

South Park School District		Lesson Plan	2015-2016
<b>Dates</b>	This unit consists of approximately 9 days of instruction, review, and assessment.	<b>Course/Grade</b>	7 <sup>th</sup> Grade Math
<b>Unit</b>	Ratios and Proportional Relationships Unit 2 Part 1	<b>Teacher</b>	<b>Mrs. Radomski</b>
<b><u>Essential Questions (Maximum 2):</u></b>  <b>How can rates and proportions be used to solve real-world problems?</b>  <b>Explain how proportions are used to represent direct relationship and inverse relationships.</b>			
<b><u>Pennsylvania State Standards: (Mathematics)</u></b>  <b>M07.A-R.1.1.1</b> Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.  <b>M07.A-R.1.1.2</b> Determine whether two quantities are proportionally related (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).  <b>M07.A-R.1.1.3</b> Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.  <b>M07.A-R.1.1.4</b> Represent proportional relationships by equations.  <b>M07.A-R.1.1.5</b> 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.  <b>M07.A-R.1.1.6</b> Use proportional relationships to solve multi-step ratio and percent problems.  <b>M07.B-E.2.3.1</b> Determine the reasonableness of an answer(s), or interpret the solution(s) in the context of the problem.			
<b><u>Pennsylvania State Common Core Standards: (Mathematics)</u></b>  <b>2.1 Numbers and Operations</b>  <b>CC.2.1.7.D.1</b> Analyze proportional relationships and use them to model and solve real-world and mathematical problems.  <b>CC.2.1.HS.F.1</b> Apply and extend the properties of exponents to solve problems with rational exponents.  <b>2.2 Algebraic Concepts</b>  <b>CC.2.2.7.B.3</b> Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.			

## **Pennsylvania State Common Core Standards: (English Language Arts)**

### **1.2 Reading Informational Text**

**Students read, understand, and respond to informational text—with an emphasis on comprehension, vocabulary acquisition, and making connections among ideas and between texts with focus on textual evidence.**

CC.1.2.7.A

Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.

CC.1.2.7.B

Cite several pieces of textual evidence to support analysis of what the text says explicitly, as well as inferences, conclusions, and/or generalizations drawn from the text.

CC.1.2.7.F

Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative, connotative, and technical meanings.

CC.1.2.7.J

Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

CC.1.2.7.K

Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.

CC.1.2.7.L

Read and comprehend literary nonfiction and informational text on grade level, reading independently and proficiently.

### **1.3 Reading Literature**

**Students read and respond to works of literature—with an emphasis on comprehension, vocabulary acquisition, and making connections among ideas and between texts with a focus on textual evidence.**

CC.1.3.7.B

Cite several pieces of textual evidence to support analysis of what the text says explicitly, as well as inferences, conclusions, and/or generalizations drawn from the text.

CC.1.3.7.F

Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative, connotative meanings.

CC.1.3.7.I

Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.

## **1.4 Writing**

**Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.**

### **CC.1.4.7.A**

**Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information clearly.**

### **CC.1.4.7.C**

Develop and analyze the topic with relevant facts, definitions, concrete details, quotations, or other information and examples; include graphics and multimedia when useful to aiding comprehension.

### **CC.1.4.7.D**

Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.

### **CC.1.4.7.F**

Demonstrate a grade appropriate command of the conventions of Standard English grammar, usage, capitalization, punctuation, and spelling.

### **CC.1.4.7G**

**Write arguments to support claims.**

### **CC.1.4.7.I**

Acknowledge alternate or opposing claims and support claim with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic.

### **CC.1.4.7.J**

Organize the claim(s) with clear reasons and evidence clearly; clarify relationships among claim(s) and reasons by using words, phrases, and clauses to create cohesion; provide a concluding statement or section that follows from and supports the argument presented.

### **CC.1.4.7.L**

Demonstrate a grade appropriate command of the conventions of Standard English grammar, usage, capitalization, punctuation, and spelling.

## **1.5 Speaking and Listening**

**Students present appropriately in formal speaking situations, listen critically, and respond intelligently as individuals or in group discussions.**

### **CC.1.5.7.A**

Engage effectively in a range of collaborative discussions, on grade-level topics, texts, and issues, building on others' ideas and expressing their own clearly.

### **CC.1.5.7.D**

Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.

### **CC.1.5.7.G**

Demonstrate command of the conventions of Standard English when speaking based on Grade 7 level and content.

## **Skills**

- Identify, Write, & Compare Ratios
- Find & Compare Unit Rates
- Determine the Slope of a Line
- Recognize Constant & Variable Rates of Change
- Find Equivalent Ratios & Identify Proportions
- Solve Proportions by Using Cross Product
- Use Ratios to Determine if 2 Figures are Similar
- Use Similar Figures to Find Unknown Lengths
- Understand Ratios & Proportions in Scale Drawings
- Learn to Use Ratios & Proportion & Scale

## **Assessments**

- |  |  |
|--|--|
| <input type="checkbox"/> Tests                                 | <input type="checkbox"/> Peer Evaluation |
| <input type="checkbox"/> Quizzes                               | <input type="checkbox"/> Rubric Scoring  |
| <input type="checkbox"/> Worksheets                            | <input type="checkbox"/> Group Grade     |
| <input type="checkbox"/> Homework                              | <input type="checkbox"/> Other           |
| <input type="checkbox"/> Teacher Observation                   |  |
| <input type="checkbox"/> Student Writing                       |  |
| <input type="checkbox"/> Student Presentations                 |  |
| <input type="checkbox"/> Student Projects                      |  |
| Scale Drawing Project  |  |
| <input type="checkbox"/> Student Written Response (reflection) |  |

## **Resources**

- ☐ Textbook  
**Go Math! Grade 7 Accelerated**  
**Scholastic Math Magazine**
- ☐ Supplementary Materials  
Materials listed on Unit Lesson Plans
- ☐ Workbook/Worksheets
- ☐ Teacher-prepared materials
- ☐ Individual Title (Name)
- ☐ Technology  
**Google Classroom**  
**Online Textbook**  
**Chrome books**  
**Khan Academy**

- ☐ Other

### **Modified homework and assessments**

Intervention and Enrichment worksheets to help reinforce difficult concepts presented or to engage in higher-level applications of concepts. Engage in higher-level applications of concepts.

### **Special Education Adaptations/Modifications:**

- Adapted/modified assignments and/or assessments for gifted / enriched students
- Follow IEP / 504 / GIEP / SDI accommodations as documented

### **Differentiated Instruction / SGI Activities:**

- Critical Thinking – Open-ended class discussion
- Cooperative learning
- Peer lead grouping
- Problem-solving activities

### **Reading & Writing:**

- Non-fiction reading excerpts that include writing prompts and multiple choice questions – monthly Scholastic Math Magazines and unit related articles

Math 7  
Mrs. Radomski  
Unit 2 Part 1– Ratios and Proportional Relationships (9 days)

Unit Order  Date	Lessons and Objectives Bell Ringer	Activities / Materials / Assessments / <u>Homework</u>
<b>1 of 9</b>  10/10/16	Ratios and Proportions <i>Students find equivalent ratios to create proportions.</i>  <b>Warm-up Question:</b> What are ratios? {comparison of two quantities by division/compare a part to a whole}	<ul style="list-style-type: none"> <li>▪ Pass back and go over the Unit 1 Number System Test</li> <li>▪ Go over the first part of the Introduction to Unit 2 Notes</li> <li>▪ Go over the Unit 2 Practice A WS together</li> <li>▪ Have the students complete the Unit 2 Practice B WS and Problem Solving WS</li> <li>▪ Go over the answers when the students finish</li> <li>▪ Finish the Introduction to Unit 2 Notes</li> <li>▪ Have the students complete the How are Ratios and Rates Related? WS</li> <li>▪ Go over the answers when the students finish</li> </ul> <p><b>HW: Complete the Simplify Ratio: Word Problems WS</b></p>
<b>2 of 9</b>  10/11/16	Unit Rates and Unit Prices <i>Students will compute unit rates and unit prices in real-world situations.</i>  <b>Warm-up Question:</b> What are the three ways to write ratios? {fraction, colon, to}	<ul style="list-style-type: none"> <li>▪ Check and go over the homework (Simplify Ratio: Word Problems WS )</li> <li>▪ Go over the What is a Unit Rate? Notes</li> <li>▪ Have the students complete the What is a Unit Rate? WS and go over the answers when the students finish</li> <li>▪ Go over the How Can Two Unit Rates Be Compared? Notes</li> <li>▪ Go over the Unit Price WS together</li> <li>▪ Have the students work on pg. 120-122 #1-16.</li> </ul> <p><b>HW: Complete pg. 120-122 #1-16</b></p>
<b>3 of 9</b>  10/12/16	Solving Proportions <i>Students will be able to solve proportions.</i>  <b>Warm-up Question:</b> What are the two ways to determine if ratios are proportionate? {cross multiply or reduce}	<ul style="list-style-type: none"> <li>▪ Check and go over the homework (pg. 120-122 #1-16)</li> <li>▪ Go over the Solving Proportions Notes</li> <li>▪ Go over the Unit 2 Solving Proportions Practice A and B WS together</li> <li>▪ Have the students complete the Proportions Review Packet with their partners</li> <li>▪ Go over the answers when the students finish</li> </ul> <p><b>HW: None</b></p>

<p><b>4 of 9</b>  10/13/16</p>	<p>Unit 2 Section 4.1 Check Point <i>Students discuss and demonstrate understanding of previous lessons by working on a graded spiral assessment.</i></p> <p>Constant Rates of Change <i>Students will be able to identify and represent proportional relationships.</i></p> <p><b>Warm-up Question:</b> Any questions before we start the quiz? {Answers will vary}</p>	<ul style="list-style-type: none"> <li>▪ Have the students complete the Unit 2 Section 4.1 Check Point</li> <li>▪ Once the students finish, they should work on Khan Academy until everyone finishes</li> <li>▪ When everyone is done, we will go over the What Makes a Relationship Proportional? Notes</li> <li>▪ Have the students complete pg. 127-128 #5-17 and go over the answers when they finish</li> </ul> <p><b>HW: Complete What Makes A Relationship Proportional? WS</b></p>
<p><b>5 of 9</b>  10/14/16</p>	<p>Constant Rates of Change <i>Students will be able to identify and represent proportional relationships.</i></p> <p><b>Warm-up Question:</b> What makes a relationship proportional? {they have to have a constant relationship represented by <math>y = kx</math>}</p>	<ul style="list-style-type: none"> <li>▪ Check and go over the homework (What Makes A Relationship Proportional? WS)</li> <li>▪ Go over the How Can Relationships Be Compared? Notes <ul style="list-style-type: none"> <li>◦ SGI Group 1: Proportional vs. Non-Proportional Card Sort Activity (Partners)</li> <li>◦ SGI Group 2: How Can Relationships Be Compared? WS (Teacher will assist this group)</li> <li>◦ SGI Group 3: "He Said, She Said" Constant of Proportionality Activity (Groups)</li> </ul> </li> </ul> <p><b>HW: Complete any of the activities not completed in class</b></p>
<p><b>6 of 9</b>  10/17/16</p>	<p>Proportional Relationships and Graphs <i>Students will decide whether two quantities are in a proportional relationship 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.</i></p> <p><b>Warm-up Question:</b> On a coordinate plane, what do you call the point (0,0)? {Origin}</p>	<ul style="list-style-type: none"> <li>▪ Pass back and go over the activities from yesterday</li> <li>▪ Go over the Coordinate Plane Review Notes and Examples</li> <li>▪ Go over the How Can Proportional Relationships Be Graphed? Notes</li> <li>▪ Go over the Unit 2 Section 4.3 WS together</li> <li>▪ Have the students work on the Proportional Tables and Graphs Activity with their partner.</li> <li>▪ When they are done, they should work on the How Can Proportional Relationships Be Graphed? WS</li> </ul> <p><b>HW: Complete the How Can Proportional Relationships Be Graphed? WS</b></p>

<b>7 of 9</b>  10/18/16	Representation of Proportional Relationships <i>Students will be able to identify the constant of proportionality in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</i>  <b>Warm-up Question:</b> When would it be more useful to represent a proportional relationship with a graph rather than an equation? {When comparing two relationships, the comparison may be easier to see on a graph}	<ul style="list-style-type: none"> <li>Check and go over the homework (How Can Proportional Relationships Be Graphed? WS)</li> <li>Go over the How Are Proportional Relationships Represented? Notes</li> <li>Have the students complete pg. 132 #1-7, 15-18, 20-21 and go over when they finish</li> <li>Have the students complete the Proportional Relationships Card Match Activity in small groups</li> <li>When they are done, they should complete the How Are Proportional Relationships Represented? WS</li> </ul> <p><b>HW: Complete the How Are Proportional Relationships Represented? WS</b></p>
<b>8 of 9</b>  10/19/16	Cumulative Review of Unit 2 Part 1 Objectives. <i>Students will be able to review the concepts taught in this unit.</i>  <b>Warm-up Question:</b> On a recent day, 8 euros were worth \$9 and 24 euros were worth \$27. Write an equation of the form $y=kx$ to show the relationship between the number of euros and the value of dollars. { $y = 1.125x$ }	<ul style="list-style-type: none"> <li>Check and go over the homework (How Are Proportional Relationships Represented? WS)</li> <li>Have the students take the Proportional Relationships Quiz</li> <li>Small Group Instruction <ul style="list-style-type: none"> <li>SGI Group 1: Proportional Relationships Stations to review the concepts taught in this unit (Groups of 3-4)</li> <li>SGI Group 2: Unit 2 Part 1 Review Sheet WS to review the concepts taught in this unit (Partners)</li> </ul> </li> </ul> <p><b>HW: Study for the Unit 2 Part 1 Test tomorrow</b></p>
<b>9 of 9</b>  10/20/16	Unit 2 Part 1 Test <i>Students are individually evaluated on their understanding of the objectives in Unit 2 Part 1.</i>  <b>Warm-up Question:</b> Any questions before we start the test? {Answers will vary}	<ul style="list-style-type: none"> <li>Give the students a final chance to ask any questions they have about the material that will be covered on the test</li> <li>Have the students complete the Unit 2 Part 1 Test</li> <li>When the students finish the test, they should work on Khan Academy on their Chrome Books</li> </ul> <p><b>HW: None</b></p>
<b>Extra Day</b>  10/21/16	CDT Testing <i>Students will complete the online CDT Testing</i>  <b>No Warm-up Question</b>	<ul style="list-style-type: none"> <li>Students will complete the online CDT Tests</li> </ul> <p><b>HW: None</b></p>