**Marietta City Schools**

**2023–2024 District Unit Planner**

*Honors 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?***

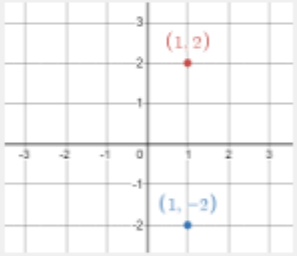
**GA DoE Standards**

**Standards**

**6.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.
**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.

**MCS.Gifted.S3C** Use a variety of strategies for solving authentic, complex, real world problems through evaluative thinking and the engineering design processes.
**MCS.Gifted.S4B** Recognize and examine the value of others strengths, thoughts, ideas, and feelings during collaboration.
**MCS.Gifted.S4D** Respectfully collaborate and effectively communicate exchanges of constructive/critical feedback.
**MCS.Gifted.S6** Students will become self-directed, independent learners.

**Concepts/Skills to be Mastered by Students**

| 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***<br>• Students should use numerical and graphical reasoning to plot points in all four quadrants on the coordinate plane. | ***Strategies and Methods***<br>• 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***<br>• 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***<br>• 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***<br>• 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.<br>  |
| 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***<br>• Students should be able to solve relevant, mathematical problems when graphing points. | ***Strategies and Methods***<br>• 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***<br>• 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***<br>• Students should be able to solve problems with polygons when given coordinate pairs with or without a coordinate grid. | |

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

| | | |
|---|---|---|
| The connections and associations between properties, objects, people and ideas. | | |

**Statement of inquiry**

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

**Inquiry questions**

**Factual—** How are positive and negative numbers plotted on a coordinate plane? How is a coordinate system used?

**Conceptual—** How can we use a number line to compare numbers? How can we use a coordinate plane to determine the distance between two points? How does a location of a coordinate change as the values within the ordered pair change?

**Debatable-** Which is more useful in real world situations: a number line or a coordinate grid?

| **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 Criterion C: Communications<br>Criterion D: Real-world application | Summative assessments examine relationships and patterns as related to number lines and coordinate grids included in real-world situations. | **Formative Assessment(s):**<br>Amusement Park Activity<br><br>**Summative Assessment(s):**<br>Unit Summative Test<br>Unit CSA |

**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**<br>Add additional rows below as needed. | | |
|---|---|---|
| **Objective or Content** | **Learning Experiences** | **Personalized Learning and Differentiation** |
| **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. | **Geometry in Coordinate Plane Activity**<br>Studentsnwill follow the lesson as it is presented in Desmos.com and will plot points to create figures in a coordinate plane. They will name the figures and find the areas. | Students will be supported through intentional planning and implementation using the 5 Practices. Teachers will support through assessing and advancing questions and aggressive monitoring of students through the task. Students will have access to number lines, xy pegboards, and various manipulatives to support their work with absolute value. |
| **Content Resources** | | |
| Savvas- Topic 2<br>Desmos: desmos.com : https://teacher.desmos.com/activitybuilder/custom/5fdecda583feb749d5ea39d7?utm_campaign=share&utm_content=activity<br>Savvas online tools: https://media.pk12ls.com/curriculum/math/enVision6-8/enV6-8_html5tools_launch/index.html<br>Interactive Math Tools: https://polypad.amplify.com/<br>Interactive Geoboard - https://apps.mathlearningcenter.org/geoboard/<br>Illustrative Mathematics<br>Number Lines, Fraction Models, Visual Models, and XY Pegboards | | |