Unit 1c-Analyze and Use Proportional Relationships

Content Area: **Math**
Course(s): **Math 7 PRE-ALGEBRA**
Time Period: **Marking Period 1**
Length: **Weeks 8-10 Envision Mathematics Topic 3**
Status: **Published**

Essential Questions

- How can you recognize and represent proportional relationships and use them to solve problems?

Big Ideas

- Analyze proportional relationships and use them to solve real-world and mathematical problems.
- Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams and verbal descriptions of proportional relations

CSDT Technology Integration

8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.

8.1.8.AP.1: Design and illustrate algorithms that solve complex problems using flowcharts and/or pseudocode

8.1.8.AP.4: Decompose problems and sub-problems into parts to facilitate the design, implementation, and review of programs.

Activity:

Using Desmos, the students played a Polygraph game with linear functions. Each student was randomly paired with another student in the class. The students would take turns picking a line. The student who picked the line would have to answer questions about the line. The student who was asking questions would ask questions in order to determine which graph was chosen. The questions were related to the different kinds of slope; positive, negative, undefined and zero. This game is similar to “Guess Who?”.

Enduring Understandings

Ratios and Proportional Relationships

7.RP.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour,

compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.

7.RP.2 Recognize and represent proportional relationships between quantities.

7.RP.2a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

7.RP.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

7.RP.2c Represent proportional relationships by equations. For example, if 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 = pn.

7.RP.3 Use proportional relationships to solve multistep ratio and percent problems.

Mathematical Practices Focus

1. Make sense of problems and persevere in solving them. Lesson 1,3,6, page 115

2. Reason abstractly and quantitatively. Lesson 2,3,4,5,6, page 115

3. Construct viable arguments and critique the reasoning of others. Lesson 1,2,3,4,5, page 115

4. Model with mathematics. Lesson 4,5, page 115

5. Use appropriate tools strategically. Lesson 6 page 115

6. Attend to precision. Lesson 1,2,4

7. Look for and make use of structure. Lesson 1,2,3,5,6m page 115

8. Look for and express regularity in repeated reasoning. Lesson 1,3,4, page 115