Standard - New Jersey Student Learning Standards: N-Q, A-REI
Critical Thinking Skills (Chapter 1)

Strand
N-Q: Quantities
Reason quantitatively and use units to solve problems.

1. Use units as a way to understand problems and to guide the solutions of mulit-step problems; choose and interpret unit's consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
2. Define appropriate quantities for the purpose of descriptive modeling.
3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

A-REI: Reasoning with Equations and Inequalities
Understand solving equations as a process of reasoning and explain the reasoning

1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Curriculum aligned with: 2009 New Jersey Core Curriculum Content Standards for 21st Century Skills (9.1 A-F)

21st Century Theme: *Global Awareness ☐,Financial, economic, business and entrepreneurial literacy ☐,Civic literacy ☐,Health literacy ☐Environmental Literacy X*

21st Century Skills: *Critical Thinking & Problem Solving X,Creativity and Innovation ☐,Collaboration, Teamwork and Leadership ☐,Cross-Cultural Understanding and Interpersonal Communications ☐ Communication and Media Fluency ☐,Accountability, Productivity and Ethics*

Interdisciplinary Connection: Math=MA, English=ELA, Science=SCI, Social Studies=SS, Physical Education=PE, Art=ART, Music=MU, Technology=TECH, World Language=WL, Business = BU

Essential Questions	Enduring Understandings	Activities, Investigation, and Student Experiences
1. What is the difference between inductive and deductive reasoning skills?	*Students will understand….* ● Inductive and deductive reasoning processes ● Estimation	**Task 1:SCI**

2. How do you use these reasoning skills to solve problems? 3. What estimation technique do you use to determine an approximate answer to a question?	● Problem-solving techniques	What reasoning process had led to the conclusion that no two people have the same fingerprints or DNA? This conclusion has resulted in the use of fingerprints and DNA in courts of law as evidence to convict persons of crimes. **Answer:** In millions of tests, no two people have been found to have the same fingerprints or DNA. By induction, then, we believe that fingerprints and DNA provide a unique identification and can therefore be used in a court of law as evidence. **Task 2:** Sonya decides to purchase cupcakes for a party. Estimate her cost if she purchases 19 cupcakes at $1.95 each. **Answer:** We may round the amounts from 19 cupcakes to 20 cupcakes and $1.95 to $2 and say 2 X 20 = $40.00. **Task 3:** Airport Express shuttle services provide service from San Antonio International Airport to downtown hotels, approximately 10 miles away. One shuttle makes 16 round trips per day, carrying 5 passengers per trip. The fare each way is $18. What are the receipts from one day's operation for this particular shuttle? **Answer:** We need to find the total from one days's operations: Distance = 10 miles # of round trips = 16 # of passengers per trip = 5 Fare each way = 18 All the information is needed to solve the problem except the distance. To determine the total receipts fot he day we need to know the number of round trips per day, the number of passengers per trip, and the round trip cost per passenger. The product of
Content Statements	**Cumulative Progress Indicators**	
Students will know… ● Understand and use inductive reasoning to solve problems. ● Understand and use deductive reasoning to solve problems. ● Use estimation techniques to determine an approximate answer to a question. ● Understand and use a general problem-solving procedure.	● Tests ● Quizzes ● Practice problems for homework ● Workbook pages ● Worksheets	
Desired Results		

- Inductive and Deductive Reasoning
- Estimation
- Problem Solving

Standards for Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning 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.

these three numbers will yield the total daily receipts. For a round trip, the cost per passenger is $18 x 2 = $36.
Thus the total receipts for one day's operation = 16 x 5 x $36 = $2880.

Modifications and/or Accommodations:

- **Special Education:** 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.
- **English Language Learners:** Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of online bilingual dictionary, and modified assessment and/or rubric.
- **Students at Risk of School Failure:** Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat instructions as needed.
- **Gifted Students:** 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 talent development opportunities

Spot Light On: *Seek multiple perspectives and different answers to questions.*

Teacher Resources

	Mymathlab.com http://achievethecore.org https://learnzillion.com https://www.khanacademy.org/ https://www.desmos.com/ http://www.ixl.com

LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*

Stephen Hawking

The mission is to ensure that every student is able to see themselves in our rich and diverse history.

Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-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. • Recognize the skills needed to establish and achieve personal and educational goals. • Utilize positive communication and social skills to interact effectively with others. • Develop, implement, and model effective problem solving and critical thinking skills.

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*		Standards in Action: *Climate Change*