Marietta City Schools

2025–2026 District Unit Planner

Grade 7 Honors Mathematics

Unit title	Unit 3: Exploring Ratios and Proportional Relationships	**MYP year**	2	**Unit duration (hrs)**	*22.5 hours*

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

GA DoE Standards

Standards

7.PAR.4 Recognize proportional relationships in relevant, mathematical problems; represent, solve, and explain these relationships with tables, graphs, and equations.
6.NR.2 Apply operations with whole numbers, fractions and decimals within relevant applications.
7.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.

Gifted Standards

Strand 2: Creative Thinking Skills
Students will develop and utilize creative thinking through a variety of products
and problem solving.
Strand 3: Higher Order Thinking and Problem Solving Skills
Students will develop and utilize critical thinking, higher order thinking, logical thinking and problem solving skills in various situations.
Strand 4: Advanced Communication and Collaboration Skills
Students will develop advanced communication and collaboration skills in
working toward a common goal with shared
accountability for the final outcome.

Concepts/Skills to support mastery of standards

7.PAR.4: Recognize proportional relationships in relevant, mathematical problems; represent, solve, and explain these relationships with tables, graphs, and equations.			
Expectations		**Evidence of Student Learning** **(not all inclusive; see Grade Level Overview for more details)**	
7.PAR.4.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units presented in realistic problems.	***Strategies and Methods*** • Students should be able to solve problems involving unit rate presented in practical, everyday situations.	***Example*** • If a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $(\frac{1}{2})/(\frac{1}{4})$ miles per hour, equivalently 2 miles per hour.

7.PAR.4.2	Determine the unit rate (constant of proportionality) in tables, graphs (1, r), equations, diagrams, and verbal descriptions of proportional relationships to solve realistic problems.	***Age/Developmentally Appropriate*** • In seventh grade, students are expected to understand that unit rate and constant of proportionality are the same.	***Examples*** • Jennifer rides on a train for 6 hours and travels 360 miles. How many miles per hour does she travel? • Mary deposits $115 into her bank account every month, represented by the equation d = 115m. Identify the unit rate from this situation.
7.PAR.4.3	Determine whether two quantities presented in authentic problems are in a proportional relationship.	***Strategies and Methods*** • Students should be able to analyze and make decisions about relationships using proportional reasoning strategies, which may include but not limited to graphing on a coordinate plane and/or observing whether a graph is a straight line passing through the origin.	***Examples*** • If Tina uses 2 eggs to make 6 pancakes and Allison uses 4 eggs to make 12 pancakes, is this proportional? • Jane runs 12 miles in 2.5 hours. Sarah runs 14 miles 3.5 hours. Are Jane and Sarah running at the same rate? Justify your answer.
7.PAR.4.4	Identify, represent, and use proportional relationships.	***Strategies and Methods*** • Student should be able to identify, represent, and use proportional relationships between quantities using verbal descriptions, tables of values, equations, and graphs to model applicable, mathematical problems: translate from one representation to another. • Students should be able to model authentic, mathematical relationships involving constant rates where the initial condition starts at 0 using tables of values and graphs. • Students should be able to represent proportional relationships using equations.	***Example*** • If the total cost, t, is proportional to the number, n, of items purchased at a constant price, p, the relationship between the total cost and the number of items can be expressed as t = np.
7.PAR.4.5	Use context to explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.	***Example*** • Erik feeds stray cats near his house. A graph shows different amounts of cat food he puts out based on the number of cats near his house. Erik graphs point P to represent the unit rate. What does point P mean in terms of the situation? Cups of cat food per cat.	
7.PAR.4.6	Solve everyday problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	***Strategies and Methods*** • Students should have opportunities to use proportional reasoning to compute unknown lengths by setting up proportions in tables or equations, or they can reason about how the lengths compare multiplicatively. • Students should be able to determine the dimensions of figures when given a scale and identify the impact of a scale on actual length (one-dimension) and area (two–dimensions). Students should be able to identify the scale factor given two figures.	***Fundamentals*** • Students should be given opportunities to explore the concept of similarity informally when learning about scale drawings of geometric figures. They should be able to make informal connections between scale drawings and similarity.

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- Using a given scale drawing, students should be able to reproduce the drawing at a different scale. Students should understand that the lengths will change by a factor equal to the product of the magnitude of the two size transformations.
- Students should be given opportunities to explore the concept of similarity by exploring the congruence of corresponding angles and the proportions of corresponding side lengths of geometric figures using hands-on, concrete tools to understand similarity (i.e., patty paper, geometric software).

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<tr><td>7.PAR.4.7</td><td>Use similar triangles to explain why the slope, m, is the same between any two distinct points on a non-vertical line in the coordinate plane.</td><td colspan="2">

Strategies and Method

- Students should be able to use proportional reasoning to explain why the slope, *m*, is the same between any two distinct points.

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<tr><td>7.PAR.4.8</td><td>Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.</td><td>

Fundamentals

- Students should demonstrate a conceptual understanding of slope.
- Students should be able to use graphical reasoning to represent proportional relationships. The proportional relationships explored by students should represent practical, realistic situations.

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Examples

- Compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.
- Mark was looking to fertilize his lawn, which is 432 sq. ft. He read the packages of 2 different fertilizer bags to see how much should be used. Bag A stated 2 ounces per 4 square feet and Bag B can be represented using the table below:

Ounces	2	4	12
Square Feet	3	6	18

What is the unit rate for each bag? Which bag should Mark purchase for his lawn? Why?

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<tr><td>7.PAR.4.9</td><td>Use proportional relationships to solve multi-step ratio and percent problems presented in applicable situations.</td><td>

Strategies and Methods

- Students may use flexible strategies such as a + 0.05a = 1.05a with the understanding that adding a 5% tax to a total is the same as multiplying the total by 1.05.

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Terminology

- Simple interest – a quick and easy method of calculating the interest charge on a loan. Simple interest is determined by multiplying the daily interest rate by the principal by the number of days that elapse between payments. Simple Interest = (principal) * (rate) * (# of periods)
- Tax – money that people must pay to the government
- Markups and markdowns - increase and decrease in the amount of a quantity
- Gratuities - a tip given to a waiter, taxicab driver, etc.
- Commissions - a fee paid to an agent as compensation for completing a transaction

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<tr><td>7.PAR.4.10</td><td>Predict characteristics of a population by examining the characteristics of a representative sample. Recognize the potential limitations and scope of the sample to the population.</td><td colspan="2">

Strategies and Methods

- Students can generate questions about things they notice and wonder from a relevant situation. Questions posed should be ones that requires data that will vary.
- Students should have opportunities to create and answer statistical investigative questions about a population by collecting data from a representative sample, using random sampling techniques to collect the data.
- Students should be able to create a statistical investigative question that can be answered by gathering data from practical situations and determine strategies for gathering data to answer the statistical investigative question.
- Potential limitations may include how the sample was selected and/or how the questions were asked.

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7.PAR.4.11	Analyze sampling methods and conclude that random sampling produces and supports valid inferences.	***Strategies and Methods*** • Students should have opportunities to critique examples of sampling techniques. • Students should conclude when conditions of sampling methods may be biased, random, and not representative of the population.	
7.PAR.4.12	Use data from repeated random samples to evaluate how much a sample mean is expected to vary from a population mean. Simulate multiple samples of the same size.	***Fundamentals*** • Students should use sample data collected to draw inferences.	***Examples*** • Estimate the mean word length in a book by randomly sampling words from the book. Gauge how far off the estimate is from the actual mean. • Predict the winner of a school election based on randomly sampled survey data. Gauge how far off the prediction might be.

Vocabulary

K12 Mathematics Glossary

Unit rate
Constant of proportionality
Slope
Proportional relationships
Scale drawing
Similar triangles
Population
Representative sample
Mean
M.A.D.

Notation

Key concept	Related concept(s)	Global context
Relationships The connections and associations between properties, objects, people and ideas.	**Equivalence, Simplification**	**Globalization and Sustainability**
Statement of inquiry		
Identifying proportional relationships can help simplify decision-making.		
Inquiry questions		

Factual— What strategies can be used to compare ratios? What information do I get when I compare two numbers using a ratio? What conditions help to recognize and represent proportional relationships between quantities? Explain how to use similar triangles to calculate the slope?

Conceptual— How do I interpret a unit rate (using words and mathematically)? What kinds of problems can I solve by using ratios? How is the unit rate represented in tables, graphs, equations, and diagrams? How is unit rate computed in real world problems? How are ratios and their relationships used to solve real world problems? How are proportional relationships used to solve multi-step ratio and percent problems? How do equations represent proportional relationships?

Debatable— What is the best way to represent a quantity in the real world?

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: Knowing and Understanding Criterion B: Investigating Patterns Criterion C: Communication Criterion D: Applying Mathematics in Real Life Contexts	Students will be expected to develop proportional relationships through the analysis of graphs, tables, equations, and diagrams. Students will be expected to develop to gain a deeper understanding of scale drawing and how to use the slope as the unit rate.	**Formative Assessment(s):** Unit 3 CFA Part A: Proportional Relationships/Unit Rates Unit 3 CFA Part B: Percentages/Inferences **Summative Assessment(s):** MYP: Which boat should Captain Jack Sparrow use to escape? Unit 3 Part A Summative Unit 3 Part B Summative

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:** Draw reasonable conclusions and generalizations.

Learning Experiences Add additional rows below as needed.		
Objective or Content	**Learning Experiences**	**Personalized Learning and Differentiation**
7.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. 7.PAR.4 Recognize proportional relationships in relevant, mathematical problems; represent, solve, and explain these relationships with tables, graphs, and equations. • 7.PAR.4.7 Use similar triangles to explain why the slope, m, is the same between any two distinct points on a non-vertical line in the coordinate plane. • 7.PAR.4.8 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.	CLE: Developing Slope	In this learning plan, students will understand the connections between proportional relationships, lines, and the equations used to represent the proportional relationship. Students will investigate the relationship patterns that exist between the triangles created on the graph of a proportional relationship.
7.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. ● 7.PAR.4 Recognize proportional relationships in relevant, mathematical problems; represent, solve, and explain these	CLE: Coupon Decisions	In this learning plan, the students will compare coupons to determine which will provide the better deal and why.

relationships with tables, graphs, and equations. • 7.PAR.4.9 Use proportional relationships to solve multi-step ratio and percent problems presented in applicable situations.relationships with tables, graphs, and equations		

Content Resources
Intervention Tasks • Comparing by Finding Rates (7.PAR.4.2 7.PAR.4.3 7.PAR.4.4) NCTM Illuminations GaDoe Framework Savvas:**6-11 Savvas Correlation to 2021 standards**