Marking Period	Unit Title	Recommended Instructional Days
Marking Period 2	**Unit 4:** ● Task 1: Students will create a program that calculates the total purchase price of a computer shopping trip that includes sales tax. ● Task 2: Students will create a program that calculates the area and perimeter of a given rectangle. ● Task 3: Students will create a program that utilizes constants to calculate the total number of minutes in a year. ● Task 4: Students will write a program to compute and print the total distance a light beam would travel in a given year. ● Task 5: Students will create a program to calculate and print the winning percentage of the 1927 New York Yankees. ● Task 6: Students will create a program to calculate and print the momentum of a given objectives. ● Task 7: Students will create a program to convert 98.0 degrees Fahrenheit to degrees Celsius. ● Task 8: Given a positive number, students will create a program to print its square and square root using the library header file “math.h” ● Task 9: Students will create a program for the Golden Sales company to calculate the monthly pay due to their salespeople based on performance. ● Task 10: Given the mass and speed of a moving object, students will create a program to calculate and print its kinetic energy. ● Task 11: Using library functions from the library header file “math.”, students will create a program to calculate and print the arithmetic mean, harmonic mean, and geometric means of two given values from the user. ● Task 12: Students will create a program for the Penny Spender Supermarket to calculate and display the total cost for a given amount of produce that will be purchased by the customer. ● Task 13: Students will create a program for the New Wave Computer Company to calculate and print a bill of sale for a	MP2 - 45 days, Units 4-6

	customer shopping for a computer, software, memory, and external drives. **Unit 5:** ● Task 1: Students will modify the Muller-Lyer Illusion by changing the colors of the line segments so that the illusion is no longer produced. ● Task 2: Students will modify the Muller-Lyer Illusion so that the colors of the line segments are randomly chosen. ● Task 3: Students will write a complete program that draws four circles. The radius of each circle should be one-eighth the size of the window. The center of each circle should be the center of a separate quadrant of the window. ● Task 4: Students will write a complete program to display a 2D image of a stick figure. ● Task 5: Students will modify Task 4 so that the user can input the coordinates of the center point of the stick figure. The figure's center point should be a point halfway between the top of the figure's head and the bottom of the figure's legs. ● Task 6: Students will modify Task 5 so that the user can specify the size of the stick figure. The size of the figure should be the height and width of the rectangular area that bounds the figure's image. **Unit 6:** ● Task 1: Students will write a program to get the coefficients of a quadratic equation from the keyboard and then print the discriminant. The program will be broken down into tasks by creating user-defined functions. ● Task 2: Students will create a program that computes and prints the total cost for carpeting a room given the length, width, and carpet price per yard. The program will be broken down into tasks by creating user-defined functions. ● Task 3: Students will create a program for Williamson's Paint and Papering store to help them determine how much paint is needed to paint a room given its length, width, and height. The program will be broken down into tasks by creating user-defined functions.	

	• Task 4: Students will write a program for Fairfield College to calculate new faculty salary for the next three years given current salary and new contract percent increases. The program will be broken down into tasks by creating user-defined functions. • Task 5: Students will create a program for teachers to calculate student averages based on weighted test scores. The program will be broken down into tasks by creating user-defined functions. • Task 6: Students will create a program for Natural Pine Furniture Company to update their payroll system and display one-week payroll reports for the employees. The program will be broken down into tasks by creating user-defined functions. • Task 7: Students will write a program to calculate the geometric mean, harmonic mean, and arithmetic mean of two different given numbers by breaking down each calculation into a user-defined function.	

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,	**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	**Essential Question/s:** • How does calculation and input help you solve problems? • How are variables used to specify coordinates in graphics programming? • What are relative coordinates? • What library functions are used to create shapes in a graphics program? • How does a programmer determine, utilize, and modify the size of the graphics window? **Activity Description:** • Use int and double data types in arithmetic expressions • Identify mixed-mode expressions and convert data to different types if necessary • Understand the utilization of memory for storing data • Declare, initialize, and use variables in programming • Use the cin statement as part of the standard input stream

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.	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.	● Utilize the string data type to work with character strings in programming ● Use constants, library/member functions in programming ● Create graphics by writing C++ code. ● Distinguish when to use absolute and relative coordinates. ● Change colors of the background and lines in graphics programs ● Determine the size of the graphics window and use the values to enhance their programs. ● Create user-defined functions within programs to demonstrate understanding of top-down design. ● Write programs that demonstrate understanding of passing parameters by reference and value.
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	● Allow access to supplemental materials, including use of online bilingual dictionaries. ● Meet with an ELL trained or inclusion teacher prior to	● Connect students to related talent development opportunities, often offered through area colleges, with the assistance of guidance counselors.

	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 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.	initial assessment to learn how to best tailor the format of any classwork, quiz or test to their individual needs.	

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 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.	• Utilize a multi-sensory (Visual, Auditory, Kinesthetic, Tactile) approach as needed during instruction to better engage all learners. • 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.	• Provide extended time to complete classwork and assessments as needed. Assignments and rubrics may need to be modified. • Provide access to preferred seating, when requested. • Check often for understanding, and review as needed, providing oral and visual prompts when necessary.	• Offer pre-assessments to better understand students' strengths, and create an enhanced set of introductory activities accordingly. • 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.

	• 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.		

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.