



## PROJECT 2: Ratios, Rates, and Real Estate Oh My. . . .

**Level:** Sixth Grade

**Subject:** Mathematics

This project focuses on understanding and applying unit rates (comparing a quantity to one unit of another quantity) to common practices in society. Students are expected to understand rates (ratios of two quantities with different units) and how to calculate rates (e.g., unit pricing and constant speed). This project requires students to use their knowledge and application of rates in the world of real estate and specifically how absorption rates (i.e., dividing the number of sales by number of available homes) impact various communities by influencing short-term and long-term appraisals. The project concludes with a one-day problem on applying the same math content in a different context. For instance, the project asks student to identify the absorption rates of different brands of paper towels and how such information may impact consumer decision making.

### Key Standards

#### **CCSS.MATH.CONTENT.6.RP.A.1**

Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

#### **CCSS.MATH.CONTENT.6.RP.A.2**

Understand the concept of a unit rate  $a/b$  associated with a ratio  $a:b$  with  $b \neq 0$ , and use rate language in the context of a ratio relationship.

#### **CCSS.MATH.CONTENT.6.RP.A.3**

Use tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

#### **MATHEMATICAL PRACTICES**

All Mathematical Practices are covered.

PHASE 1	PHASE 2	PHASE 3	PHASE 4
<ul style="list-style-type: none"><li>• Launch project.</li><li>• Conduct pre/postassessment.</li><li>• Go through Know/Need to Know list.</li></ul>	<ul style="list-style-type: none"><li>• Engage in surface workshops.</li><li>• Begin completing major tasks at surface level.</li></ul>	<ul style="list-style-type: none"><li>• Engage in deep-learning workshops.</li><li>• Postassessment</li><li>• Begin completing major tasks at deep level.</li></ul>	<ul style="list-style-type: none"><li>• Presentation</li><li>• Reflection</li><li>• Provide new context for students to discuss.</li></ul>

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PROJECT DESIGN		
<b>STEP 1: Learning Intention(s)</b>		
<ul style="list-style-type: none"> <li>I can use rates and unit rates to solve problems.</li> <li>I can express rates and unit rates to solve problems using models, tables, and line drawings.</li> </ul>		
<b>STEP 2: Success Criteria</b>		
Surface	Deep	Transfer
<ul style="list-style-type: none"> <li>Define <i>rate, unit rate, unit pricing, ratio, constant speed, average speed</i>.</li> <li>Solve unit rate problems using one method.</li> <li>Describe unit rate problems using a visual representation.</li> </ul>	<ul style="list-style-type: none"> <li>Relate rate terms.</li> <li>Solve unit rate problems using different methods (multiplication expression or division expression).</li> <li>Relate models, tables, and line drawings to unit rate problems.</li> </ul>	<ul style="list-style-type: none"> <li>Apply models, tables, and line drawings to various contexts in which rates and unit rates are germane.</li> </ul>
<b>STEP 3: Driving Question(s)</b>		
How do rates enable people to make decisions (such as housing appraisals in your local community)?		
Context		
<ul style="list-style-type: none"> <li>Absorption rates (e.g., paper towels, real estate)</li> <li>Heart rate (monitoring)</li> </ul>		
<b>STEP 4: Tasks</b>		
Surface	Deep	Transfer
<ul style="list-style-type: none"> <li>Complete a number talk expressing different ways to find ratios.</li> <li>Present to others how ratios compare two quantities that have the same unit.</li> <li>Solve rate problems numerically and verbally.</li> </ul>	<ul style="list-style-type: none"> <li>Compare and contrast different ways (models) to represent rates.</li> <li>Show processes and solutions to rate problems using different methods to represent data.</li> </ul>	<ul style="list-style-type: none"> <li>Present multiple representations of rates to an audience to help inform decision making.</li> </ul>
<b>STEP 5: Entry Event</b>		
Scenario . . . Local community real estate		
Expectations . . . Use multiple representations of rates to influence decision making.		
Patron . . . Home buyers, sellers, and real estate agents		
Format . . . Presentation from real estate agent—Preview online Huffington Post article “What Is Absorption Rate in Real Estate and Why Is It Important?”		
<b>WORKSHOPS</b>		
Surface	Deep	Transfer
<ul style="list-style-type: none"> <li>Direct instruction workshop: What is a rate? How is it calculated? How can one convey a rate?</li> </ul>	<ul style="list-style-type: none"> <li>Provide direct modeling of a rate problem using multiple methods of representation. Students practice in triads to solve a rate problem and demonstrate the solution using different representations. Present representations to the larger class using academic vocabulary.</li> </ul>	<ul style="list-style-type: none"> <li>Critical Friends Team feedback on real estate models</li> <li>Compare and contrast absorption of paper towels with absorption of real estate.</li> </ul>

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PROJECT CALENDAR					
	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1 <i>[Phase 1 and Phase 2]</i>	Project launch preassessment	Surface workshops What are rates?	Surface Rate calculations Different interpretations	Practice/feedback	Review Know/Need to Know list. Surface workshops Practice Feedback
Week 2 <i>[Phase 2 and Phase 3]</i>	Deeper workshop Relationships Modeling practice	Deeper workshop Relationships Modeling practice	Deeper workshop Relationships Modeling practice	Deeper workshop Relationships Modeling practice	Postassessment review Know/Need to Know list
Week 3 <i>[Phase 3 and Phase 4]</i>	Review real estate problem.	Transfer workshop— Reviewing models. Critical Friends Team review with others.	Present to local community.	Transfer workshop Transfer understanding of learned concept (i.e., rate) to a new context.	Reflections

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