Marietta City Schools

2024–2025 District Unit Planner

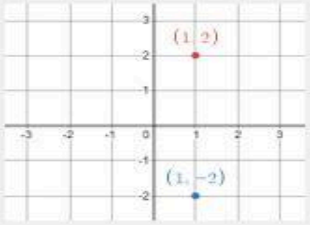
Grade 6 Mathematics

Unit title	Unit 8: Graphing Rational Numbers	**MYP year**	*1*	**Unit duration (hrs)**	*10 hours*

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

GA DoE Standards
Standards **6.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.

6.PAR.8: Graph rational numbers as points on the coordinate plane to represent and solve contextual, mathematical problems; draw polygons using the coordinates for their vertices and find the length of a side of a polygon.

Expectations		Evidence of Student Learning (not all inclusive; see Grade Level Overview for more details)		
6.PAR.8.1	Locate and position rational numbers on a horizontal or vertical number line; find and position pairs of integers and other rational numbers on a coordinate plane.	***Fundamentals*** • Students should use numerical and graphical reasoning to plot points in all four quadrants on the coordinate plane.	***Strategies and Methods*** • Students should extend understanding of number lines and coordinate axes from previous grades to represent points on the line and in the plane with negative number coordinates.	
6.PAR.8.2	Show and explain that signs of numbers in ordered pairs indicate locations in quadrants of the coordinate plane and determine how two ordered pairs may differ based only on the signs.	***Fundamentals*** • Students should use numerical and graphical reasoning to interpret points in all four quadrants on the coordinate plane based on the signs.	***Strategies and Methods*** • Students should use numerical and graphical reasoning to show and explain the relationship between ordered pairs and location in quadrants of the coordinate plane.	***Example*** • A student is able to compare and explain that (1, 2) is in the first quadrant whereas (1, -2) is in the fourth quadrant because the y-coordinate is negative and the two points are the same distance from the horizontal axes in different directions. 
6.PAR.8.3	Solve problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same x-coordinate or the same y-coordinate.	***Relevance and Application*** • Students should be able to solve relevant, mathematical problems when graphing points.	***Strategies and Methods*** • Students should be expected to solve relevant problems within the context of a graph only.	
6.PAR.8.4	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same x-coordinate or the same y-coordinate.	***Relevance and Application*** • Students should apply the techniques of graphing in the coordinate plane to solve relevant problems involving the application of algebra through geometry.	***Strategies and Methods*** • Students should be able to solve problems with polygons when given coordinate pairs with or without a coordinate grid.	

Vocabulary: [K-12 Mathematics Glossary]

Absolute value	**Magnitude**	**Rational Number**	**Cartesian Coordinate Plane**	**Ordered Pair**	**x-axis**
Coordinates	**Origin**	**x-coordinate**	**Distance**	**Polygon**	**y-axis**
Integers	**Quadrant**	**y-coordinate**			

Key concept	Related concept(s)	Global context
Relationships	Equivalence, Generalization	**Identities and Relationships**

Statement of inquiry

By examining relationships and patterns, we can make predictions in real world situations.

Inquiry questions

Factual—How are number lines and the coordinate plan different? What are opposites? What is absolute value? Where do I place positive and negative rational numbers on the number line? What are opposites, and how are opposites shown on a number line?

Conceptual—When are negative numbers used and why are they important? Why is it useful for me to know the absolute value of a number? When is graphing on the coordinate plane helpful? How do I use positive and negative numbers in everyday life? How do I use positive and negative numbers to represent quantities in real-world contexts? How do statements of inequality help me place numbers on a number line? How can I use coordinates to find the distances between points? How can I use number lines to find the distances between points? How can I use absolute value to find the lengths of the sides of polygons on the coordinate plane? What do reflections and symmetry have in common? How is absolute value and order different?

Debatable—Does a negative number always represent a negative situation?

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.*
MYP Assessment:	Students will understand and recognize positive and negative numbers on a number line and coordinate grid. Students will understand statements of inequality, absolute value, and real world mathematical problems.	**Summative Assessment(s):** Rational Explorations and Graphing Rational Numbers Test

Approaches to learning (ATL)
Category: Social **Cluster:** Collaboration Skills **Skill Indicator:** Give and receive meaningful feedback. **Category:** Thinking **Cluster:** Critical Thinking, Creative Thinking & Transfer **Skill Indicator:** Use models and simulations to explore complex systems and issues

Learning Experiences Add additional rows below as needed.		
Objective or Content	**Learning Experiences**	**Personalized Learning and Differentiation**
6.PAR.8.1 Locate and position rational numbers on a horizontal or vertical number line; find and position pairs of integers and other rational numbers on a coordinate plane. **6.PAR.8.2** Show and explain that signs of numbers in ordered pairs indicate locations in quadrants of the coordinate plane and determine how two ordered pairs may differ based only on the signs **6.PAR.8.3** Solve problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same x-coordinate or the same y-coordinate.	The Terryville Task: Students are given a map of Terryville with a story for their characters. They create a route through the town stopping at various locations and calculating the distance they travel by writing distance equations that use absolute value.	Teachers can provide graph paper. Teachers can edit the questions to provide scaffolding. Students can work in collaborative pairs.
Content Resources		
[6-11 Savvas Correlation to 2021 standards] **GaDoe Intervention Table of Tasks/Activities** **Additional Resources** • **Savvas** • **Desmos** • **Hands-On Math**		