Trimester:	Unit Title:	Recommended Instructional Days:
2	**Equations and Inequalities**	**21 - 25 days**

Domain: Expressions and Equations

Strand:

7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms with accuracy and efficiency. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*

7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make and describe the solutions.*

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 are inverse operations useful in solving equations?
Lesson 2: How do we use equations and expressions in the real world?
Lesson 3: How is solving a two-step equation similar to solving a one-step equation?
Lesson 4: What strategies can we use to write inequalities from given scenarios? How can we represent the solutions of an inequality visually?
Lesson 5: What is the difference between solving an equation and an inequality? How do the properties of inequalities help us manipulate and solve them effectively?
Lesson 6: What patterns do you notice about solving inequalities with negative numbers?
Lesson 7: How does solving two-step inequalities compare to solving one-step inequalities?

Essential Understandings:
Mathematical and real-world situations can be modeled and solved with equations.
Equations can be written in several different ways and still be balanced.
An inequality represents two mathematical statements, which are not equal.
An inequality has infinitely many solutions.

Vocabulary:
- equivalent equations
- inequality
- solution of an inequality
- solution set
- graph of an inequality

**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 126.
- Exploration Activities at the beginning of each section.
- Start one-step equations by displaying a very long and complex equation on the board. Explain that today you are setting the foundation for these types of equations. Then, require students to show their steps as they solve.

- For two-step equations, give students individual white boards and have them work in teams of three. With one equation written on the board, the first person will solve step one. The second person will complete the second step in solving and the third will check the equation. Have groups hold up their boards when they are finished.
- Have students use algebra tiles to model and solve two-step equations.
- Ask students to write and graph four inequalities, one for each symbol. Then have them trade only their graphs with another student who will write the inequalities. Students will then compare answers.
- Tic-Tac-Toe from the Big Ideas Game Library.

Interdisciplinary Connections:
Science:

1. Big Ideas STEAM Video and corresponding questions on TB page 125.
2. Big Ideas STEAM Performance Task. QR Code on TB page 171.
3. Question #40 on TB page 144: On a given day, the coldest surface temperature on the Moon, −280°F, is 53.6°F colder than twice the coldest surface temperature on Earth. What is the coldest surface temperature on Earth that day? Justify your answer.
4. Question #35 on TB page 150: A planet orbiting a star at a distance such that its temperatures are right for liquid water is said to be in the star's habitable zone. The habitable zone of a particular star is at least 0.023 AU and at most 0.054 AU from the star (1 AU is equal to the distance between Earth and the Sun). Draw a graph that represents the habitable zone.

Physical Education:

1. Example #3 on TB page 168: A football team orders the sweatshirts shown. The price per sweatshirt decreases $0.05 for each sweatshirt that is ordered. How many sweatshirts should the team order for the price per sweatshirt to be no greater than $32.50?
2. Question #23 on TB page 170: The first jump in a unicycle high-jump contest is shown. The bar is raised 2 centimeters after each jump. Solve the inequality $2n + 10 \geq 26$ to find the numbers of additional jumps needed to meet or exceed the goal of clearing a height of 26 centimeters.
3. Question #17 on TB page 176: You lose 0.3 point for stepping out of bounds during a gymnastics floor routine. Your final score is 9.124. Write and solve an equation to find your score without the penalty.

Language Arts:

1. Writing Question #8 on TB page 129: Are the equations $m + 3 = -5$ and $m - 4 = -12$ equivalent? Explain.
2. Writing Question #10 on TB page 135: Explain why you can use multiplication to solve equations involving division.
3. Writing Question #17 on TB page 141: Are the equations $3x + 12 = 6$ and $-2 = 4 - 3x$ equivalent? Explain.
4. Writing Question #7 on TB page 153: Are the inequalities $c + 3 > 5$ and $c - 1 > 1$ equivalent? Explain.
5. Writing Question #15 on TB page 160: Are the inequalities $12c > -15$ and $4c < -5$ equivalent? Explain.
6. Writing Question #11 on TB page 167: Are the inequalities $-6x + 18 \leq 12$ and $2x - 4 \leq -2$ equivalent? Explain.

Spot Light On: Fern Hunt

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,	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

Desmos			
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):** Creativity and Innovation	
	Core Ideas:	With a growth mindset, failure is an important part of success.
	Performance Expectation/s:	9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas.
	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)									
X	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*