Standard: Technology Literacy (2009)

8.1: Education Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

8.2: Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world, as they relate to the individual, global, and the environment.

9.1: 21st Century Life and Career Skills: All students will demonstrate the creativity, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

Strand:

8.1.A: Technology Operations and Concepts
8.1.F: Critical Thinking, Problem Solving, and Decision Making

8.2.B: Design: Critical Thinking, Problem Solving, and Decision Making
8.2.F: Resources for a Technological World
8.2.G: The Designed World

9.1.A: Critical Thinking and Problem Solving
9.2.E: Communication and Media Fluency
9.2.F: Accountability, Productivity, and Ethics

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 X Civic literacy ☐,Health literacy ☐Environmental Literacy ☐*

21st Century Skills: *Critical Thinking & Problem Solving ☐,Creativity and Innovation X,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

• What are numeric and string literals? • How can the difference between syntax errors, run-time errors, and logic errors be detected? • How can output statements be used to debug a program? • What is the difference between Cartesian coordinates and screen coordinates? • How and when are comments used in a program?	*Students will understand….* • How to construct and use numeric and string literals • Name and use variables and constants • Create arithmetic expressions • The precedence of different arithmetic operators • How to concatenate two strings or a number and a string • How and when to use comments in a program • How to tell the difference between syntax errors, run-tie errors, and logic errors • How to insert output statements to debug a program • The difference between Cartesian coordinates and screen coordinates • How to work with color and text properties	MA Task 1: The surface area of a cube can be known if we know the length of an edge. Write a program that takes the length of an edge (an integer) as input and prints the cube's surface area as an output. Task 2: Write a program that takes the radius of a sphere (a double) as input and outputs the sphere's diameter, circumference, surface area, and volume. Task 3: An employee's total weekly pay equals the hourly wage multiplied by the total number of regular hours plus any overtime pay. Overtime pay equals the total overtime hours multiplied by 1.5 times the hourly wage. Write a program that takes as inputs the hourly wage, total regular hours, and total overtime and displays an employee's total weekly pay. Task 4: Modify the program you created in task 3 so that it prompts the user for the regular and overtime hours of each of the five working days. Task 5: Write a graphics program that displays the coordinates of the center point of a panel in the form (x,y). This information should be displayed at the panel's center point and be automatically updated when the panel is resized. **Unit Project:** During the summer, the guidance office must enter new data for incoming freshman. Design and implement a program that prompts the user for the following inputs: Last Name First Name

Content Statements	**Cumulative Progress Indicators**
Students will know… ● Java programs use the int data type for whole numbers and double for floating point numbers ● Java variable and method names consist of a letter followed by additional letters or digits. ● Arithmetic expressions are evaluated according to precedence ● Strings can be concatenated to form a new string ● The compiler catches syntax errors. The JVM catches run-time errors. Logic errors are detected by the programmer or user. ● Java uses a screen coordinate to located the positions of pixels in a window or panel.	● Tests ● Quizzes ● Practice problems for homework ● Unit projects ● Worksheets
Desired Results	

• Understanding of the naming and use of variables • Understanding of the different types of errors and how they are caught • How to take information in different forms as inputs and return information as output • Distinguish between the coordinates on the Cartesian Plane and those of screen coordinates	
Standards For Mathematical Practices	Teacher Resources
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.	http://www.cengage.com/us http://achievethecore.org https://learnzillion.com https://www.khanacademy.org/ https://www.desmos.com/ http://www.ixl.com http://www.parcconline.org

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

Neil Devine - https://www.pbs.org/wgbh/nova/article/the-case-for-representation/

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.