Trimester:	Unit Title:	Recommended Instructional Days:
2	**Percents**	**16 - 20 days**

Domains: Ratios and Proportional Relationships; Expressions and Equations

Strand:

7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*

7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*

Key:

Major Cluster **Supporting Cluster** **Additional Cluster** **Climate Change Opportunity**

Progress Indicators: ◊ 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 NJSLS-CLKS within Unit

Essential Questions:
Lesson 1: Why is it important to know how to convert between forms of rational numbers? How do percents show the relationship between quantities?
Lesson 2: How are percent problems related to proportional reasoning?
Lesson 3: How can we set up and solve equations to find the unknowns in percent problems?
Lesson 4: How can you use percents to describe change? How do we use proportions to find the percent error in measurements and calculations?
Lesson 5: How do we calculate and interpret markups and discounts in financial contexts?
Lesson 6: How do we calculate and interpret simple interest in financial contexts?

Essential Understandings:
Fractions, decimals, and percents express a relationship between two numbers.
Fractions, decimals, and percents can be used interchangeably.
Percent of markup is a percent of increase.
Percent of discount is a percent of decrease.
Given the same principal and interest rate, compound interest grows faster than simple interest.

Vocabulary:
- percent of change
- percent of increase
- percent of decrease
- percent error
- discount
- markup
- interest
- principal
- simple interest

**Encourage students to practice using the unit vocabulary as they talk and write about mathematics. Understanding vocabulary will aid their understanding of the concepts. When students encounter a new definition, encourage them to write in their Big Ideas Student Journals. They will revisit these definitions during the Chapter Review.*

Suggested Activity Descriptions:
- Chapter Exploration problems on TB page 234.
- Exploration Activities at the beginning of each section.

- Each student writes two percents greater than 100 and two percents less than one on a piece of paper. They partner up and convert their partner's percents to decimals and then together they order all of their percents from least to greatest.
- Provide pairs of students with one hundred connecting cubes (ten stacks of ten works well). Have them find the percent values for common benchmark fractions by splitting the cubes into groups. For example, to find the percent form of ¼, divide the cubes into four equal groups and count the number of cubes in one of the four groups.
- Have students bring in receipts that show tax and/or discounts and project them so that the class can calculate what the percentages of tax and discount were.
- Use the census for your local town to describe the historic population of your area. Discuss how the area has changed and how that can be represented mathematically.
- I Have…, Who Has…? from the Big Ideas Game Library.
- Match Them Up from the Big Ideas Game Library.
- Order Matters from the Big Ideas Game Library.

Interdisciplinary Connections:
Science:

1. Big Ideas STEAM Video and corresponding questions on TB page 233.
2. Big Ideas STEAM Performance Task. QR Code on TB page 271.
3. Question #41 on TB page 240: Three different mixtures contain small amounts of acetic acid. Mixture A is 0.036 acetic acid, Mixture B is 4.2% acetic acid, and Mixture C is 1/22 acetic acid. Explain how to use this information to determine which mixture contains the greatest amount of acetic acid.
4. Question #23 on TB page 258: A researcher estimates that a fossil is 3200 years old. Using carbon-14 dating, a procedure used to determine the age of an object, the researcher discovers that the fossil is 3600 years old. Find the percent error. What other estimate gives the same percent error? Explain your reasoning.

Social Studies:

1. Questions #26-28 on TB page 252: There were n signers of the Declaration of Independence. The youngest was Edward Rutledge, who was x years old. The oldest was Benjamin Franklin, who was y years old.
   26. x is 25% of 104. What was Rutledge's age?
   27. 7 is 10% of y. What was Franklin's age?
   28. n is 80% of y. How many signers were there?

Physical Education:

1. Question #40 on TB page 240: The table shows the portion of gold medals that were won by the United States in five summer Olympic games. In what year did the United States win the least portion of gold medals? the greatest portion? Justify your answers.
2. Question #34 on TB page 246: A quarterback threw 33 passes in the first three quarters of a football game. The ratio of complete passes to incomplete passes during the first three quarters is 6 : 5. He completes every pass in the fourth quarter and 62.5% of his passes for the entire game. How many passes does the quarterback throw in the fourth quarter? Justify your answer.

Language Arts:

1. Vocabulary Question #7 on TB page 249: Write the percent equation in words.
2. Vocabulary Question #4 on TB page 255: What does it mean for a quantity to change by n%?
3. Writing Question #3 on TB page 261: Describe how to find the sale price of an item that has a 15% discount.
4. Vocabulary Question #4 on TB page 267: Explain the meaning of simple interest.

Spot Light On: Katherine Johnson

Social and Emotional Learning: *Competencies*	**Social and Emotional Learning: *Sub-Competencies***
SEL Competencies: • Self-Awareness • Social Awareness • Self-Management • Relationship Skills • Responsible Decision-Making	• Recognizing the importance of self-confidence in handling daily tasks and challenges. • Demonstrate an awareness of the expectations for social interactions in a variety of ways. • Demonstrate an understanding of the need for mutual respect when viewpoints differ. • Identify and apply ways to persevere through alternative methods to achieve goals. • Utilize positive communication and social skills to interact effectively with others. • Develop, implement, and model effective problem solving and critical thinking skills.
Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
<u>Formative Assessments:</u> • Teacher Observations • Exit Tickets • Quizzes • Self Assessments • Big Ideas Student Journals • Homework/Classwork • Teacher Created Assessments • Progress Monitoring Items • Formative Assessment Tips in Big Ideas Teacher Edition	**<u>Benchmarks & Summative Assessments:</u>** • Chapter/Unit Assessments • Standardized Tests • Project-based Assessments • Benchmark Tests

Differentiated Student Access to Content: **Teaching and Learning *Resources/Materials***			
Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
Big Ideas Student Journal, Dynamic Assessment System, iReady, Khan Academy, Illustrative Mathematics, Learn360, TeacherTube, BrainPOP, Freckle, LearnZillion, MobyMax, 60 minutes of weekly ST Math, Edulastic, Achieve the Core, Desmos	Reteach worksheets, Extra Practice worksheets, Math manipulatives, Scaffolding Instructions in each section of textbook, Tutorial Videos, Skills Review Handbook, Skills Trainer	Dictionary for native language, Video tutorial in native language, ELL Support in each section of Big Ideas Teacher's Edition	ST Math Challenge Objectives, G&T tasks, Enrichment and Extension worksheets, Art of Problem Solving, Leveled assessments
Supplemental Resources			
Technology: • Chromebooks • Scientific Calculators • 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** ***IEP/504/At-Risk/ESL***	**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,	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 students to related content.

	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.		

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept(s):** Technology Literacy	
	Core Ideas:	Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others.
	Performance Expectation/s:	9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem.
	Career Readiness, Life Literacies, & Key Skills Practices	
	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.**	

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