**Lucile Erwin Middle School an IB World School Subject: Math Level 2/Grade 7 Teachers: Kathryn Baeverstad, Steven Rauer, Ben Egger**

### Unit 3 - Linear Comparison

Modeling explorations of patterns between rational quantities provides connections to the real world.

### Key Concepts

**Representational:** The manner in which something is presented.

**Simplification:** The process of reducing to a less complicated form.

**Equivalence:** Quantity. An amount or number.

**Modeling:** Depictions of a real-life event using expressions, equations, or graphs.

### Related Concepts

**Scientific and technical innovation:** Students will explore the natural world and its laws; the interaction between people and the natural world; how humans use their understanding of scientific principles; the impact of scientific and technological advances on communities and environments; the impact of environments on human activity; how humans adapt environments to their needs.

Possible explorations to develop:
- Numbers, methods, real-world applications
- Scientific and technical innovation
- How do we understand the worlds in which we live?
- Students will explore the natural world and its laws; the interaction between people and the natural world; how humans use their understanding of scientific principles; the impact of scientific and technological advances on communities and environments; the impact of environments on human activity; how humans adapt environments to their needs.

Possible explorations to develop:
- Systems, models, methods

### Global Context

**Through the use of numbers, technologies and real-world applications, relationships between representations can be explored.**

Modeling explorations of patterns between rational quantities provides connections to the real world.

### Statement of Inquiry

- **Criteria A – Knowing and Understanding Students must know and understand the concepts and skills of the prescribed framework in mathematics.**
- **Criteria B – Investigating Patterns Through investigation students become risk takers, innovators, and critical thinkers. Classroom work with groups in real-life situations.**

### Objectives

**reasoning (logic) about the equivalence of quantities provides access to understanding of differences.**

Connections between quantities are discovered through modeling processes and solutions.

### Measurement of dimensional space, through scale and variability, allows for understanding of structures and shapes (form).
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<th>Content</th>
<th>Add and subtract integers and rational numbers. Apply properties of operations as strategies to perform operations with rational numbers. Solve problems involving the four operations with rational numbers. Multiply and divide rational numbers. Understand that rewriting expressions in different forms can show how the quantities are related. Solve two-step equations. Compare algebraic solutions to arithmetic solutions. Solve two-step inequalities involving integers and rational numbers.</th>
<th>Add, subtract, factor, and expand linear expressions with rational coefficients. Use proportional reasoning to solve multistep ratio problems. Use scale drawings to compute actual lengths and areas and reproduce a scale drawing at a different scale.</th>
<th>Draw geometric shapes with given conditions, focusing on triangles. Solve problems involving the area and circumference of a circle. Understand pi and its estimates. Use facts about supplementary, complementary, vertical, and adjacent angles. Solve real-world and mathematical problems involving area of two-dimensional objects.</th>
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<td>Understand representative samples (random samples) and populations. Use proportionality to solve multistep percent problems. Solve percent problems involving percents of increase and decrease, and simple interest. Compare fractions, decimals, and percents. Use samples to draw inferences about populations. Compare two populations from random samples using measures of center and variability. Find unit rates associated with ratios of fractions, areas, and other quantities in like or different units. Decide whether two quantities are proportional. Using ratio tables and graphs, identify the constant of proportionality in tables, graphs, equations, diagrams, and verbal descriptions. Represent proportional relationships with equations. Use proportional reasoning to solve multistep ratio problems. Use scale drawings to compute actual lengths and areas and reproduce a scale drawing at a different scale.</td>
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