Trimester:	Unit Title:	Recommended Instructional Days:
1	**Adding & Subtracting Rational Numbers**	**16 - 20 days**

Domain: The Number System

Strand:

7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

a. Describe situations in which opposite quantities combine to make 0. *For example, in the first round of a game, Maria scored 20 points. In the second round of the same game, she lost 20 points. What is her score at the end of the second round?*

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b. Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.

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c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference and apply this principle in real-world contexts.

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d. Apply properties of operations as strategies to add and subtract rational numbers.

7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers. (Clarification: Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)

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: What does the absolute value of a rational number represent?
Lesson 2: How do you add integers with the same sign? How do you add integers with different signs?
Lesson 3: How can you add rational numbers? How is adding integers related to adding other rational numbers?
Lesson 4: How do you subtract integers? What pattern do you notice when subtracting integers?
Lesson 5: How can you subtract rational numbers? How is subtracting integers related to subtracting other rational numbers?

Essential Understandings:
Absolute value is a number's distance from zero.
Numerical representations can be used to describe and compare the value of real-world quantities.
Rational numbers can be used to solve real-life problems.
Integers are used to describe relative changes and values.
Integers have magnitude and direction.
Relationships exist between positive and negative integers.
Additive inverses (opposites) combine to make zero.
The result of subtracting an integer is the same as adding the opposite integer.

Vocabulary:

- integers
- rational number
- absolute value
- additive inverse

**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 2.
- Exploration Activities at the beginning of each section.
- Consider introducing both a horizontal and a vertical number line. Seeing the vertical number line (which aligns more intuitively with how we count) next to a horizontal number line may help students make connections and also provides another visual model.
- Modeling addition of integers can be a hands-on experience. Use counters, white and black beans, or colored pieces of cardstock.
- Have students use a paperclip on a number line to demonstrate the addition and subtraction of integers.
- Use dice labeled with positive and negative integers. Students roll two dice, add or subtract the numbers, and record their results. To add a competitive element, set a goal for the number of correct answers needed to win, or play in teams to see which team can accumulate the highest total.
- Create a card game where each card represents an integer. Students draw two cards at a time, add or subtract the integers, and compare results. The player with the highest (or lowest, depending on the game rules) result wins the round.
- Top This Game from the Big Ideas Game Library.
- Right on Target from the Big Ideas Game Library.
- Let's Go Shopping! from the Big Ideas Game Library.
- ***Climate Change:*** Students may solve real-world problems involving the addition and subtraction with rational numbers related to the relationship between altitude and the temperature above sea level.

Interdisciplinary Connections:
Science:

1. Big Ideas STEAM Video and corresponding questions on TB page 1.
2. Big Ideas STEAM Performance Task. QR Code on TB page 37.
3. Example #3 on TB page 6: A moon has an ocean underneath its icy surface. Scientists run tests above and below the surface. The table shows the elevations of each test. Which test is deepest? Which test is closest to the surface?
4. Question #41 on TB page 8: The freezing point of a liquid is the temperature at which the liquid becomes a solid. Which liquid in the table has the lowest freezing point? Is the freezing point of mercury or butter closer to the freezing point of water, 0°C?

Physical Education:

1. Question #46 on TB page 8: The table shows golf scores, relative to par. The player with the lowest score wins. Which player wins? Which player is closest to par? Which player is farthest from par?
2. Question #21 on TB page 40: During the first play of a football game, you lose 3 yards. You gain 7 yards during the second play. What is your total gain of yards for these two plays?
3. Question #14 on TB page 42: The table shows your scores, relative to par, for nine holes of golf. What is your total score for the nine holes?

Language Arts:

1. Vocabulary Question #7 on TB page 5: Which of the following numbers are integers? 9, 3.2, −1, ½ , −0.25, 15
2. Vocabulary Question #8 on TB page 5: What is the absolute value of a number?
3. Writing Question #11 on TB page 5: You compare two numbers, a and b. Explain how $a > b$ and $|a| < |b|$ can both be true statements.
4. Writing Question #10 on TB page 12: Explain how to use a number line to find the sum of two integers.
5. Writing Question #7 on TB page 19: Explain how to use a number line to find the sum of two rational numbers.
6. Writing Question #27 on TB page 22: You are adding two rational numbers with different signs. How can you tell if the sum will be positive, negative, or zero?

Spot Light On: Alan Turing

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:***
Formative Assessments: • 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	**Benchmarks & Summative Assessments:** • 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, 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 students to related content.

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept(s):** Planning and Budgeting	
	Core Ideas:	A budget aligned with an individual's financial goals can help prepare for life events.
	Performance Expectation/s:	9.1.8.PB.1: Predict future expenses or opportunities that should be included in the budget planning process.
	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*	**X**	LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	**X**	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*	**X**	Standards in Action: *Climate Change*