Marietta City Schools

2025–2026 District Unit Planner

Grade 8 Honors Mathematics

Unit title	Unit 6: Exploring Geometric Relationships	**MYP year**	3	**Unit duration (hrs)**	*MMS- (4.5 hours per week)* *18 Hours –4 Weeks*

Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): ***What will students learn?***

Georgia K-12 Standards

Standards

8.GSR.8 Solve geometric problems involving the Pythagorean Theorem and the volume of geometric figures to explain real-life phenomena.
8.MP: Display perseverance and patience in problem-solving. Demonstrate skills and strategies needed to succeed in mathematics, including critical thinking, reasoning, and effective collaboration and expression. Seek help and apply feedback. Set and monitor goals.

Honors Standards
MCS Gifted Standards:
MCS.Gifted.S2A.

Concepts/Skills to support mastery of standards

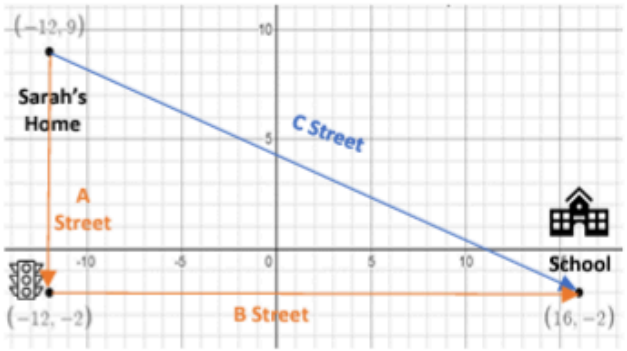
8.GSR.8.1 - Explain a proof of the Pythagorean Theorem and its Converse

8.GSR.8.2 - Apply the Pythagorean Theorem to determine the unknown side lengths in right triangles.

8.GSR.8.3 - Apply the Pythagorean Theorem to find the distance between two points.

8.GSR.8.4 - Apply the formulas for the volume of Cylinders, Cones, and Spheres.

8.GSR.8.1	Explain a proof of the Pythagorean Theorem and its converse using visual models.	***Age/Developmentally Appropriate*** • Students are not limited to a particular proof for the Pythagorean Theorem or its converse.	***Strategies and Methods*** • Geometric and spatial reasoning should be used when explaining the Pythagorean Theorem.	***Example*** 
8.GSR.8.2	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles within authentic, mathematical problems in two and three dimensions.	***Age/Developmentally Appropriate*** • Triangle dimensions may be rational or irrational numbers.	***Strategies and Methods*** • Geometric and spatial reasoning should be used to solve problems involving the Pythagorean theorem. • Models and drawings may be useful as students solve contextual problems in two- and three-dimensions.	***Example***  How tall is the Great Pyramid of Giza?
8.GSR.8.3	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system in practical, mathematical problems.	***Age/Developmentally Appropriate*** • Students should apply their understanding of the Pythagorean Theorem to find the distance. Use of the distance formula is not an expectation for this grade level.	***Strategies and Methods*** • Students should be provided opportunities to solve problems using a variety of strategies.	***Example*** • There are two paths that Sarah can take when walking to school. One path is to take is to take A Street from home to the traffic light and then walk on B street from the traffic light to the school, and the other way is for her to take C street directly to the school. How much shorter is the direct path along C Street?

				 To answer this question, students may use what they learned in 6th grade to find the distance between (-12, 9) and (-12, -2) representing A street and the distance between (-12, -2) and (16, -2) representing B street. Then, students could use those two distances to find the sum of the distances for the first path. Then, students can apply the Pythagorean theorem to determine the distance between the final two points, (-12, 9) and (16, -2) to determine the answer to the question.
8.GSR.8.4	Apply the formulas for the volume of cones, cylinders, and spheres and use them to solve in relevant problems.	***Age/Developmentally Appropriate*** • This learning objective is limited to right circular cones, right cylinders, and spheres.	***Strategies and Methods*** • Given the volume, solve for an unknown dimension of the figure. Students will need to be able to express the answer in terms of pi and as a decimal approximation. • Students should be able to use their knowledge of cube roots to solve for unknown dimensions of geometric figures.	***Relevance and Application*** • Students should be given opportunities to find missing dimensions of a right circular cone (e.g., slant height, radius, etc.). • Students should be able to make connections between the Pythagorean Theorem and solving relevant problems related to volume of cones.

Vocabulary

Altitude of a Triangle	Base (of a Polygon)	Coordinate Plane	Coordinate Point of a Plane	Converse of Pythagorean Theorem	Cube Root
Hypotenuse	Leg of a Triangle	Perfect Squares	Perfect Cubes	Pythagorean Theorem	Pythagorean Triples
Square Root	Right Triangle	Volume	Cone	Cylinder	Sphere
Hemisphere	Diameter	Radius	Pi	Height	Slant Height
Area	Circumference				

Key concept	Related concept(s)	Global context
Relationships	Measurement and Space	Orientation in space and time

Statement of inquiry

People can explore relationships through measurement.

Inquiry questions

- **Factual—** What is the Pythagorean Theorem?
- **Conceptual—** How has the discovery of the Pythagorean Theorem shaped the world in which we live? What does it mean to cube or square a number? Why is the square root of 2 irrational?
- **Debatable—** Can the Pythagorean Theorem be applied to any polygon? Explain

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.*

Criterion A: Knowledge and Understanding	Students will explore relationships through measurement.	**<u>Formative Assessment(s):</u>** Unit 6 CFA **<u>Summative Assessment(s):</u>** Unit 6 Test: Geometric Applications of Exponents Unit 6 Retest: Geometric Applications of Exponents MYP Project: MTM Volume Task
Approaches to learning (ATL)		
Need: Give and receive meaningful feedback **Category:** Research Skills **Cluster:** Information literacy **Skill Indicator:** Finding, interpreting, judging and creating information		

Learning Experiences Add additional rows below as needed.		
Objective or Content	**Learning Experiences**	**Personalized Learning and Differentiation**
8.GSR.8.2 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles with authentic, mathematical problems in two and three dimensions.	**Using the Pythagorean Theorem** **Brief Description:** In this learning plan, students will apply the Pythagorean Theorem to determine the packaging needs for two television companies. Students will only solve equations involving square roots as it relates to the Pythagorean Theorem. Students will also rationalize the denominator. **Learning Goal:** ● I can use right triangles to model real world problems. ● I can use the Pythagorean Theorem to find the distance between points. ● I can explain how the components (a, b, and c) of the Pythagorean Theorem relate to a contextual situation. ● I can interpret the solution to a situation involving the Pythagorean Theorem.	In this learning plan, students will apply the Pythagorean Theorem to solve real world problems.
8.GSR.8.4 Apply the formula for the volume of cones, cylinders, and spheres and use them to solve relevant problems.	**Volume of Cones, Cylinders, and Spheres Discovery Lab** **Brief Description:** In this discovery lab, it focuses on the similarities and differences between the volume formulas for cylinders, cones, and spheres. The students will discover the similarities and differences by comparing and contrasting each formula, identifying the parts of the formula that are similar and different through a graphic organizer, calculate the volume or each shape, and then write a conclusion of what they discovered.	In this learning plan, students will discover the similarities and differences between the formulas for each shape.

	Learning Goal: ● I can compose and decompose shapes to find the volume of a compound object.	
Content Resources		
Grade-8-Mathematics-Unit-6-Exploring-Geometric-Relationships Savvas Correlation Link		