Mathematics
Geometry: Year at a Glance
2019 - 2020

Q1	Q2	Q3	Q4
Aug. 12 – Oct. 11	**Oct. 21 - Dec. 20**	**Jan. 6 – Mar. 13**	**Mar. 23 – May 22 TN Ready Testing Apr. 13 - May 1**
Tools of Geometry, Reasoning and Proof, Lines and Angles, Triangle Congruence with Applications	**Transformations and Congruence, Transformations and Symmetry, Similarity and Transformations, Using Similar Triangles, Properties of Quadrilaterals with Coordinate Proofs**	**Special Segments in Triangles, Trigonometry with Right Triangles, Trigonometry with All Triangles, and Surface Area and Volume of Solids**	**Properties of Circles, Arc Length, Sector Area, and Equations of Circles, Measurement and Modeling in Two and Three Dimensions**
G.CO.A.1	G-CO.A.2	G-CO.C.10	G.C.A.1
G.CO.B.7	G-CO.A.3	G-GMD.A.1	G.C.A.2
G.CO.B.8	G-CO.A.4	G-GMD.A.2	G.C.A.3
G.CO.C.9	G-CO.A.5	G-MG.A.1	G.C.B.4
G.CO.C.10	G-CO.B.6	G-MG.A.2	G.CO.A.1
G.CO.D.12	G-CO.C.11	G-SRT.B.4	G.CO.D.12
G. GPE.B.2	G-GPE.B.2	G-SRT.B.5	G. GPE.A.1
G. GPE.B.3	G-GPE.B.4	G-SRT.C.6	G. GPE.B.2
G. SRT.B.5	G-MG.A.1	G-SRT.C.7	G-SRT.C.8
	G-MG.A.2	G-SRT.C.8	G. GMD.A.1
	G-SRT.A.1		
	G-SRT.A.2		
	G-SRT.A.3		
	G-SRT.B.4		
	G-SRT.C.6		

Key:

Major Content	Supporting Content

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**.

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

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 & Resources
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. 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.

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

- Similarity and Transformations
- Using Similar Triangles
- Right Triangles with Trigonometry
- Surface Area of Solids
- Volume of Solids

Overview

During the third quarter students formalize their understanding of similarity, which was informally studied prior to geometry. Similarity of polygons and triangles is explored and triangle similarity postulates and theorems are formally proven. The proportionality of corresponding sides of similar figures is applied. Similarity is extended to the side-splitting, proportional medians, altitudes, angle bisectors, and segments theorems. The geometric mean is defined and related to the arithmetic mean. The special right triangles of 30-60-90 and 45-45-90 are also studied. Students are introduced to the right-triangle trigonometric ratios of sine, cosine, and tangent, and their applications. Angles and the sine, cosine, and tangent functions are defined in terms of a rotation of a point on the unit circle. Students will end the quarter by starting their study of lateral areas, surface areas, and volumes of various solid figures.

Content Standard	Type of Rigor	Foundational Standards
G-SRT.B.4	Procedural Fluency, Conceptual Understanding	8.G.B.6
G-SRT.B. 5	Procedural Fluency, Conceptual Understanding & Application	8.G.A.1, 2, 3, 4, 5
G-SRT.C. 6	Conceptual Understanding	Introductory
G-SRT.C. 7	Procedural Fluency, Conceptual Understanding	7.G.B.5
G-SRT.C. 8	Conceptual Understanding & Application	8.G.B.7
G-GMD.A.1	Conceptual Understanding	8.G.A.5, 8.G.B.7
G-GMD.A.2	Procedural Fluency & Application	8.G.A.5, 8.G.B.7
G-MG.A.1	Conceptual Understanding	7.G.B.6
G-MG.A.2	Application	7.G.B.6, 8.G.C.9
G-CO.C.10	Conceptual Understanding & Procedural Fluency	7.G.A.2, 8.G.A.5
Indicates 2017-2018 Power Standard		
Instructional Focus Documents-Geometry		

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
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 modeling situations ■ **G-MG.A.2** Apply geometric methods to solve real-world problems.	**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? **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. **Type(s) of Rigor:** G.CO.C.10 - Procedural Fluency, Conceptual Understanding G-MG.A.2 - Application	***Textbook Lesson*** Lesson 5-1 Bisectors of Triangles pp. 321-331 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** ***Eureka Math*** Eureka Math: Geometry Module 1, Topic A, Lesson 5 – Points of Concurrencies ***Task(s)*** Triangle Centers Centers of Triangles Geometry Lab - Constructing Bisectors p. 321 ***Instructional Videos (via eMATHinstruction)*** Unit 4 – Lesson 4 – The Circumscribed Circle Unit 4 – Lesson 6 – The Inscribed Circle of a Triangle	**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 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?	***Textbook Lesson*** Lesson 5.2 Medians and Altitudes of Triangles pp. 332-341 ***Optional: Use the following resources to ensure that the intended outcome and level***	**Vocabulary** Median, centroid, altitude, orthocenter **Writing in Math** Summarize the special segments of a triangle including their names, properties

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
	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. **Type(s) of Rigor:** G-MG.A.2 - Application	***of rigor of the standards are met.*** **Eureka Math** Eureka Math: Geometry Module 1, Topic E, Lesson 30 – Special Lines in Triangles: Medians ***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 ***Instructional Videos (via eMATHinstruction)*** **Unit 7 – Lesson 10 – The Medians of a Triangle**	and diagrams into a chart or booklet. **Example Questions:** 1, 33
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)** 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. **Type(s) of Rigor:** G.CO.C.10 - Procedural Fluency, Conceptual Understanding G-MG.A.2 – Application	***Textbook Lesson*** 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	**Writing in Math** p. 348 #43 & 48 (H.O.T. Problems) p. 365 #45 & 48 (H.O.T. Problems)

Curriculum and Instruction – Mathematics

Quarter 3 — Geometry

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
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 **Type(s) of Rigor:** G.CO.C.10 - Procedural Fluency, Conceptual Understanding G-MG.A.2 - Application	***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.
Domain: Similarity, Right Triangles, and Trigonometry (G.SRT) **Cluster**: Prove theorems involving similarity ■ **G-SRT.B.4** Prove theorems about similar triangles. **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.	**Essential Question(s)** How are the segments that join the midpoints of a triangle's sides related to the triangle's sides? **Objective(s):** • Students will use proportional parts within triangles. • Students will use proportional parts with parallel lines. • Students will prove the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length. **Type(s) of Rigor:** G-SRT.B.4 - Procedural Fluency, Conceptual Understanding G-SRT.B.5 - Procedural Fluency, Conceptual Understanding & Application	***Use the textbook resources to address procedural fluency.*** Lesson 7-4 Parallel Lines and Proportional Parts (mid-segments of triangles) pp. 484-493 ***Use the following Lesson(s) to introduce concepts/build conceptual understanding.*** Eureka Math: Geometry Module 1, Topic E Lesson 29 – Special Lines in Triangles: Mid-segments ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** ***Task(s)*** **TN Geometry Task: Midpoint Madness** *See Mathematics, Instructional Resources, Geometry* **TN Task Arc: How Should We Divide This** *See Mathematics, Instructional Resources, Geometry, Task Arc: Investigating Coordinate*	**Vocabulary** mid-segment of a triangle **Example Questions:** 2

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
		Geometry ***Instructional Videos (via eMATHinstruction)*** Unit 7 – Lesson 8 – The Side Splitter Theorem	
Right Triangles and Trigonometry **(Allow approximately 3 weeks for instruction, review, and assessment)**			
Domain: Similarity, Right Triangles and Trigonometry (G.SRT) **Cluster**: Define trigonometric ratios and solve problems involving right triangles ■ **G-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. **Domain**: Similarity, Right Triangles and Trigonometry (G.SRT) **Cluster**: Define trigonometric ratios and solve problems involving right triangles ■ **G-SRT.C.7** Explain and use the relationship between the sine and cosine of complementary angles. **Domain**: Similarity, Right Triangles and Trigonometry (G.SRT) **Cluster**: Define trigonometric ratios and solve problems involving right triangles ■ **G-SRT.C.8** Solve triangles. *a.* Know and use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. b. Know and use the Law of Sines and Law of Cosines to solve problems in real life situations. Recognize when it is appropriate to use each.	**Essential Question(s)** How do you find a side length or angle measure in a right triangle? How do you find a side length or angle measure in a right triangle? How do trigonometric ratios relate to similar right triangles? **Objective(s):** • Identify and apply side ratios in 45-45-90 right triangles. • Identify and apply side ratios in 30-60-90 right triangles • Define trigonometric ratios for acute angles in right triangles • Use trigonometric rations and Pythagorean Theorem to solve right triangles • Use the relationship between the sine and cosine of complementary angles. **Type(s) of Rigor:** G-SRT.C.6 - Conceptual Understanding G-SRT.C.7 - Procedural Fluency, Conceptual Understanding G-SRT.C.8 - Conceptual Understanding &	***Textbook Lesson*** Lesson 8-3 Special Right Triangles pp.552-559 Lesson 8-4 Trigonometry pp.562-271 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** ***Eureka Math*** Eureka Math Geometry Module 2, Topic D Lesson 24 - Prove the Pythagorean Theorem Using Similarity Lesson 25: Incredibly Useful Ratios Lesson 26: The Definition of Sine, Cosine, and Tangent Lesson 28: Solving Problems Using Sine and Cosine Lesson 29: Applying Tangents Lesson 30: Trigonometry and the Pythagorean Theorem HS Flip Book with examples of each Standard ***Task(s)*** Discovering Trigonometric Ratio Relationships learning task p.22 ***Instructional Videos (via eMATHinstruction)*** Unit 8 –Lesson 2 The Trigonometric Ratios Unit 8 – Lesson 3 – Trigonometry and the	**Vocabulary** Trigonometry, trigonometry ratio, sine, cosine, tangent, inverse sine, inverse cosine, inverse tangent **Activity with Discussion** p.570 #65 Explain how you can use ratios of the side lengths to find the angle measures of the acut angles in a right triangle. **Activity with Discussion** p.559 #50 Explain how you can find the lengths of two le of a 30-60-90 triangle in radical form if you are given the length of the hypotenuse. **Example Questions: 3**, 4, 5, 6, 7, 8

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
	Application	Calculator Unit 8 – Lesson 4 – Solving for Missing Sides of Right Triangles	
Domain: Similarity, Right Triangles and Trigonometry (G-SRT) **Cluster**: Define trigonometric ratios and solve problems involving right triangles **G-SRT.C.7** Explain and use the relationship between the sine and cosine of complementary angles.	**Essential Question(s)** How can right triangle relationships be used to solve practical problems? **Objective(s):** • Students will use the relationship between the sine and cosine of complementary angles. • Students will understand that if A and B are the measurements of complementary angles of a right triangle, then sin A = Cos B • Students will solve triangle problems using special angles. **Type(s) of Rigor:** G-SRT.C.7 - Procedural Fluency, Conceptual Understanding	***No Textbook Lesson*** ***Eureka Math*** Eureka Math Geometry Module 2, Topic E, Lesson 27: Sine and Cosine of Complementary and Special Angles Also see notes and homework (G-SRT.C.7) here ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** ***Task(s)*** Clyde's Construction Crew p.102 ***Instructional Videos (via eMATHinstruction)*** Unit 8 –Lesson 2 The Trigonometric Ratios Unit 8 – Lesson 3 – Trigonometry and the Calculator	**Writing in Math/Discussion** Explain in your own words why sin A = cos B i right triangle with m∠A + m∠B = 90 **Example Questions:** 9, 10, 11, 12, 13, 14
Domain: Similarity, Right Triangles and Trigonometry (G.SRT) **Cluster**: Define trigonometric ratios and solve problems involving right triangles ■ **G-SRT.C.8** Solve triangles. a. Know and use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. b. Know and use the Law of Sines and Law of Cosines to solve problems in	**Essential Question(s)** How do you find a side length or angle measure in a right triangle? How do trigonometric ratios relate to similar right triangles? **Objective(s):** • Solve problems involving angles of elevation. • Solve problems involving angles of depression.	***Textbook Lesson*** Lesson 8-5 – Angles of Elevation and Depression pp.574-581 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** ***Eureka Math*** Eureka Math Geometry Module 2, Topic D, Lesson 31: Using Trigonometry to Determine Area	**Vocabulary** Angle of elevation, angle of depression **Writing in Math/Discussion** p.580 #25 Classify the statement below as true or false. Explain. **"As a person moves closer to an object he or she is sighting, the angle of elevation increases"**

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
real life situations. Recognize when it is appropriate to use each.	**Type(s) of Rigor:** G-SRT.C.8 - Conceptual Understanding & Application	Lesson 32: Using Trigonometry to Find Side Lengths of an Acute Triangle Lesson 33: Applying the Laws of Sines and Cosines Lesson 34: Unknown Angles ***Task(s)*** Edutoolbox: Interstate Task ***ACT Practice*** Glencoe, pp.618-619 **HS Flip Book with examples of each Standard** ***Instructional Videos (via eMATHinstruction)*** **Unit 8 – Lesson 5 – Trigonometric Applications** **Unit 8 – Lesson 6 – More Trigonometric Applications**	**Example Questions:** 15, 16, 17, 18
There is not a TNReady standard that goes with this objective however, students need to know how to convert between radians and degree measure to work application problems. It is mentioned prior to G-C.B.4	**Objective:** Students will convert between angles measured in radian and degree measures	***See notes & homework here*** ***Use this to help explain concept*** Intuitive Guide to Angles, Degrees and Radians	**Vocabulary** Radian, degree
Visualizing Solids and Volume of Solids **(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.	**Essential Question(s)** In what ways, can geometric figures be used to understand real-world problems? **Objective(s):** Students will • Investigate cross sections of three-dimensional figures.	***Textbook Lesson*** Lesson 12-1 – Representations of Three-Dimensional Figures, Lesson pp. 823-828 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.***	**Vocabulary** Isometric view, cross section **Writing in Math/Discussion** When an object on a video game is viewed from only one side, what are some ways that the object can be made to appear three-dimensional? **Example Questions:** 19, 20

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
	Type(s) of Rigor: G-MG.A.1 - Conceptual Understanding	**Eureka Math** Eureka Math Geometry, Module 3, Topic B Lesson 7: General Pyramids and Cones and Their Cross-Sections **HS Flip Book with examples of each Standard** **Task(s)** Volumes of Cylinders, Cones, Pyramids, and Spheres Videos Volumes of Cylinders, Cones, Pyramids, and Spheres Task, p.98 Unit on Area, Perimeter, and Volume with multiple tasks • Boxing Basketballs p.5 • Great Pyramid p.21 • Walter and Juanita's Water Troughs p.25 • Greenhouse p.31 ***Instructional Videos (via eMATHinstruction)*** **Unit 10 – Lesson 7 – Solids and Their Cross Sections**	
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 geometric figures be used to understand real-world problems? • How do surface volume and area compare to each other? **Objective(s):** Students will • Find the lateral area and surface area of prisms to solve problems. • Find the lateral area and surface area of cylinders to solve problems.	***Textbook Lesson*** Lesson 12-2 – Surface Area of Prisms and Cylinders, pp.830-837 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **HS Flip Book with examples of each Standard** ***Task(s)*** Cereal Box Project (Surface Area & Volume) Tasks	**Vocabulary** Lateral face, lateral edge, base edge, altitude, height, lateral area, axis, composite solid **Writing in Math/Discussion** Compare and contrast finding the surface area of a prism and finding the surface area of a cylinder. **Example Questions:** 21, 22

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
	Type(s) of Rigor: G-MG.A.2 - Application	Designing an Energy Drink Can (Surface Area and Volume of Cylinder) pp. 6-10	
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 geometric figures be used to understand real-world problems? • How do surface volume and area compare to each other? **Objective(s):** Students will • Find the lateral area and surface area of pyramids to solve problems. • Find the lateral area and surface area of cones to solve problems. **Type(s) of Rigor:** G-MG.A.2 - Application	***Textbook Lesson*** Lesson 12-3 – Surface Area of Pyramids and Cones, pp.838-846 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** ***Activity*** How to find the surface area of a cone activity & video	**Vocabulary** Regular pyramid, slant height, right cone, oblique cone **Writing in Math/Discussion** What is the difference between a prism and a pyramid? What is the difference between a cone and a cylinder? . **Example Questions:** 23, 24
Domain: Geometric Measurement and Dimension (G.GMD) **Cluster:** Explain volume formulas and use them to solve problems ➢ **G-GMD.A.1** Give an informal argument for the formulas for the circumference of a circle and the volume and surface area of a cylinder, cone, prism, and pyramid. ➢ **G-GMD.A.2** Know and use volume and surface area formulas for cylinders, cones, prisms, pyramids, and spheres to solve problems. ★ ★	**Essential Question(s)** • In what ways do we use cones, cylinders, spheres, right rectangular prisms, triangular prisms in real-life? • How do I find the surface area and volume of a three-dimensional figure? **Objective(s):** Students will Find volumes of prisms and cylinders in the context of the real world. **Type(s) of Rigor:** G-GMD.A.1 - Conceptual Understanding	***Textbook Lesson*** Lesson 12.4 – Volumes of Prisms and Cylinders, pp. 847-854 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Eureka Math** Eureka Math Geometry, Module 3, Topic B Lesson 5: Three-Dimensional Space Lesson 6: General Prisms and Cylinders and Their Cross-Sections **Task(s)** How much money is that? (prism)	**Writing in Math/Discussion** Write a helpful response to the following questions posted on an Internet garden forum *"I am new to gardening. The nursery will deliv a truckload of soil, which they say is 4 yards. know that a yard is 3 feet, but what is a yard o soil? How do I know what to order?"* **Example Questions:** 25, 26

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
	G-GMD.A.2 - Procedural Fluency, Application	Centerpiece (cylinder) ***Instructional Videos (via eMATHinstruction)*** Unit 10 – Lesson 8 – Volumes of Prisms and Cylinders	
Domain: Geometric Measurement and Dimension (G.GMD) **Cluster:** Explain volume formulas and use them to solve problems ➢ **G-GMD.A.1** Give an informal argument for the formulas for the circumference of a circle and the volume and surface area of a cylinder, cone, prism, and pyramid. ➢ **G-GMD.A.2** Know and use volume and surface area formulas for cylinders, cones, prisms, pyramids, and spheres to solve problems.	**Essential Question(s)** • In what ways do we use cones, cylinders, spheres, right rectangular prisms, triangular prisms in real-life? • How do I find the surface area and volume of a three-dimensional figure? **Objective(s):** Students will • Understand the precise language that describes the properties of volume. • Find volumes of pyramids and cones in the context of the real world. **Type(s) of Rigor:** G-GMD.A.1 - Conceptual Understanding G-GMD.A.2 - Procedural Fluency, Application	***Textbook Lesson*** Lesson 12.5 - Volumes of Pyramids and Cones, pp. 857-863 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Eureka Math** Eureka Math Geometry, Module 3, Topic B Lesson 7: General Pyramids and Cones and Their Cross-Sections Lesson 8: Definition and Properties of Volume Lesson 9: Scaling Principle for Volumes Lesson 10: The Volume of Prisms and Cylinders and Cavalieri's Principle **Task(s)** Doctors Appointment (cone) Great Egyptian Pyramids (pyramid) ***Instructional Videos (via eMATHinstruction)*** **Unit 10 – Lesson 9 – Volumes of Pyramids and Cones**	**Writing in Math/Discussion** Compare and contrast finding volumes of pyramids and cones with finding volumes of prisms and cylinders. **Example Questions:** 27
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 geometric figures be used to understand real-world problems? • How do surface volume and area compare to each other? **Objective(s):** Students will	***Textbook Lesson*** Lesson 12-6 – Surface Areas and Volumes of Spheres, pp.864-871 ***Optional: Use the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **HS Flip Book with examples of each**	**Vocabulary** Great circle, pole, hemisphere **Writing in Math/Discussion** Describe the difference between the surface area of a sphere and the volume of a sphere.

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
	• Find the surface area of a sphere to solve problems • **Find** the volume of a sphere to solve problems **Type(s) of Rigor:** G-MG.A.2 - Application	Standard ***Instructional Videos (via eMATHinstruction)*** Unit 10 – Lesson 10 – Sphere's	Example Questions: 28
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. *Geometric methods may include but are not limited to using geometric shapes, the probability of a shaded region**, density**, and design problems.*	**Essential Question(s)** In what ways, can geometric figures be used to understand real-world problems? **Objective(s):** Students will: • Apply concepts of density based on area and volume in modeling situations **Type(s) of Rigor:** G-MG.A.2 - Application	***Lesson*** Examples and video tutorial Classwork and/or homework problems ***Task(s)*** Illustrative Mathematics tasks (several examples to choose from) Probability and Area	**Vocabulary:** Density, mass, volume Example Questions: 29, 30, 31, 32

RESOURCE TOOLKIT		
Textbook Resources ConnectED Site - Textbook and Resources Glencoe Video Lessons	**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 **Tennessee Academic Standards for Mathematics** **Tennessee Assessment LiveBinder** **Achieve the Core Coherence Map** Instructional Focus Documents-Geometry	**Videos** Math TV Videos The Teaching Channel Khan Academy Videos (Geometry) eMATHinstruction
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	**ACT/SAT Testing** ACT & SAT TN ACT Information & Resources ACT College & Career Readiness Mathematics Standards SAT Connections SAT Practice from Khan Academy	**SEL Resources** SEL Connections with Math Practices **SEL Core Competencies** The Collaborative for Academic, Social, and Emotional Learning (CASEL)

Curriculum and Instruction – Mathematics

Quarter 3 **Geometry**

February 2020

Suggested Lessons for the Week	Monday	Tuesday	Wednesday	Thursday	Friday	Notes:
			1	2	3	***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 their individual class needs.***
5.1-Bisectors of Triangles 5.2- Medians & Altitudes of Triangles	6 ***3rd Quarter Begins***	7	8	9	10	
5.3-Inequalities in One Triangle 5.5-Triangle Inequality Theorem	13	14	15	16	17 *½ day students*	
5.6-Inequalities in Two Triangles 7.4-Parallel Lines & Proportional Parts	20 ***Martin Luther King Jr. Day (Out)***	21	22	23	24	
8.3-Special Right Triangles	27	28	29	30	31	

Winter Break

■ Major Content ➢ Supporting Content ★ (star) Modeling Standard/Domain

Curriculum and Instruction – Mathematics

Quarter 3 — Geometry

Suggested Lessons for the Week	Monday	Tuesday	Wednesday	Thursday	Friday	Notes:
8.4-Trigonometry Eureka M2, Lesson 27	**3**	**4**	**5**	**6**	**7**	***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 their individual class needs.***
notes and homework for G-SRT.C.7 8.5-Angles of Elevation and Depression See notes in map	**10**	**11**	**12**	**13** *Parent Teacher Conferences*	**14** *1/2 day students*	
12.1-Representations of 3D Figures 12.2-Surface Area of Prisms and Cylinders	**17** **PD FLEX DAY** ***President's Day***	**18**	**19**	**20**	**21**	
12.3-Surface Area of Pyramids and Cones 12.4-Volumes of Prisms and Cylinders	**24**	**25**	**26**	**27**	**28**	

March 2020

Suggested Lessons for the Week	Monday	Tuesday	Wednesday	Thursday	Friday	Notes:
12.5-Volumes of Pyramids and Cones	**2**	**3**	**4**	**5**	**6**	***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 their individual class needs.***
12.6-Surface Areas of Spheres Real-world problems (see map)	**9**	**10**	**11**	**12**	**13** *End of 3rd Nine Weeks*	
	16	**17**	**18**	**19**	**20**	
	23 *4th Nine Weeks Begin*	**24**	**25**	**26**	**27**	
	30	**31**	1	2	3	

Spring Break

■ Major Content ➢ Supporting Content ★ (star) Modeling Standard/Domain