**
- **Special Segments in Triangles**
- **Properties of Quadrilaterals with Coordinate Proof**

Overview

During the second quarter, students will continue to work with the concept of rigid motion and congruency. They will determine if two triangles are congruent by SSS, SAS, ASA, AAS, or HL and then provide appropriate reasoning for why they are congruent. They also will gain a deeper insight into constructing two-column, paragraph, and coordinate proofs. Students will classify triangles based on its' angles and side measures and determine whether a triangle exists given three side measures and find the range of the third side when given two side measures. Students will compare the sides or angles of a given triangle and apply the Hinge theorem. Students will learn how to find missing angles in triangles both interior and exterior angles. They will investigate the special segments of a triangle; altitude, angle bisector, perpendicular bisector, and median. They will also practice with the points of concurrency; orthocenter, incenter, circumcenter, and centroid. Identifying quadrilaterals using given properties concludes the second quarter. Students should be able to solve equations to find various missing parts of the quadrilaterals as well as write two-column, paragraph and coordinate proofs using definitions and properties.

Content Standard	Type of Rigor	Foundational Standards
G-CO.B.7, 8	Conceptual Understanding & Application	8.G.A.1, 2,3, 4,5
G-CO.C.9, 10, 11	Conceptual Understanding & Application	8.G.A.1, 2,3, 4,5
G-CO.D.12	Conceptual Understanding & Application	8.G.A.5; 8.EE.B.6
G-GPE.B.2	Procedural Skill and Fluency	8.EE.B.6
G-MG.A.1,2	Procedural Skill and Fluency , Conceptual Understanding & Application	8.G.A.5; 8.G.B.7
G-SRT.B.4,5	Procedural Skill and Fluency , Conceptual Understanding & Application	8.G.A.1, 2,3, 4,5

Curriculum and Instruction – Mathematics

Quarter 2 — Geometry

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
Properties of Triangles and Triangle Congruence with Applications **(Allow approximately 3 weeks for instruction, review, and assessment)**			
Domain: Congruence (G.CO) **Cluster**: Prove geometric theorems ■ **G-CO.C.10** Prove theorems about triangles. **Domain:** Congruence **Cluster**: Make geometric constructions ➢ **G-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, etc.).	**Essential Question(s)** How do the properties of triangles contribute to the geometric understanding of the world around us? **Objective(s):** • Students will identify and classify triangles by angle measure • Students will identify and classify triangles by side measure	***Textbook Lesson*** Lesson 4.1 Classifying Triangles, pp.235-242	**Vocabulary** acute triangle, equiangular triangle, obtuse triangle, right triangle, equilateral triangle isosceles triangle, scalene triangle **Activity with Discussion** Pair the categories of classifications of sides of triangles with the categories of classifications of angles to determine which combinations can exist and which ones cannot exist. Explain why certain combinations cannot exist. (Example, can a right equilateral triangle exist?) **Error Analysis** pg. 241, #56 (H.O.T. Problem)
Domain: Congruence (G.CO) **Cluster**: Prove geometric theorems ■ **G-CO.C.10** Prove theorems about triangles. **Domain:** Congruence **Cluster**: Make geometric constructions ➢ **G-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, etc.).	**Essential Question(s)** What can you say about the interior and exterior angles of a triangle and other polygons? **Objective(s):** • Students will apply the Triangle Angle Sum Theorem • Students will prove the measures of interior angles of a triangle have a sum of 180º.	***Textbook Lesson*** Lesson 4.2 Angles of Triangles, pp. 243-252 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Task(s)** Geometry Lab: Angles of Triangles p. 243	**Vocabulary** Auxiliary line, exterior angle, remote interior angles, flow proof, corollary **Writing in Math** Explain in words how to find the measure of a missing angle of a triangle if you know two of the angles. (Have students write this as if they were explaining it to someone who has never taken geometry before.)
Domain: Congruence (G.CO) **Cluster**: Understand congruence in terms of rigid motion ■ **G.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	**Essential Question(s)** • How do you identify corresponding parts of congruent triangles? • How do you show that two triangles are congruent?	***Textbook Lesson*** Lesson 4.3 – Congruent Triangles, pp. 253 – 261 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.***	**Vocabulary** Congruent, congruent polygons, corresponding parts **Writing in Math** Determine whether the following statement is

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
pairs of sides and corresponding pairs of angles are congruent.	**Objective(s):** • Students will identify corresponding sides and corresponding triangles of congruent triangles. • Students will explain that in a pair of congruent triangles, corresponding sides are congruent (distance is preserved) and corresponding angles are congruent (angle measure is preserved).	**Task(s)** Illustrative Mathematics Properties of Congruent Triangles Task	*always*, *sometimes*, or *never* true. Explain your reasoning. *Equilateral triangles are congruent.*
Domain: Similarity, Right Triangles, and Trigonometry (G.SRT) **Cluster**: Prove theorems involving similarity ■ **G-SRT.B.5** Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures. **Domain:** Congruence (G.CO) **Cluster**: Understand congruence in terms of rigid motions ■ **G-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. **Domain:** Congruence (G.CO) **Cluster**: Understand congruence in terms of rigid motions ■ **G-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.	**Essential Question(s)** What does the SAS Triangle Congruence Theorem tell you about triangles? What does the SSS Triangle Congruence Theorem tell you about triangles? **Objective(s):** • Students will use the SSS Postulate to test for triangle congruence. • Students will use the SAS Postulate to test for triangle congruence. • Students will write two-column proofs to show that two triangles are congruent by SSS or SAS.	***Textbook Lessons*** Lesson 4.4 Proving Triangles Congruent – SSS, SAS, pp. 262-271 Lesson 4.4 Extension – Geometry Lab: Proving Constructions p. 271 ***Eureka Math*** Eureka Math: Geometry Module 1, Topic D, Lesson 22 – Congruence Criteria for Triangles-SAS ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Task(s)** Select appropriate tasks from GSE Analytic Geometry Unit 1: Similarity, Congruence and Proofs Investigating Congruence in Terms of Rigid Motion (TN Task Arc)	**Vocabulary** Included angle **Writing in Math** Create a chart for triangle congruence theorems (theorem, definition, and picture) highlighting the sides and angles that are congruent in each pair of triangles. Compare and contrast the theorems in your own words. Be sure to include both similarities and differences between the theorems. p. 269 #30, (H.O.T. Problems)

Curriculum and Instruction – Mathematics

Quarter 2 — Geometry

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
Domain: Similarity, Right Triangles, and Trigonometry (G.SRT) **Cluster**: Prove theorems involving similarity ■ **G-SRT.B.5** Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures. **Domain:** Congruence (G.CO) **Cluster**: Understand congruence in terms of rigid motions ■ **G-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. **Domain:** Congruence (G.CO) **Cluster**: Understand congruence in terms of rigid motions ■ **G-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.	**Essential Question(s)** What does the ASA Triangle Congruence Theorem tell you about triangles? What does the AAS Triangle Congruence Theorem tell you about triangles? What does the HL Triangle Congruence Theorem tell you about two triangles? **Objective(s):** • Students will use the ASA Postulate to test for triangle congruence. • Students will use the AAS Postulate to test for triangle congruence. • Students will explore congruence in right triangles. • Students will write formal proofs to show that two triangles are congruent by AAS, ASA or HL.	***Textbook Lesson*** Lesson 4.5 Proving Triangles Congruent – ASA, AAS. Pp.273-280 ***Eureka Math*** Eureka Math: Geometry Module 1, Topic D, Lesson 24 – Congruence Criteria for Triangles – ASA and SSS Eureka Math: Geometry Module 1, Topic D, Lesson 25 – Congruence Criteria for Triangles – AAS and HL ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** Lesson 4.5 Geometry Lab: Congruence in Right Triangles p.281-282 **Task(s)** Select appropriate tasks from GSE Analytic Geometry Unit 1: Similarity, Congruence and Proofs	**Vocabulary** Included side **Writing in Math** Explain why identifying two pairs of congruent angles with their included sides congruent is enough to prove that two triangles are congruent.
Domain: Congruence (G.CO) **Cluster**: Prove geometric theorems ■ **G-CO.C.10** Prove theorems about triangles. **Domain:** Congruence (G.CO) **Cluster**: Make geometric constructions ➢ **G-CO.D.12** Make formal geometric constructions with a variety of tools and methods (compass and straightedge,	**Essential Question(s)** What are the special relationships among angles and sides in isosceles and equilateral triangles? **Objective(s):** • Students will use properties of isosceles triangles.	***Textbook Lesson*** Lesson 4.6 Isosceles and Equilateral Triangles, pp. 283-291 ***Eureka Math*** Eureka Math: Geometry Module 1, Topic D, Lesson 23 – Base Angles of Isosceles Triangles	**Vocabulary** Pythagorean triple **Writing in Math** p. 290 #45 Challenge – proof (H.O.T. problem)

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string, reflective devices, paper folding, dynamic geometric software, etc.). **Domain:** Similarity, Right Triangles, and Trigonometry (G.SRT) **Cluster**: Prove theorems involving similarity ■ **G-SRT.B.5** Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	• Students will use properties of equilateral triangles. • Students will prove base angles of isosceles triangles are congruent.		
Domain: Congruence (G.CO) **Cluster**: Experiment with transformations in the plane. ➢ **G.CO.A.2** Represent transformations in the plane in multiple ways, including technology. Describe transformations as functions that take points in the plane(pre-image) as inputs and give other points (image) as outputs. Compare transformations that preserve distance and angle measure to those that do not (e.g., translation versus horizontal stretch).	**Essential Question(s)** What are rigid motions and how can they be defined? **Objective(s):** • Students will identify reflections, translations, and rotations. • Students will define rigid motions as reflections, rotations, translations, and combinations of these, all of which preserve distance and angle measure. • Students will define congruent figures as figures that have the same shape and size and state that a composition of rigid motions will map one congruent figure onto the other.	***Textbook Lesson*** Lesson 4.7 –Congruence Transformations, pp. 294 – 295 ***Eureka Math*** Eureka Math Geometry Module 1, Topic C, Lesson 12 – Transformations—The Next Level	**Vocabulary** Transformation, preimage, image, congruence transformation, isometry, reflection, translation, rotation **Writing in Math** Explain the prefix *pre-* when discussing *pre-image*. Explain, give an example and write the rules for the translations and nonrigid motion transformation on a coordinate plane of a reflection, a translation, a rotation and a nonrigid motion transformation.
Special Segments in Triangles **(Allow approximately 3 weeks for instruction, review, and assessment)**			
Domain: Congruence (G.CO) **Cluster**: Prove geometric theorems ■ **G-CO.C.10** Prove theorems about triangles. **Domain:** Modeling with Geometry (G.MG) **Cluster**: Apply geometric concepts in	**Essential Question(s)** How can you use perpendicular bisectors to find the point that is equidistant from all the vertices of a triangle? How can you use angle bisectors to find the point that is equidistant from all the sides of a triangle?	***Textbook Lesson*** Lesson 5.1 Bisectors of Triangles pp. 321-331 ***Eureka Math*** Eureka Math: Geometry Module 1, Topic A, Lesson 5 – Points of Concurrencies	**Vocabulary** Perpendicular bisector, concurrent lines, point of concurrency, circumcenter, incenter **Writing in Math** Compare and contrast the perpendicular bisectors and angle bisectors of a triangle. Be

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
modeling situations ■ **G-MG.A.2** Apply geometric methods to solve real-world problems. ★	**Objective(s):** • Students will identify and use perpendicular bisectors in triangles • Students will identify and use angle bisectors in triangles. • Students will construct the special segments (perpendicular bisectors and angle bisectors) in acute, right and obtuse triangles. • Students will prove the perpendicular bisectors and the angle bisectors of a triangle meet at a point.	***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Task(s)** Centers of Triangles Centers of Triangles Solutions Hospital Locator Dividing a Town into Pizza Delivery Regions Geometry Lab - Constructing Bisectors p. 321	sure to include their points of concurrency. Why are the points of concurrency called incenter for angle bisectors of triangles and circumcenter for the perpendicular bisectors?
Domain: Modeling with Geometry (G.MG) **Cluster**: Apply geometric concepts in modeling situations ■ **G-MG.A.2** Apply geometric methods to solve real-world problems. ★	**Essential Question(s)** How can you find the balance point or center of gravity of a triangle? **Objective(s):** • Students will identify and use medians in triangles • Students will identify and use altitudes in triangles. • Students will construct the special segments (medians and altitudes) in acute, right and obtuse triangles. • Students will prove the medians and the altitudes of a triangle meet at a point.	***Textbook Lesson*** Lesson 5.2 Medians and Altitudes of Triangles pp. 332-341 ***Eureka Math*** Eureka Math: Geometry Module 1, Topic E, Lesson 30 – Special Lines in Triangles: Medians ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Task(s)** Select appropriate tasks from GSE Analytic Geometry Unit 1: Similarity, Congruence and Proofs Geometry Lab - Constructing Medians and Altitudes p. 332 The Centroid of a Triangle Balancing Act	**Vocabulary** Median, centroid, altitude, orthocenter **Writing in Math** Summarize the special segments of a triangle including their names, properties and diagrams into a chart or booklet.
Domain: Congruence (G.CO)	**Essential Question(s)**	***Textbook Lesson***	**Writing in Math**

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Quarter 2 — Geometry

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
Cluster: Prove geometric theorems ■ **G-CO.C.10** Prove theorems about triangles. **Domain:** Modeling with Geometry (G.MG) **Cluster**: Apply geometric concepts in modeling situations ■ **G-MG.A.2** Apply geometric methods to solve real-world problems. ★	How can you use inequalities to describe the relationships among side lengths and angle measures in a triangle? **Objective(s):** • Students will recognize and apply properties of inequalities to the measures of the angles of a triangle. • Students will recognize and apply properties of inequalities to the relationships between the angles and sides of a triangle.	Lesson 5.3 Inequalities in one triangle pp. 342-349 Lesson 5.5 The Triangle Inequality Theorem pp.359-366 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Task(s)** Graphing Technology Lab - The Triangle Inequality p. 359 Triangle Inequality Task	p. 348 #43 & 48 (H.O.T. Problems) p. 365 #45 & 48 (H.O.T. Problems)
Domain: Congruence (G.CO) **Cluster**: Prove geometric theorems ■ **G-CO.C.10** Prove theorems about triangles. **Domain:** Modeling with Geometry (G.MG) **Cluster**: Apply geometric concepts in modeling situations ■ **G-MG.A.2** Apply geometric methods to solve real-world problems. ★	**Essential Question(s)** In what ways can congruence be useful? **Objective(s):** • Students will apply the Hinge Theorem or its converse to make comparisons in two triangles • Prove triangle relationships using the hinge theorem or its converse	***Textbook Lesson*** Lesson 5.6 Inequalities in Two Triangles pp. 367-376 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Task(s)** Inequalities in Two Triangles Activity	**Writing in Math** Compare and contrast the Hinge Theorem to the SAS Postulate for Triangle Congruence.
Properties of Quadrilaterals and Coordinate Proof **(Allow approximately 3 weeks for instruction, review, and assessment)**			
Domain: Modeling with Geometry (G.MG) **Cluster**: Apply geometric concepts in modeling situations ■ **G-MG.A.1** Use geometric shapes, their measures, and their properties to describe objects .★ **Domain:** Expressing Geometric Properties with Equations (G.GPE)	**Essential Question(s)** What are polygons? **Objective(s):** • Identify and name polygons • Find perimeter, circumference, and area of two-dimensional figures	***Textbook Lesson*** Lesson 1.6 Two-Dimensional Figures	**Vocabulary** Parallelogram, vertex of a polygon, concave, convex, n-gon, equilateral polygon, regular polygon, equiangular polygon, regular polygon, perimeter, circumference, area

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Quarter 2 — Geometry

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
Cluster: Use coordinates to prove simple geometric theorems algebraically ■ **G.GPE.B.5** Know and use coordinates to compute perimeters of polygons and areas of triangles and rectangles.★			
Domain: Modeling with Geometry (G.MG) **Cluster**: Apply geometric concepts in modeling situations ■ **G-MG.A.1** Use geometric shapes, their measures, and their properties to describe objects .★	**Essential Question(s)** Is there a limit to the sum of the interior/exterior angles of a polygon why or why not? **Objective(s):** • Students will find and use the sum of the measures of the interior angles of a polygon • Find and use the sum of the measures of the exterior angles of a polygon	***Textbook Lesson*** Lesson 6.1 Angles of Polygons pp. 389-398 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Task(s)** Angle Sums Spreadsheet Lab p. 398 Illustrative Mathematics Illustrative Mathematics: Sum of Angles in a Polygon	**Vocabulary** diagonal **Writing in Math** p. 396 #52 Open ended - Sketch a polygon and find the sum of its interior angles. How many sides does a polygon with twice this interior angles sum have? Justify your answer
Domain: Congruence (G.CO) **Cluster**: Prove geometric theorems ■ **G-CO.C.11** Prove theorems about parallelograms. **Domain:** Expressing Geometric Properties with Equations (G.GPE) **Cluster:** Use coordinates to prove simple geometric theorems algebraically ■ **G-GPE.B.2** Use coordinates to prove simple geometric theorems algebraically.	**Essential Question(s)** What can you conclude about the sides, angles, and diagonals of a parallelogram? **Objective(s):** • Students will recognize and apply properties of the sides and angles of parallelograms • Students will recognize and apply properties of parallelograms	***Textbook Lesson*** Lesson 6.2 Parallelograms, pp. 399-408 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Task(s)** Select appropriate tasks from GSE Analytic Geometry Unit 1: Similarity, Congruence and Proofs TN Task: Expanding Triangles *See Mathematics, Instructional Resources, Geometry*	**Vocabulary** parallelogram **Writing in Math** p. 406 # 43 Open ended - Provide a counterexample to show that parallelograms are not always congruent if their corresponding sides are congruent. (H.O.T. Problem)

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TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
Domain: Congruence (G.CO) **Cluster**: Prove geometric theorems ■ **G-CO.C.11** Prove theorems about parallelograms. **Domain:** Expressing Geometric Properties with Equations (G.GPE) **Cluster:** Use coordinates to prove simple geometric theorems algebraically ■ **G-GPE.B.2** Use coordinates to prove simple geometric theorems algebraically.	**Essential Question(s)** What criteria can you use to prove that a quadrilateral is a parallelogram? **Objective(s):** • Students will recognize the conditions that ensure a quadrilateral is a parallelogram. • Students will prove that a set of points forms a parallelogram in the coordinate plane.	***Textbook Lesson*** Lesson 6.3 Tests for Parallelograms pp.409-417 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Task(s)** Select appropriate tasks from GSE Analytic Geometry Unit 1: Similarity, Congruence and Proofs Graphing Technology Lab - Parallelograms p. 408 Whitebeard's Treasure Task Similarity, Congruence & Proofs TN Task: Park City	**Writing in Math** Journal Question: Are two parallelograms congruent if they both have four congruent angles? Justify your answer
Domain: Congruence (G.CO) **Cluster**: Prove geometric theorems ■ **G-CO.C.11** Prove theorems about parallelograms. **Domain:** Expressing Geometric Properties with Equations (G.GPE) **Cluster:** Use coordinates to prove simple geometric theorems algebraically ■ **G-GPE.B.2** Use coordinates to prove simple geometric theorems algebraically.	**Essential Question(s)** How are the properties of rectangles, rhombi, and squares used to classify quadrilaterals? How can you use given conditions to prove that a quadrilateral is a rectangle, rhombus or square? **Objective(s):** • Students will recognize and use the properties of rectangles • Students will determine whether parallelograms are rectangles • Students will recognize and apply the properties of rhombi and squares. • Students will determine whether quadrilaterals are rectangles, rhombi, or squares.	***Textbook Lessons*** Lesson 6.4 Rectangles, pp 419 - 425 Lesson 6.5 Rhombi and Squares, pp 426 - 434 ***Eureka Math*** Eureka Math: Geometry Module 1, Topic E, Lesson 28 – Properties of Parallelograms ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Task(s)** TN Task: Getting in Shape TN Task: Lucio's Ride	**Vocabulary** rectangle, rhombi, and square.

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Quarter 2 Geometry

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
Domain: Modeling with Geometry (G.MG) **Cluster**: Apply geometric concepts in modeling situations ■ **G-MG.A.2** Apply geometric methods to solve real-world problems ★.	**Essential Question(s)** What are the properties of kites and trapezoids? **Objective(s):** • Students will apply properties of trapezoids • Students will apply properties of kites	***Textbook Lesson*** Lesson 6.6 Trapezoids and Kites, pp.435-446 ***Eureka Math*** Eureka Math: Geometry Module 1, Topic D, Lesson 33 – Review of the Assumptions 1 Eureka Math: Geometry Module 1, Topic D, Lesson 34– Review of the Assumptions 2 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** . **Task(s)** Properties of Different Quadrilaterals	**Vocabulary** trapezoid, bases, legs of a trapezoid, base angles, isosceles trapezoid, midsegment of a trapezoid **Graphic Organizer** Use a Venn Diagram to show the relationship of the quadrilaterals you studied in Chapter 6

Curriculum and Instruction – Mathematics

Quarter 2 Geometry

RESOURCE TOOLBOX		
Textbook Resources ConnectED Site - Textbook and Resources Glencoe Video Lessons Hotmath - solutions to odd problems Comprehensive Geometry Help: Online Math Learning (Geometry) NCTM Illuminations **Tasks** Edutoolbox (formerly TNCore) Tasks Inside Math Tasks Dan Meyer's Three-Act Math Tasks Illustrative Math Tasks UT Dana Center GSE Analytic Geometry Unit 1: Similarity, Congruence and Proofs	**Standards** Common Core Standards - Mathematics Common Core Standards - Mathematics Appendix A **HS Flip Book with examples of each Standard** http://www.ccsstoolbox.org/ http://insidemathematics.org/index.php/high-school-geometry http://www.livebinders.com/play/play/454480 https://www.livebinders.com/play/play?id=464831 http://www.livebinders.com/play/play?id=571735 Chicago Public Schools Framework and Tasks **Tennessee Academic Standards for Mathematics** **Tennessee Assessment LiveBinder**	**Videos** Math TV Videos The Teaching Channel Khan Academy Videos (Geometry) **NWEA MAP** **Resources:**https://teach.mapnwea.org/assist/help_map/ApplicationHelp.htm#UsingTestResults/MAPReportsFinder.htm - Sign in and Click the Learning Continuum Tab – this resources will help as you plan for intervention, and differentiating small group instruction on the skill you are currently teaching. (Four Ways to Impact Teaching with the Learning Continuum) https://support.nwea.org/khanrit - These Khan Academy lessons are aligned to RIT scores.