Northern York County School District Curriculum				
Course Name:	C++			
Content:	An introduction to computer programming.			
Key Learning(s):	Many computer processes are involved when running a simple program.			
Essential Question(s)	What is a computer program?			
Vocabulary	Algorithm, assembly language, compiler, compiler directive, function, interpreter, linker, machine language, main, object code, object file, source code, statement			
Grade Level	11-12			

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Describe various types of programs. -Describe the role of the operating system. -Describe how a computer gets instructions	Evaluate review questions.	Student text and workbook: <i>Introduction</i> to Computer Science
3.7.7.C	Explain and demonstrate basic computer operations	-Describe how a computer gets instructions. -Describe the role of: programming languages, high and low level languages, interpreters and compilers.	applications.	Using C++, Third
3.7.4.D	and concepts. Use basic computer software.	 -Explain the process needed to enter, compile, link, and run a C++ program. -Explain the structure of a C++ program. 	Award points for successful completion of exercises.	<i>Edition</i> © 2002, Course Technology, Thomson Learning
3.7.7.D	Apply computer software to solve problems.	-Compile, link, and run C++ programs. -Modify source code. -Create a standalone program.	Evaluate with application exercises, chapter tests, unit tests, book programs, and	Teacher-prepared programs
3.7.10.D	Utilize computer software to solve specific problems	-Load, compile, and run existing source code.	teacher designed projects.	Audiovisual Media

Northern York County School District Curriculum			
Course Name:	C++		
Content:	An introduction to computer programming.		
Key Learning(s):	Computers store data in complex arrangements.		
Essential Question(s)	What are data structures?		
Vocabulary	Data type, declaring, initializing, identifier, keyword, ASCII, exponential notation, string		
Grade Level	11-12		

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Explain the different integer variable types used in C++. -Declare, name, and initialize variables.	Evaluate review questions. Evaluate reinforcement	Student text and workbook: <i>Introduction</i> to Computer Science
3.7.7.C	Explain and demonstrate basic computer operations and concepts.	-Use character variables -Explain the different floating-point types and use variables of those types.	applications. Award points for successful	Using C++, Third Edition © 2002, Course
3.7.4.D	Use basic computer software.	-Describe Boolean variables. -Declare and use constants.	completion of exercises. Evaluate with application	Technology, Thomson Learning Teacher-prepared
3.7.7.D	Apply computer software to solve problems.		exercises, chapter tests, unit tests, book programs, and teacher designed projects.	programs Audiovisual Media
3.7.10.D	Utilize computer software to solve specific problems.			

Northern York County School District Curriculum			
Course Name:	C++		
Content:	An introduction to computer programming.		
Key Learning(s):	Math operations are central in almost every type of program.		
Essential Question(s)	What are the different math operators that can be used in a C++ program?		
Vocabulary	Modulus operator, promotion, truncate, typecasting, expression, assignment operator		
Grade Level	11-12		

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Use the assignment and arithmetic operators in programs.	Evaluate review questions.	Student text and workbook: <i>Introduction</i>
3.7.7.C	Explain and demonstrate	-Use operators in output statements. -Explain the problem with dividing by zero.	Evaluate reinforcement applications.	to Computer Science Using C++,
	basic computer operations	-Explain the difference between incrementing and decrementing variables	Award points for successful	<i>Third</i> <i>Edition</i> © 2002. Course
3.7.4.D	Use basic computer software.	-Explain the order of operations. -Properly mix data types in calculations.	completion of exercises.	Technology, Thomson Learning
277D	Apply computer software	-Explain overflow and underflow in calculations.	Evaluate with application	Teacher-prepared
5.7.7.D	to solve problems.	-Explain noating-point rounding errors.	tests, book programs, and	programs
2 7 10 D	Utiliza computer software		teacher designed projects.	Audiovisual Media
5.7.10.D	to solve specific problems			

Northern York County School District Curriculum			
Course Name:	C++		
Content:	An introduction to computer programming.		
Key Learning(s):	Strings are the most useful kind of data in a program.		
Essential Question(s)	How do you use elements called string objects to store strings?		
Vocabulary	Containment, dot operator, extraction operator, field width, input stream, insertion operator, instance, literals, message, method, stream		
Grade Level	11-12		

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Define strings and literals. -Explain classes and objects. -Use the string class to store strings in programs	Evaluate review questions.	Student text and workbook: Introduction to Computer Science
3.7.7.C	Explain and demonstrate basic computer operations	-Demonstrate how to perform basic string operations. -Use cin, cout, and special characters in programs.	applications.	Using C++, Third
3.7.4.D	and concepts. Use basic computer software.	-Demonstrate how to format output.	Award points for successful completion of exercises.	<i>Edition</i> © 2002, Course Technology, Thomson Learning
3.7.7.D	Apply computer software to solve problems.		Evaluate with application exercises, chapter tests, unit tests, book programs, and	Teacher-prepared programs
3.7.10.D	Utilize computer software to solve specific problems		teacher designed projects.	Audiovisual Media

Northern York County School District Curriculum			
Course Name:	C++		
Content:	An introduction to computer programming.		
Key Learning(s):	Computers make decisions based on comparisons.		
Essential Question(s)	What are the basic tools of computer decision-making?		
Vocabulary	Control expression, fuzzy logic, menu, one-way selection structure, two-way selection structure, truth tables		
Grade Level	11-12		

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Describe how decisions are made in programs. -Describe how true and false are represented in C++.	Evaluate review questions.	Student text and workbook: <i>Introduction</i> to Computer Science
3.7.7.C	Explain and demonstrate basic computer operations	-Demonstrate how to use logical operators. -Define short circuit evaluation.	applications.	Using C++, Third
3.7.4.D	and concepts. Use basic computer software.	-Use the "if" structure. -Use the "if/else" structure. -Use nested "if" structures.	Award points for successful completion of exercises.	<i>Edition</i> © 2002, Course Technology, Thomson Learning
3.7.7.D	Apply computer software to solve problems.	-Use the switch structure.	Evaluate with application exercises, chapter tests, unit tests, book programs, and	Teacher-prepared programs
3.7.10.D	Utilize computer software to solve specific problems		teacher designed projects.	Audiovisual Media

Northern York County School District Curriculum			
Course Name:	C++		
Content:	An introduction to computer programming.		
Key Learning(s):	Much of the work a computer does is repeated many times.		
Essential Question(s)	What is an iteration structure?		
Vocabulary	Infinite loop, iteration, iteration structures, loop, parameters		
Grade Level	11-12		

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Describe the purpose of loops. -Use for loops.	Evaluate review questions.	Student text and workbook: <i>Introduction</i>
3.7.7.C	Explain and demonstrate basic computer operations	-Use while loops. -Use do/while loops. -Use the break and continue command statements.	Evaluate reinforcement applications.	Using C++, Third
3.7.4.D	and concepts. Use basic computer software.	-Nest loops in programs.	Award points for successful completion of exercises.	<i>Edition</i> © 2002, Course Technology, Thomson Learning
3.7.7.D	Apply computer software to solve problems.		Evaluate with application exercises, chapter tests, unit tests, book programs, and	Teacher-prepared programs
3.7.10.D	Utilize computer software to solve specific problems		teacher designed projects.	Audiovisual Media

Northern York County School District Curriculum			
Course Name:	C++		
Content:	An introduction to computer programming.		
Key Learning(s):	Programs are often divided into more than one function.		
Essential Question(s)	What is the purpose of functions in programming?		
Vocabulary	Argument, automatic variable, bottom-up design, external variable, global variable, local variable, passing by reference, passing by value, prototypes, scope, top-down design		
Grade Level	11-12		

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Build structured programs that are divided into functions.	Evaluate review questions.	Student text and workbook: <i>Introduction</i>
3.7.7.C	Explain and demonstrate basic computer operations	-Describe the flow of execution in a program with multiple functions. -Describe what is meant by "scope of a variable."	applications.	Using C++, Third
3.7.4.D	and concepts. Use basic computer software.	-Pass data to functions in programs.-Get values from functions using "return."-Describe and use library functions.	Award points for successful completion of exercises.	<i>Edition</i> © 2002, Course Technology, Thomson Learning
3.7.7.D	Apply computer software to solve problems.	-Use common math functions. -Use character manipulation functions.	Evaluate with application exercises, chapter tests, unit tests, book programs, and	Teacher-prepared programs
3.7.10.D	Utilize computer software to solve specific problems		teacher designed projects.	Audiovisual Media

Northern York County School District Curriculum			
Course Name:	C++		
Content:	An introduction to computer programming.		
Key Learning(s):	Inputting data from and to a file can be very useful in programming.		
Essential Question(s)	How can you use sequential access for file input and output?		
Vocabulary	Appending, file streams, stream operation modes		
Grade Level	11-12		

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Explain what is meant by sequential and random file access.	Evaluate review questions.	Student text and workbook: <i>Introduction</i>
		-Demonstrate how to open and close files.	Evaluate reinforcement	to Computer Science
3.7.7.C	Explain and demonstrate	-Write data to sequential files.	applications.	Using C++, Third
	and concepts.	-Use other sequential file techniques	Award points for successful	Edition © 2002, Course
3.7.4.D	Use basic computer		completion of exercises.	Technology, Thomson
	software.		Evaluate with application	Teacher-prepared
3.7.7.D	Apply computer software		exercises, chapter tests, unit	programs
	to solve problems.		tests, book programs, and	
			teacher designed projects.	Audiovisual Media
3.7.10.D	Utilize computer software			
	to solve specific problems			

Northern York County School District Curriculum			
Course Name:	C++		
Content:	An introduction to computer programming.		
Key Learning(s):	Programs often need to store lists and tables.		
Essential Question(s)	How can object oriented techniques help to store data in C++?		
Vocabulary	Array, elements, matrix, parallel vectors, subscript, template class, vector		
Grade Level	11-12		

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Describe what an array is and how it is used. -Declare a vector object.	Evaluate review questions.	Student text and workbook: <i>Introduction</i>
3.7.7.C	Explain and demonstrate basic computer operations	-Index elements in a vector. -Explain why arrays are needed. -Work with vectors and use vector features.	applications.	Using C++, Third
3.7.4.D	and concepts. Use basic computer software.	-Declare a matrix object.	Award points for successful completion of exercises.	<i>Edition</i> © 2002, Course Technology, Thomson Learning
3.7.7.D	Apply computer software to solve problems.		Evaluate with application exercises, chapter tests, unit tests, book programs, and	Teacher-prepared programs
3.7.10.D	Utilize computer software to solve specific problems		teacher designed projects.	Audiovisual Media

Northern York County School District Curriculum			
Course Name:	C++		
Content:	An introduction to computer programming.		
Key Learning(s):	There are many different programming paradigms in computer science.		
Essential Question(s)	What are the benefits of using object-oriented programming versus procedural programming?		
Vocabulary	Constructors, encapsulation, has-a relationship, is-a relationship, members, object-oriented paradigm, paradigm, procedural paradigm, scope-resolution operator		
Grade Level	11-12		

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Compare and contrast procedural programming and object-oriented programming.	Evaluate review questions.	Student text and workbook: <i>Introduction</i>
3.7.7.C	Explain and demonstrate basic computer operations	-Describe the concepts of reusability, containment, and inheritance with regards to object-oriented programming.	applications.	Using C++, Third
3.7.4.D	and concepts. Use basic computer software.	-Use a simple class. -Design and implement a simple class.	Award points for successful completion of exercises.	<i>Edition</i> © 2002, Course Technology, Thomson Learning
3.7.7.D	Apply computer software to solve problems.		Evaluate with application exercises, chapter tests, unit tests, book programs, and	Teacher-prepared programs
3.7.10.D	Utilize computer software to solve specific problems		teacher designed projects.	Audiovisual Media

Northern York County School District Curriculum			
Course Name:	C++		
Content:	An introduction to computer programming.		
Key Learning(s):	Computers can generate random numbers from their internal clock.		
Essential Question(s)	What are the benefits of using randomly generated numerical data in a program?		
Vocabulary	Seed, seed random		
Grade Level	11-12		

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Identify the time and srand header. -Use a program with randomization.	Evaluate review questions.	Student text and workbook: <i>Introduction</i> to Computer Science
3.7.7.C	Explain and demonstrate basic computer operations	randomization	applications.	Using C++, Third
3.7.4.D	and concepts. Use basic computer software.		Award points for successful completion of exercises.	<i>Edition</i> © 2002, Course Technology, Thomson Learning
3.7.7.D	Apply computer software		Evaluate with application exercises, chapter tests, unit tests book programs and	Teacher-prepared programs
3.7.10.D	Utilize computer software to solve specific problems		teacher designed projects.	Audiovisual Media

Northern York County School District Curriculum			
Course Name:	C++		
Content:	An introduction to computer programming.		
Key Learning(s):	Each byte of a computers memory is a unique address.		
Essential Question(s)	How can pointers be used to hold memory addresses for data in a program?		
Vocabulary	Address-of operator, dereferencing operator, enum, fields, pointer, structure, typedef		
Grade Level	11-12		

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Understand the basics of pointers. -Declare pointers.	Evaluate review questions.	Student text and workbook: <i>Introduction</i> to Computer Science
3.7.7.C	Explain and demonstrate basic computer operations	-Use "enum."	applications.	Using C++, Third
3.7.4.D	and concepts. Use basic computer software.	-Understand what structures are and how to use them.	Award points for successful completion of exercises.	<i>Edition</i> © 2002, Course Technology, Thomson Learning
3.7.7.D	Apply computer software to solve problems.		Evaluate with application exercises, chapter tests, unit tests, book programs, and	Teacher-prepared programs
3.7.10.D	Utilize computer software to solve specific problems		teacher designed projects.	Audiovisual Media

Northern York County School District Curriculum		
Course Name:	C++	
Content:	An introduction to computer programming.	
Key Learning(s):	In C++, you can use a method like a scavenger hunt to store data.	
Essential Question(s)	How can data be stored and retrieved from a linked list?	
Vocabulary	Allocating, circularly linked lists, de-allocating, doubly-linked lists, free, heap, node, null pointer, singly-linked list, structure pointer operator, traversing	
Grade Level	11-12	

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Declare and initialize linked lists. -Add nodes to the end of a linked list. -Move through the nodes of a linked list.	Evaluate review questions. Evaluate reinforcement	Student text and workbook: <i>Introduction</i> to Computer Science
3.7.7.C	Explain and demonstrate basic computer operations	-Dispose of a linked list. -Insert and delete nodes into a linked list.	applications.	Using C ++, Third Edition © 2002, Course
3.7.4.D	use basic computer software.	-Save a linked list. -Understand doubly linked lists. -Understand circularly linked lists.	completion of exercises.	Technology, Thomson Learning
3.7.7.D	Apply computer software to solve problems.		Evaluate with application exercises, chapter tests, unit tests, book programs, and	Teacher-prepared programs
3.7.10.D	Utilize computer software to solve specific problems		teacher designed projects.	Audiovisual Media

	Northern York County School District Curriculum			
Course Name:	C++			
Content:	An introduction to computer programming.			
Key Learning(s):	There are many data structures in C++.			
Essential Question(s)	Why are stacks, queues, and trees important methods of storing data?			
Vocabulary	Ancestors, balance, branch, branch nodes, children, Dequeue, descendants, Enqueue, FIFO, key, LIFO, leaf node, pop, push, tree, root, sibling/child			
Grade Level	11-12			

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Understand stacks. -Understand the way stacks can be implemented.	Evaluate review questions.	Student text and workbook: <i>Introduction</i>
3.7.7.C	Explain and demonstrate basic computer operations	-Use a stack class. -Understand queues. -Understand how a queue can be implemented with a	applications.	Using C++, Third
3.7.4.D	and concepts. Use basic computer software.	linked list. -Use a queue class. -Understand binary trees.	Award points for successful completion of exercises.	<i>Edition</i> © 2002, Course Technology, Thomson Learning
3.7.7.D	Apply computer software to solve problems.	, , , , , , , , , , , , , , , , , , ,	Evaluate with application exercises, chapter tests, unit tests, book programs, and	Teacher-prepared programs
3.7.10.D	Utilize computer software to solve specific problems		teacher designed projects.	Audiovisual Media

Northern York County School District Curriculum			
Course Name:	C++		
Content:	An introduction to computer programming.		
Key Learning(s):	Recursion can greatly simplify programming problems.		
Essential Question(s)	What are the advantages/disadvantages to using different search methods in C++?		
Vocabulary	Collision, division/remainder, method, exit condition, hashing, hashing algorithm, in-order traversal, key, key field, post order, traversal, preorder traversal, recursion, sequential search		
Grade Level	11-12		

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Understand recursion. -Understand sequential searching.	Evaluate review questions.	Student text and workbook: <i>Introduction</i>
3.7.7.C	Explain and demonstrate basic computer operations	-Search binary trees. -Traverse binary trees.	applications.	Using C++, Third
3.7.4.D	and concepts. Use basic computer software.		Award points for successful completion of exercises.	<i>Edition</i> © 2002, Course Technology, Thomson Learning
3.7.7.D	Apply computer software to solve problems.		Evaluate with application exercises, chapter tests, unit tests, book programs, and	Teacher-prepared programs
3.7.10.D	Utilize computer software to solve specific problems		teacher designed projects.	Audiovisual Media

	Northern York County School District Curriculum
Course Name:	C++
Content:	An introduction to computer programming.
Key Learning(s):	Many computer programs require that data be arranged a certain way.
Essential Question(s)	What are the ways of arranging data in a program?
Vocabulary	Ascending order, bubble sort, descending order, divide and conquer approach, external sort, incremental approach, input size, insertion sort, merge sort, key value and field, partitions, quick sort, selection sort, shell sort
Grade Level	11-12

Number	Standard	Student Learning Experiences	Procedures for Assessment	Resources
3.7.4.C	Identify basic computer operations and concepts.	-Understand the basics of sorting. -Understand the selection sort.	Evaluate review questions.	Student text and workbook: <i>Introduction</i>
2770		-Understand the insertion sort.	Evaluate reinforcement	to Computer Science
3.7.7.C	Explain and demonstrate	-Understand the bubble sort.	applications.	Third
	and concepts.	-Understand the guick sort.	Award points for successful	<i>Edition</i> © 2002, Course
3.7.4.D	Use basic computer software.	-Understand the merge sort.	completion of exercises.	Technology, Thomson Learning
			Evaluate with application	Teacher-prepared
3.7.7.D	Apply computer software		exercises, chapter tests, unit	programs
	to solve problems.		tests, book programs, and teacher designed projects.	Audiovisual Media
3.7.10.D	Utilize computer software to solve specific problems			

Introduction to C++ Programming

(2009)

	Introduction to C++ Programming			
Course Description:	The C++ programming language will be used as a model to build student skills in structure and object oriented programming techniques. The emphasis of this course will be to write computer source code to solve problems. Creative and deductive reasoning will be developed, and the student will be encouraged to work independently as well as with a partner with limited amount of direction. This course will develop computer-programming skills for those students who wish to pursue a career in the computer science, math, or science related field of study.			
Grade Level:	11-12			
Length of Course:	Frequency: 6 days per 6 day cycle Duration: 44 minutes Length: full year course Credits: 1			
Prerequisites:	Successful completion of Web Page Design			
Textbook:	Introduction to Computer Science Using C++, 3 rd Edition			
Expected Level of Achievement	Students will be required to maintain a 70% or better. They will be required to come to class prepared to learn.93-100% = A $85 - 92\% = B$ $77 - 84\% = C$ $70 - 76\% = D$ Below 70% = F			