

NJDOE MODEL CURRICULUM PROJECT

CONTENT AREA: Mathematics	GRADE: 6	UNIT #5	UNIT NAME: Ratio and Proportion
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#	STUDENT LEARNING OBJECTIVES	CORRESPONDING CCSS
1	Explain the relationship of two quantities or measures of a given ratio and use ratio language to describe the relationship between the two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” <i>“For every vote candidate A received, candidate C received nearly three votes.”</i>	6.RP.1
2	Use rate language in the context of a ratio relationship to describe a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$. For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar.” “We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.”	6.RP.2
3	Use ratio and rate reasoning to solve real world and mathematical problems which include making tables of equivalent ratios, solving unit rate problems, finding percent of a quantity as a rate per 100.	6.RP.3
4	Use ratio and rate reasoning to convert measurement units (manipulate and transform units appropriately when multiplying or dividing quantities).	6.RP.3
5	Use variables to represent two quantities that change in relationship to one another in a real world problem and write an equation to express one quantity, thought of as the dependent variable, in terms of another quantity, thought of as the independent variable.	6.EE.9
6	Analyze the relationship between the dependent and independent variables in an equation using graphs and tables. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.	6.EE.9

Major Content **Supporting Content** **Additional Content** (Identified by PARCC Model Content Frameworks).

Bold type indicates grade level fluency requirements. (Identified by PARCC Model Content Frameworks).

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Selected Opportunities for Connections to Mathematical Practices

- 1. Make sense of problems and persevere in solving them.**
SLO #5 Relating variables to real world context.
- 2. Reason abstractly and quantitatively.**
3. Construct viable arguments and critique the reasoning of others.
- 4. Model with mathematics.**
SLO #6 Use graphs and tables to represent a dependent/independent relationship.
5. Use appropriate tools strategically.
- 6. Attend to precision.**
SLO #4 Converting measures.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

All of the content presented at this grade level has connections to the standards for mathematical practices.

Bold type identifies possible starting points for connections to the SLOs in this unit.

Code #	Common Core State Standards
6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."
6.RP.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. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."
6.RP.3	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. <ol style="list-style-type: none"> a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

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	<p>b. Solve unit rate problems including those involving unit pricing and constant speed. <i>For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?</i></p> <p>c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.</p> <p>d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.</p>
6.EE.9	<p>Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.</p>

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