Marietta City Schools

2025–2026 District Unit Planner

Geometry: Concepts & Connections

Unit title	Unit 5: Right Triangle Trigonometry	**MYP year**	*5*	**Unit duration (hrs)**	11 hours

Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): ***What will students learn?*** Establishing relationships helps us to understand and model change

GA DoE Standards

Standards

G.GSR.6: Examine side ratios of similar triangles; use the relationship between right triangles to develop an understanding of sine, cosine, and tangent to solve geometric problems and to model and explain real-life phenomena.

G.GSR.6.1 Explain 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.

Fundamentals

• Students should be able to use similarity to establish sine, cosine, and tangent ratios.

G.GSR.6.2 Explain and use the relationship between the sine and cosine of complementary angles.

Fundamentals

• Students should be able to verify and apply the relationship between cofunctions, $\sin(\theta) = \cos(90° - \theta)$ and $\cos(\theta) = \sin(90° - \theta)$.

• In seventh grade, students write and solve equations using supplementary, complementary, vertical, and adjacent angles.

G.GSR.6.3 Use trigonometric ratios and the Pythagorean Theorem to solve for sides and angles of right triangles in applied problems.

Strategies and Methods

• Students should be able to use sine, cosine, and tangent to solve real-life problems that require them to find missing side and angle measurements.

G.MM.1: Apply mathematics to real-life situations; model real-life phenomena using mathematics.

G.MM.1.1 Explain mathematically applicable problems using a mathematical model.

Fundamentals

• Students should be provided with opportunities to learn mathematics through the exploration of real-life problems.

• Mathematically applicable problems are those presented in context where the context makes sense, realistically and mathematically, and allows for students to make decisions about how to solve the problem (model with mathematics).

G.MM.1.2 Create mathematical models to explain phenomena that exist in the natural sciences, social sciences, liberal arts, fine and performing arts, and/or humanities contexts.

Fundamentals

• Students should be able to use the content learned in this course to create a mathematical model to explain real-life phenomena.

G.MM.1.3 Using abstract and quantitative reasoning, make decisions about information and data from a mathematically applicable situation.

Fundamentals

• Students should be able to connect learning of geometric shapes and their properties to describe objects.

• Students should be able to apply geometric methods and data to make decisions about structures and solve real-world problems.

G.MM.1.4 Use various mathematical representations and structures with this information to represent and solve real-life problems.

Fundamentals

• Students should be able to construct a model by selecting and creating algebraic and geometric representations that describe relationships between variables in context.

Concepts/Skills to support mastery of standards

Explain and Derive Trigonometric Ratios Using Similarity

Define and Apply Trigonometric Ratios for Acute Angles

Explain Cofunction Relationships in Complementary Angles

Solve for Unknowns Using Trigonometric Ratios

Utilize the Pythagorean Theorem in Applied Problems

Vocabulary

Adjacent Side	Angle of Depression	Angle of Elevation	Complementary Angles	Cosine	Hypotenuse
Opposite Side	Right Angle (90° Angle)	Similar Triangle	Sine	Tangent	Trigonometric Ratio
Trigonometry					

Notation

sin (θ) cos (θ) tan (θ) sin(θ) = cos (90-θ) cos(θ) = sin(90-θ)

Key concept	Related concept(s)	Global context
Relationship	Pattern and Model	Scientific and Technical Innovation Exploration: Mathematical puzzles, principles and discoveries

Statement of inquiry

Establishing relationships helps us to understand and model change.

Inquiry questions

Factual—

- What is the process to find a missing side using right triangle trigonometry?
- What is the process to find a missing angle using right triangle trigonometry?
- What are Pythagorean triples?
- What is the difference between angle of elevation and angle of depression?

Conceptual—

- How would you describe the relationship between the sine and cosine of complementary angles?
- How is right triangle trigonometry used to solve real world problems?
- How do I know which trigonometric ratio to use to solve for a missing side/angle?
- How are Pythagorean triples used to solve problems involving right triangles?

Debatable-

How would measurements taken with a clinometer on a different planet, with a different distance from the sun, differ from clinometer measurements taken on earth?

MYP Objectives	**Assessment Tasks**	
*What specific MYP **objectives** will be addressed during this unit?*	***Relationship** between summative assessment task(s) and statement of inquiry:*	*List of common formative and summative assessments.*
Objective D i. select appropriate mathematical strategies when solving authentic real-life situations ii. apply the selected mathematical strategies successfully to reach a solution	Students will use sinusoidal relationships to solve problems involving angles and sides of right triangles in real-world contexts.	**Formative Assessment(s):** MYP D - Applications **Summative Assessment(s):** Unit 5 Quest (On- Level) Unit 5 Test (Honors)

Approaches to learning (ATL)
Category: Communication Skills **Cluster:** Communication **Skill Indicator:** Understand and use mathematical notation, Apply skills and knowledge in unfamiliar situations

Learning Experiences Add additional rows below as needed.		
Objective or Content	**Learning Experiences**	**Personalized Learning and Differentiation**
G.GSR.6.1 Explain 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. **G.GSR.6.2** Explain and use the relationship between the sine and cosine of complementary angles.	**Sine, Cosine Relationships - Engage, Explore, and Reflect (DOE)** **Description:** In this learning plan, students will learn the relationship between the sine and cosine of acute angles in a right triangle. **Learning Goal:** ● I can explain and use the relationship between the sine and cosine of complementary angles. ● I can use the relationship between the sine and cosine of complementary angles to solve geometric problems	(On-Level Only) - Diagnostic Assessment can be used as a warm up review - Provide review on Pythagorean Theorem as that background knowledge is needed to build new understanding with sine and consine in this task - For the Explore “Twin Triangles” section: Arrange students in pairs or groups. Tell half the group to work on column A while the other half of the group works on column B. - Select groups to share their visual displays following the explore - For ELL students, possible translation of situation could be needed Questions for discussion: 1. How can you clearly connect the explanation to the diagram? (label the parts, draw arrows, use phrases such as 'adjacent leg') 2. What type of triangle does this equation work for? (only right triangles - For an extension, have students complete the “Apply” section

G.GSR.6.1 **G.GSR.6.2** **G.GSR.6.3** Students will use trigonometric ratios, pythagorean theorem, and complementary angles to solve the real world application problem.	**Miracle on the Hudson - Engage, Explore, and Reflect (DOE)** **Description:** In this learning plan, students will analyze the flight path of an airplane that hit a flock of birds and landed in the Hudson River. They will calculate the height of the plan above the water and the lengths it traveled. Students will also use inverse ratios to calculate the various angles of elevation and depression along the path. **Learning Goal:** • I can use trig ratios and the Pythagorean Theorem to solve right triangles in applied problems. • I can interpret statements about heights, distances, and angles of elevation and depression.	(Honors Only) - Diagnostic Assessment can be used as a warm up review - Provide review on vocab: angle of depression, angle of elevation, altitude - Support some students with unit conversion with various units - For ELL students, possible translation of situation could be needed - For an extension, have students complete the “Apply” section with a different scenario

Content Resources

Textbook Correlation: enVision A|G|A - Geometry

G.GSR.6.1 - Lesson 8-2
G.GSR.6.2 - Lesson 8-2
G.GSR.6.3 - Lesson 8-1, 8-2, Topic 8 - Mathematical Modeling in 3 Acts