7th Grade Unit 3: Exploring Ratios & Proportional Relationships

Overview:

In the third unit of seventh-grade math, students will apply their knowledge of unit rates in practical situations, solving problems and representing unit rates through graphs, tables, equations, and diagrams. They will deepen their understanding of ratios, exploring proportional relationships to address real-world problems using various strategies. Additionally, students will use similar triangles to explain slope, graph proportional relationships, and informally interpret unit rates as the slope of the related line. They will distinguish proportional relationships from others and employ proportional reasoning to explain why the slope remains consistent between any two points in a similar triangle.

Learning Targets:

In Unit 3, students will:

- 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.
- Determine the unit rate (constant of proportionality) in tables, graphs (1, r), equations, diagrams, and verbal descriptions of proportional relationships to solve realistic problems.
- Determine whether two quantities presented in authentic problems are in a proportional relationship.
- Identify, represent, and use proportional relationships.
- Use context to explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation.
- Solve everyday problems involving scale drawings of geometric figures.
- 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.
- Graph proportional relationships, interpreting the unit rate as the slope of the graph.
- Use proportional relationships to solve multi-step ratio and percent problems presented in applicable situations.
- Predict the characteristics of a population by examining the characteristics of a representative sample.
- Analyze sampling methods and conclude that random sampling produces and supports valid inferences.

Key Vocabulary: (linked to GA DOE Interactive Glossary)

Constant of Proportionality	Equivalent Fractions	Fraction	Non-vertical line
Proportion	Ratio	Scale Drawing	Scale Factor
Similar Triangle	Slope	Steepness	Unit Rate

Supporting Resources:

http://ctlslearn.cobbk12.org/	Ratios
https://gavirtual.instructure.com/courses/34330	Proportions
Similar Figures	Equivalent Fractions
Identifying Constant of Proportionality Graphically	Slope