Marking Period	Unit Title	Recommended Instructional Days
Marking Period 4	**Unit 10:** ● Task 1: Students will use repetition statements to modify a service station program that adjusts for an indefinite number of customers. ● Task 2: Students will use repetition statements to create a program that accepts two positive integers as input and then prints out their greatest common divisor. ● Task 3: Students will use repetitions statements to create a program that accepts two positive integers as input and then prints out their least common multiple. ● Task 4: Students will write a program that allows the user to enter a positive integer and then displays the result indicating whether the number is perfect, deficient, or abundant. ● Task 5: Students will modify the Lucky Wildcat Well Corporation program so that it can be run with data containing information about all of the owner's wells. ● Task 6: Students will write a program so that it prints a calendar for one month. Input will consist of an integer specifying the first day of the month (1=Sunday) and an integer specifying how many days are in a month. ● Task 7: Students will write a program to print a list of positive integers less than 500 that are divisible by either 5 or 7. When the list is complete, the program will print a count of the number of integers found. ● Task 8: Students will write a program to read in a list of 20 real numbers, and then print the average of the positive numbers and the average of the negative numbers. ● Task 9: Students will write a program to help Mr. Christian count the number of A's, B's, C's, D's, and F's on a given test based on a percent scale. User will terminate the list of scores with a sentinel value such as -999. ● Task 10: Using repetition statements and the theory of relativity, students will write a program to calculate the new length of an object based on its given length and its speed ranging from 0 to 99 percent of the speed of light.	MP4 - 45 days, Units 10-12

	● Task 11: Using repetition statements and Gottfried Leibniz's formula, students will write a program to estimate the value of PI using at least 200 terms. ● Task 12: Students will write a program that utilizes repetition statements to calculate a negotiated salary schedule for Mr. Thomas's new job. He will be paid one cent on the first day, with the rate doubling each day. The program will find his total earnings for the first 30 days. Inputs should be the starting daily rate, the growth factor (2=double, etc), and the total days in the period. ● Task 13: Students will write a program for the Babbage school district to calculate and display teacher salary schedules based on first year salary and four percent pay increases for 12 years. **Unit 11:** ● Task 1: Students will use repetition statements to create a graphics program which bounces a rectangle within the boundaries of the graphics window. Unit 12: ● Task 1: Students will write a program to read in a list of ten items from the keyboard. The program will place the even numbers into a vector called even, the odd numbers into a vector called odd, and the negatives into a vector called negative. All three vectors will print after all the numbers are read. ● Task 2: Students will create a program that reads in 10 real numbers and prints the average of the numbers followed by all the numbers that are greater than the average. ● Task 3: Students will write a program to read in an unknown number of integer test scores from the keyboard. It will then print the original list of scores, the scores sorted from low to high, the scores sorted from high to low, the highest score, the lowest score, and the average score. ● Task 4: Students will create a program to read in the names of five candidates in a class election and the number of votes received by each. It will then print the list of candidates, the number of votes they received, and the percentage of the	

	total votes they received in order from winner to the person with fewest votes.	

Life Literacy & Key Skills Disciplinary Concept: ***Core Idea***	**Performance Expectation/s:**	**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit**
Creativity and Innovation Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed. **Digital Citizenship** Network connectivity and computing capability extended to objects, sensors and everyday items not normally considered computers allows these devices to generate, exchange, and consume data with minimal human intervention. **Technology Literacy** Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task. Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.	**TECH.9.4.12.CT.1:** Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3). **TECH.9.4.12.CT.2:** Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a) **TECH.9.4.12.DC.8:** Explain how increased network connectivity and computing capabilities of everyday objects allow for innovative technological approaches to climate protection. 9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.). • 9.4.12.TL.2: Generate data using formula-based calculations in a spreadsheet and draw conclusions about the data. 9.4.12.TL.3: Analyze the effectiveness of the process and quality of collaborative environments.	**Essential Question/s:** • Why are repetition statements important? • How are repetition statements used in C++ programming? • What is the importance of the Loop Control Variable? • Why are repetition statements important? • How are repetition statements used in C++ programming? • How can repetition statements enhance graphics programs? • What is the role of a vector as a fundamental data structure? • How are vectors and matrices used in computer programming? **Activity Description:** ● Create programs that design and test for loops. ● Create programs that utilize for loops to count up and down ● Create programs that utilize while loops to count up and down ● Create programs that utilize do..while loops to count up and down ● Create program that utilize multiple types of repetition statements in nested form to complete a given task ● Create C++ programs that display 2D graphics by incorporating repetition statements ● Understand the basic idea and notation of vectors ● Declare vectors ● Use parallel vectors in a program ● Use vectors in conjunction with loops to read input and display output ● Sort and search vectors ● Understand the basic idea and notation of matrices
Career Awareness, Exploration, Preparation, & Training Disciplinary Concept: ***Core Idea***	**Performance Expectation/s:**	

Career Awareness and Planning There are strategies to improve one's professional value and marketability. **Career Awareness and Planning** Career planning requires purposeful planning, based on research, self-knowledge, and informed choices.	**WRK.9.2.12.CAP.3:** Investigate how continuing education contributes to one's career and personal growth. **WRK.9.2.12.CAP.6:** Identify transferable skills in career choices and design alternative career plans based on those skills.	
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
-Self- awareness -Social Awareness -Self- Management -Relationship Skills -Responsibility -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.	

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:***
● Tests ● Quizzes ● Practice problems for homework ● Worksheets ● Lab work: Write programs ● Observation ● Oral Explanation Check	**Benchmarks:** ● Students will obtain a score of 70% or higher, students who complete the proper assigned classwork will be assigned ● Rubric evaluations **Summative Assessments:** ● District Assessments ● Evidence that students can perform the functions ● Final documents/projects

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**
	● Meet with the student's special education or inclusion teacher prior to initial assessment to learn how to best tailor the format of any classwork, quiz or test to their individual special needs, as well as to discuss whether or not homework is appropriate. ● Provide access to an individual or classroom aide, when required by the student's IEP or 504, to improve student focus, comprehension and time on task. ● Provide access to modified materials as needed to improve accessibility (slant	● Allow access to supplemental materials, including use of online bilingual dictionaries. ● Meet with an ELL trained or inclusion teacher prior to initial assessment to learn how to best tailor the format of any classwork, quiz or test to their individual needs.	● Connect students to related talent development opportunities, often offered through area colleges, with the assistance of guidance counselors.

	boards, headphones for auditory processing disorders, gym mats for additional cushioning, active/sensory seating pads, helmets and body padding as required by physical therapist, etc.). Many can be borrowed from a student's special education classroom, or the school's Occupational or Physical Therapists.		

Supplemental Resources

Technology:

- Assistive technology may be required for students with IEPs and 504s. Access to computers with screen readers, voice recognition software, and talking word processing applications may be beneficial. Some students with limited verbal abilities may require access to assistive communication devices and tablets that can be accessed through the school's speech therapist.

Other:

- Microsoft Visual C++ Software
- Fundamentals of C++ Second Edition
- Course Technology
- Thomson Learning
- Lambert / Nance

Differentiated Student Access to Content:
Recommended *Strategies & Techniques*

Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core**
• Offer resources to students in a variety of ways to accommodate for multiple learning styles. • Engage all learners through implementation of various	• Utilize a multi-sensory (Visual, Auditory, Kinesthetic, Tactile) approach as needed during instruction to better engage all learners.	• Provide extended time to complete classwork and assessments as needed. Assignments and rubrics may need to be modified.	• Offer pre-assessments to better understand students' strengths, and create an enhanced set of introductory activities accordingly.

resources including visual, audio, and tactile materials. ● Provide easy access to course resources so the student can utilize materials within the classroom or at home to reiterate content learned within the course.	● Provide alternate presentations of skills and steps required for project completion by varying the method (repetition, simple explanations, visual step-by-step guides, additional examples, modeling, etc). ● Allow additional time to complete classwork as needed, when required according to students' IEP or 504 plan. Break assignments up into shorter tasks while repeating directions as needed. Offer additional individual instruction time as needed. ● Modify test content and/or format, allowing students additional time and preferential seating as needed, according to their IEP or 504 plan. Review, restate and repeat directions during any formal or informal assessments.	● Provide access to preferred seating, when requested. ● Check often for understanding, and review as needed, providing oral and visual prompts when necessary.	● Integrate active teaching and learning opportunities, including grouping gifted students together to push each other academically. ● Propose interest-based extension activities and opportunities for extra credit.

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*		Standards in Action: *Climate Change*

Standard 9	
9 Career Ready Practices	__X__CRP1. Act as a responsible and contributing citizen and employee. __X__CRP2. Attend to financial well-being. __X__CRP3. Consider the environmental, social and economic impacts of decisions. __X__CRP4. Demonstrate creativity and innovation. __X__CRP5. Utilize critical thinking to make sense of problems and persevere in solving them. __X__CRP6. Model integrity, ethical leadership and effective management. __X__CRP7. Plan education and career paths aligned to personal goals. __X__CRP8. Use technology to enhance productivity, increase collaboration and communicate effectively. __X__CRP9. Work productively in teams while using cultural global competence.