

Marking Period	Unit Title	Recommended Instructional Days
2	<b>Proportionality: Ratios and Rates</b>	<b>26 - 30</b>
<b>Domain</b>		
<p><i>Strand:</i></p> <p><b>6.RP.A.1</b> Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. <i>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.”</i></p> <p><b>6.RP.A.2</b> Understand the concept of a unit rate <math>a/b</math> associated with a ratio <math>a:b</math> with <math>b \neq 0</math>, and use rate language in the context of a ratio relationship. <i>For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is <math>3/4</math> cup of flour for each cup of sugar.” “We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.”</i></p> <p><b>6.RP.A.3</b> 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.</p> <p>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.</p> <p><b>6.RP.A.3</b> 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.</p> <p>b. Solve unit rate problems including those involving unit pricing and constant speed. 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?</p> <p><b>6.RP.A.3</b> 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.</p> <p>c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means <math>30/100</math> times the quantity); solve problems involving finding the whole, given a part and the percent.</p>		

**6.RP.A.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.

d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

**Key:**

 **Major Cluster**

 **Supporting Cluster**

 **Additional Cluster**

**Progress Indicator:** ◊ Tests ◊ Homework / Classwork ◊ Projects ◊ Formative assessments ◊ Summative assessments

**Mathematical Practices:**

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reason of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSL-CLKS within Unit**

**Essential Questions:**

**Module 6:**

How can you use ratios and rates to solve real-world problems?

How do you use ratios to compare two quantities?

How do you use rates to compare quantities?

How can a ratio be used to display patterns?

How can you use ratios and rates to make comparisons and predictions?

**Module 7:**

How can you use the ratios and rates to solve real-world problems?

How can you represent real-world problems involving ratios and rates with tables and graphs?  
How do proportions explain the relationship between quantities?  
How can you solve problems with proportions?  
How do you convert units within a measurement system?  
How can you use ratios and proportions to convert measurements?

**Module 8:**

How can you use the percents to solve real-world problems?  
What information and strategies would you use to determine a percent?  
How can you write a ratio as a percent?  
How can you write equivalent percents, fractions, and decimals?  
How do you use percents to solve problems?

**Essential Understandings:**

**Module 6:**

Ratios exist in everyday life.  
Ratios are a way of comparing two mathematical quantities.

**Module 7:**

Rates are a way of comparing two mathematical quantities.  
Proportional relationships exist in everyday life.  
Proportional relationships consist of more specific math concepts.

**Module 8:**

Fractions, decimals, and percents express a relationship between two numbers.

**Vocabulary:**

- equivalent ratios
- ratio
- rate
- unit rate
- proportion
- scale
- scale drawing
- conversion factor
- percent

*\*Encourage students to practice using the unit vocabulary as they talk and write about mathematics. Understanding vocabulary will aid their understanding of the concepts.*

**Suggested Activity Descriptions:**

- Grab any colorful manipulatives (color tiles, pattern blocks, snap cubes, etc) and have students create their own ratios. Give them a ratio of 4 blue to 3 green and ask them to produce an equivalent ratio. Ask students to share their ratios and strategies, and help students to connect them to scaling.
- Introduce rates by having your students do tasks with a partner (such as jumping jacks, push-ups, etc.) and then find their rate.
- For unit pricing, take a few real-life pictures next time you go shopping and let students find the unit price from your photos.
- Search the Illuminations website for the “Fraction Model Interactive” for a great visual tool of fractions, decimals, and percents.
- GoMATH Game 6.1 R-A-T-I-O on GoMATH page 154A.
- GoMATH Game 7.2 How Fast Can You Go? on GoMATH page 184A.
- GoMATH Game 8.2 Triple Equivalence on GoMATH page 214A.
- GoMATH Unit 3 Review Project: How Big is Big?

**◇ Suggested Sample Tasks:**

1. Sam is packing gift boxes with fruit. For each apple, he packs 3 plums and 5 oranges. If he puts 3 apples in a box, how many plums and oranges will Sam put in the box?
2. Ms. Torres bought a package of star stickers. Out of every 10 stars, 4 are gold. If there are 60 stars in the pack, what fraction of the stars in the pack are gold? What percent of the stars in the pack are gold?
3. The ratio of the number of mystery books to the number of science fiction books is 4:3. The ratio of the number of science fiction books to the number of biographies is 4:5. If there are 48 science fiction books, find the total number of books.

**Interdisciplinary Connections:**

**Social Studies:**

1. Performance Task: Careers in Math: Residential Builder on GoMATH page. 228.

**Language Arts:**

1. Vocabulary Preview Activity on GoMATH page 144.
2. Reading Start-Up Activities on GoMATH pages 146, 170, and 200.

**Spot Light On:** Dr. Aprielle Ericcson-Jackson

**Grade 6 Mathematics**  
**Unit 3: Proportionality: Ratios and Rates**

September  
2022

Social and Emotional Learning: <i>Competencies</i>		Social and Emotional Learning: <i>Sub-Competencies</i>	
SEL Competencies: <ul style="list-style-type: none"> <li>• Self-Awareness</li> <li>• Social Awareness</li> <li>• Self-Management</li> <li>• Relationship Skills</li> <li>• Responsible Decision-Making</li> </ul>		<ul style="list-style-type: none"> <li>• Recognizing the importance of self-confidence in handling daily tasks and challenges.</li> <li>• Demonstrate an awareness of the expectations for social interactions in a variety of ways.</li> <li>• Demonstrate an understanding of the need for mutual respect when viewpoints differ.</li> <li>• Identify and apply ways to persevere through alternative methods to achieve goals.</li> <li>• Utilize positive communication and social skills to interact effectively with others.</li> <li>• Develop, implement, and model effective problem solving and critical thinking skills.</li> </ul>	
<b>Assessments (Formative)</b> <i>To show evidence of meeting the standard/s, students will successfully engage within:</i>		<b>Assessments (Summative)</b> <i>To show evidence of meeting the standard/s, students will successfully complete:</i>	
<b>Formative Assessments:</b> • Teacher Observations • Exit Tickets • Quizzes • Self Assessments • Math Journals • Homework/Classwork • Teacher created assessments		<b>Benchmarks &amp; Summative Assessments:</b> • Chapter/Unit Assessments • Standardized Tests • District Assessments • Project-based Assessments	
<b>Differentiated Student Access to Content:</b> <b>Teaching and Learning <u>Resources/Materials</u></b>			
Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core Resources
Go Math Workbook, IXL, Personal Math Trainer, Math on the Spot Videos, My HRW, Khan Academy, Illustrative Mathematics, Learn360, TeacherTube, BrainPOP, Freckle, LearnZillion, MobyMax, 60 minutes of weekly ST Math, Edulastic, Achieve the Core, Desmos	Reteaching worksheets, Skill building workbook, Math manipulatives, Leveled practice worksheets	Dictionary for native language, Video tutorial in native language, Success for English Learners worksheets, GoMATH Leveled Strategies for English Learners, GoMATH Linguistic Support	ST Math Challenge Objectives, G&T tasks, Enrichment worksheets, Art of Problem Solving, Leveled assessments, GoMATH Teaching for Depth

**Supplemental Resources**

**Technology:**

• Chromebooks • Scientific/Graphing Calculators (upper grades only) • Online math manipulatives

**Other:**

• Google Classroom, Google Meets, Schoology, Interactive Workbooks • Illustrative Mathematics • insidemathematics.org • National Library of Virtual Manipulatives

**Differentiated Student Access to Content:  
 Recommended *Strategies & Techniques***

Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core
Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics.	Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks.	Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric.	Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect student to related content.

<b>NJSLS CAREER READINESS, LIFE LITERACIES &amp; KEY SKILLS</b>	<b>Disciplinary Concept(s):</b> Creativity and Innovation	
	<b>Core Ideas:</b>	Multiple solutions exist to solve a problem.
	<b>Performance Expectation/s:</b>	9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option.

	<b>Career Readiness, Life Literacies, &amp; Key Skills Practices</b>
	<p>Act as a responsible and contributing community member and employee.  Attend to financial well-being.  Consider the environmental, social and economic impacts of decisions.  Demonstrate creativity and innovation.  Utilize critical thinking to make sense of problems and persevere in solving them.  Model integrity, ethical leadership and effective management.  Plan education and career paths aligned to personal goals.  Use technology to enhance productivity, increase collaboration and communicate effectively.  Work productively in teams while using cultural/global competence.</p>

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)									
<b>X</b>	Amistad Law: <i>N.J.S.A. 18A 52:16A-88</i>		Holocaust Law: <i>N.J.S.A. 18A:35-28</i>		LGBT and Disabilities Law: <i>N.J.S.A. 18A:35-4.35</i>	<b>X</b>	Diversity & Inclusion: <i>N.J.S.A. 18A:35-4.36a</i>		Standards in Action: <i>Climate Change</i>