

C++ Unit 1: Problem Solving

ESTABLISHED GOALS: <u>Competencies:</u> - Students will demonstrate the ability to explain the process used to translate high level languages to low level languages in order to create executable images. - Students will demonstrate the ability to analyze machine code to utilize its correct interpretation in order to solve a problem. - Students will demonstrate the ability to create a coding solution in order to solve a problem. - Students will demonstrate the ability to analyze and summarize text and integrate knowledge to make meaning of discipline-specific materials. - Students will demonstrate the ability to produce coherent and supported writing in order to communicate effectively for a range of discipline-specific tasks, purposes, and audiences. - Students will demonstrate the ability to speak purposefully and effectively by strategically making decisions about content, language use, and discourse style. <u>Content Standards:</u> CSTA - Computer Science Teacher Association CSTA 3A-C-4-16: Describe the steps necessary for a computer to execute high-level source code (e.g. compilation to machine language, interpretation, fetch-decode-execute cycle.) CSTA 3B-A-5-7: Decompose a problem by creating new data types, functions, or classes. CSTA 3B-A-5-8: Demonstrate code reuse by creating programming solutions using libraries and APIs (e.g. graphics libraries, maps API.) CSTA 3B-D-4-25: Discuss how data sequences (e.g. binary, hexadecimal, octal) can be interpreted in a variety of forms (e.g. instructions, numbers, text, sound, image.)	<table border="1"> <tr> <th colspan="2">Transfer</th></tr> <tr> <td colspan="2">Students will be able to independently use their learning to select the most appropriate tool to solve a variety of problems.</td></tr> <tr> <th colspan="2">Meaning</th></tr> <tr> <td> ENDURING UNDERSTANDINGS Students will understand that... - primitive data structures, variables and constants impact information. - computers use data in order to process information and produce results. - some data is constant, and some data varies. - different types of information is stored differently by the computer. </td><td> ESSENTIAL QUESTIONS - Which is more limited, the human brain or a computer? </td></tr> <tr> <th colspan="2">Acquisition</th></tr> <tr> <td> Students will know... - that C++ development design involves decisions based on information (data) that is required to create a solution. - that C++ uses a development environment to create, run, and test programs. - that C++ uses a specific language syntax to successfully solve problems. <u>vocabulary:</u> algorithm, character, data, floating point number, input, integer, output, processing </td><td> Students will be skilled at... - describing how computers execute source code. - creating a running C++ program. - breaking down problems by creating new data types, functions, or classes. - developing a procedure oriented style program. - creating, selecting, and using appropriate primitive data types and memory locations (variables and constants). - explaining how data sequences can be interpreted. - creating a program solution that shows code reuse. </td></tr> </table>	Transfer		Students will be able to independently use their learning to select the most appropriate tool to solve a variety of problems.		Meaning		ENDURING UNDERSTANDINGS Students will understand that... - primitive data structures, variables and constants impact information. - computers use data in order to process information and produce results. - some data is constant, and some data varies. - different types of information is stored differently by the computer.	ESSENTIAL QUESTIONS Which is more limited, the human brain or a computer?	Acquisition		Students will know... - that C++ development design involves decisions based on information (data) that is required to create a solution. - that C++ uses a development environment to create, run, and test programs. - that C++ uses a specific language syntax to successfully solve problems. <u>vocabulary:</u> algorithm, character, data, floating point number, input, integer, output, processing	Students will be skilled at... - describing how computers execute source code. - creating a running C++ program. - breaking down problems by creating new data types, functions, or classes. - developing a procedure oriented style program. - creating, selecting, and using appropriate primitive data types and memory locations (variables and constants). - explaining how data sequences can be interpreted. - creating a program solution that shows code reuse.
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Content Area Literacy Standards RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11-12 texts and topics</i>. WHST.9-10.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	21st Century Skills - Make Judgements and Decisions - Manage Goals and Time - Be Self-directed Learners - Solve Problems												

WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

<i>Evaluative Criteria</i>	<i>Assessment Evidence</i>
	PERFORMANCE TASK(S):
	OTHER EVIDENCE:

Summary of Key Learning Events and Instruction

Language Arts Integration

- 1.OA.1 Use

Mathematics Integration

- 1.OA.1 Use

Technology Integration

- 1.OA.1 Use

District Materials