

Grade 6
Math Unit 2
Canterbury Public Schools

Subject	Math
Grade Level	6
Unit Title	What are Ratios?
Unit Goals	<p>Comprehend the word ratios and the notation $a:b$ to refer to an association between quantities</p> <p>Describe associations between quantities using the language “For every a of these, there are b of those and the ratio of these to those is $a:b$ or. a to b.”</p> <p>Describe two quantities at the same time</p> <p><u>Equivalent Ratios</u></p> <p>Recipes: draw and label a discrete diagram with circled groups to represent multiple batches of a recipe</p> <p>Explain equivalent ratios in terms of different sized batches of the same recipe having the same taste</p> <p>Understand that doubling or tripling a recipe involves multiplying the amount of each ingredient by the same number</p> <p><u>Representing Equivalent Ratios - Introducing Double Number Line Diagrams</u></p> <p>Compare and contrast discrete diagrams and double number line diagrams representing the same situation</p> <p>Explain how to use a double number line to find equivalent ratios</p> <p>Label and interpret a double number line diagram that represents a familiar context</p> <p>Calculate equivalent ratios between prices and quantities and present the solution method.</p> <p>Understand the phrase, at this rate” to indicate that equivalent ratios are involved</p> <p><u>Solving Ratio and Rate Problems- using tables</u></p> <p>Comprehend the words <i>row and column</i> as they are used to describe a table of equivalent ratios</p> <p>Explain how to find a missing value in a table of equivalent ratios</p> <p>Interpret a table of equivalent ratios that represents different sized batches</p> <p><u>Part -Part Whole</u></p> <p>Draw and label a tape diagram to solve problems involving ratios and the total amount</p> <p>Explain the solution method</p>

	<p><u>Let's Put it to Work</u></p> <p>Apply reasoning developed throughout this unit to and unfamiliar problem</p> <p>Decide what information is needed to solve a real-world problem</p> <p>Make simplifying assumptions about a real-world situation</p>
Pacing (# of weeks)	6 - 8 weeks
Standards	<p>6.RP.A.1, Understand the concept of ratio and use ratio language to describe a ratio relationship between two quantities.</p> <p>6.RP.A.1: Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.</p> <p>6.RP.A.2: Understand the concept of a unit rate associated with a ratio and use rate language in the context of a ratio relationship.</p> <p>6.RP.A.3: Use ratio and rate reasoning to solve real-world and mathematical problems, including:</p> <ul style="list-style-type: none"> • Using tables of equivalent ratios • Solving unit rate problems • Finding missing values in ratio tables • Using diagrams and equations
Content/Conceptual Knowledge (know)	<p>Definitions of ratio, rate, and unit rate.</p> <p>That ratio compares two quantities and can be written in multiple forms (e.g., 3 to 2, 3:2, $\frac{3}{2}$).</p> <p>How to identify part-part, part-whole, and whole relationships in ratio contexts.</p> <p>That tables and diagrams can represent ratio relationships and help solve problems.</p> <p>What it means to double or triple a recipe</p>

	<p>Strategies for problem solving “rate” questions</p> <p>Whether or not two situations are happening at the same time</p>
Skills (be able to do)	<p>Write or say a sentence that describes a ratio.</p> <p>Know how to say words and numbers in the correct order to accurately describe the ratio</p> <p>Use ratio reasoning to analyze and solve real-world problems involving comparisons, quantities, and rates.</p> <p>Represent and communicate ratio relationships using words, diagrams, tables, and equations.</p> <p>Use and interpret ratio language to describe relationships.</p> <p>Create and analyze double number line diagrams and tape diagrams.</p> <p>Complete ratio tables and recognize patterns.</p> <p>Solve problems involving equivalent ratios and unit rates.</p> <p>Distinguish between part-part and part-whole ratios.</p> <p>Explain their reasoning and justify solutions using appropriate models.</p> <p>Explain the meaning of equivalent ratios using a recipe as an example</p> <p>Use a diagram to represent a recipe, a double batch, and a triple batch</p> <p>Label a double number line diagram to represent batches of a recipe or color mixture</p> <p>Choose and create diagrams to help compare two situations and explain whether they happen at the same rate</p> <p>Justify that two situations do not happen at the same rate by finding a ratio to describe each situation where the two ratios share one value by not the other</p> <p>Recognize that a question asking whether two situations happen at the same rate is asking whether the ratios are equivalent</p> <p>Explain how to find a missing value in a table of equivalent ratios</p> <p>Interpret a table of equivalent ratios that represents different size batches of a recipe</p> <p>Identify rows and columns</p> <p>Come up with numbers to make a new row</p> <p>Choose multipliers strategically while solving multi-step problems involving equivalent ratios</p> <p>Describe how a table of equivalent ratios was used to solve a problem about prices and quantities when I know a ratio and a total amount</p>

	<p>Create tape diagrams to help reason about problems involving a ratio and a total among</p> <p>Solve problems when I know a ratio and a total amount</p> <p>Apply what I have learned about ratios and rates to solve a more complicated problem</p> <p>Decide what information I need to know to be able to solve real-world problems about ratios and rates</p>
Essential Questions	<p>What is a ratio, and how can it describe relationships between quantities?</p> <p>How do different models (tables, diagrams) help us understand ratios?</p> <p>When and why is it helpful to use unit rates?</p> <p>How can I use ratios to solve real-world problems?</p> <p>What information is needed to solve a problem involving equivalent ratios and rates?</p>
Enduring Understandings	<p>A ratio shows the relative size of two quantities.</p> <p>Ratios can represent part-to-part, part-to-whole, and whole relationships.</p> <p>Tables, double number lines, and tape diagrams are tools that support ratio reasoning.</p> <p>Unit rates help compare quantities in "per 1" terms, which is helpful in daily life.</p> <p>Dividing by a whole number is the same as multiplying by an associated unit fraction</p>
Vocabulary	<p>Ratio, double number line diagram, per, meters per second, same rate, row, column, table, efficient, less efficient, more efficient, tape diagrams</p>

<p>Common Learning Experiences</p>	<p>Warm ups and cool downs</p> <p>Ratio Scavenger Hunt: Students find and label real-world examples of ratios (e.g., student to teacher, windows to desks).</p> <p>Double Number Line Walk: Students use masking tape on the floor to create and walk through scaled versions of double number lines.</p> <p>Ratio Table Challenge: In small groups, students race to complete tables showing equivalent ratios from given scenarios.</p> <p>Interactive Notebook Entry: Students create and color-code tape diagrams and ratio tables to keep as reference tools.</p> <p>Compare and Discuss: Students interpret the same situation using different representations (diagram vs. table vs. equation).</p> <p>Part-Part vs. Part-Whole Sort: Card sort activity identifying which ratios represent which type of relationship.</p> <p>Unit Rate Relay: Solve quick problems with changing units and run to post answers in a math relay format.</p> <p>Ratio Scavenger Hunt: Students find and label real-world examples of ratios (e.g., student to teacher, windows to desks).</p> <p>Lesson Syntheses daily Daily activities and tasks</p> <p>Participate in Fermi problems (Fermi Question: estimate and answer, smaller sub questions, looking for reasonability, organize smaller questions, label smaller questions in the order they should be answered, and pose additional questions if necessary. Create a visual display that includes the Fermi Problem and the solution.)</p>
<p>Assessments</p>	<p>Recipe Scaling Project: Students are given a recipe and must scale it up/down using ratios and unit rates, using multiple representations (table, double number line, and explanation).</p> <p>Sports Stats Analysis: Students analyze athlete or team stats and compare performances using unit rates and ratios.</p> <p>Other Evidence</p> <ul style="list-style-type: none"> Ratio word problems from IM curriculum

	<ul style="list-style-type: none"> • Partner work with double number line diagrams and tables • Short quizzes on identifying and using ratios • Exit tickets focused on reasoning and diagram use • Practice problems
Resources	Manipulatives - physical objects, snap cubes,
Strategies	Anticipate, monitor, sequence, select, connect Group presentations Compare and connect Think pair share Number talks Take turns True or False