Southern York County School District

One Warrior at a Time

Course/Subject: CS Discoveries - Coding	Grade Level: 6

Textbook(s) / Instructional Materials Used: Online resources at www.code.org

Month(s): August - January	Unit 1 - Problem Solving

Problem Solving

Big Ideas	Standard	Essential Questions & Lesson Essential Question	Concepts/ Objectives	Vocabulary	Competencies
Problem Solving Computer Processing	1B-AP-08 - Compare and refine multiple algorithms for the same task and determine which is the most appropriate. 1B-AP-11 - Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process. 1B-AP-16 - Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation and review stages of program development. 1B-CS-01 - Describe how internal and external parts of computing devices function to form a system. 1B-CS-02 - Model how computer hardware and	● What strategies and processes can I use to become a more effective problem solver? ● How do computers help people solve problems? ● How do people and computers approach problems differently? ● What do a computer need from people in order to solve problems effectively?	Input Output Processing Algorithm Storage App **Objectives:** Communicate and collaborate with classmates in order to solve a problem. Iteratively improve a solution to a problem Identify different strategies used to solve a problem. Identify the four steps of the problem solving process.	Input Output Algorithm App	Problem Solving Strategies Input Output Processing Algorithms Computer vs Non Computer App Design

	software work together as a system to accomplish tasks. 2-CS-02 - Design projects that combine hardware and software components to collect and exchange data. 2-IC-20 - Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options. 2-AP-10 - Use flowcharts and/or pseudocode to address complex problems as algorithms. 2-AP-15 - Seek and incorporate feedback from team members and users to refine a solution that meets user needs. 2-AP-17 - Systematically test and refine programs using a range of test cases. 2-AP-18 - Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts. **ISTE** 1d -Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge		Given a problem, identify individual actions that would fall within each step of the problem solving process. Identify useful strategies within each step of the problem solving process. Apply the problem solving process to approach a variety of problems. Assess how well-defined a problem is and use strategies to define the problem more precisely. Identify a computer as a machine that works with information to help people with thinking tasks. Provide a high level description of the different parts of the Input - Output - Store - Process model of a computer.		

	to explore emerging technologies. 2b - Students engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices. 4b - Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks. 4c -Students develop, test and refine prototypes as part of a cyclical design process. 4d - Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems. 5d - Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.		Identify the inputs and outputs of common computing devices. Select the inputs and outputs used to perform common computing tasks. Define processing as the work done (possibly by a computer) to turn an input into an output. Define an algorithm as the series of commands a computer uses to process information. Develop and iteratively improve an algorithm for processing information based on given constraints. Describe how information can be processed to solve a particular problem. Identify a possible source of a given input.		

			Determine what information should be stored on a device for later. Identify and define a problem that could be solved using computing. Design an app that inputs, outputs, stores, and processes information in order to solve a problem. Provide and incorporate targeted peer feedback to improve a computing artifact.		

Month(s): January - May			Unit 2 – Web Development		
Web Development					
Big Ideas	**Standard**	**Essential Questions & Lesson Essential Question**	**Concepts/ Objectives**	**Vocabulary**	**Competencies**
Web Content Webpage Creation HTML CSS Digital Citizenship	1B-IC-18 - Discuss computing technologies that have changed the world and express how those technologies influence, and are influenced by, cultural practices.	• Why do people create websites? • How can test communicate content and structure on a web page?	HTML Heading Debugging Privacy Lists CSS Styling	Website Website Content HTML HTML Element HTML Tag	HTML CSS Styling Debugging Lists HTML Tagging Using Intellectual Property

1B-IC-21 - Use public domain or creative commons media and refrain from copying or using material created by others without permission. 1B-IC-21 - Use public domain or creative commons media and refrain from copying or using material created by others without permission. 1B-AP-11 - Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process. 1B-AP-12 - Modify, remix or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features. 1B-AP-15 - Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended. 1B-NI-05 - Discuss real-world cybersecurity problems and how personal information can be protected. 2-IC-20 - Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.	• How can I incorporate content I find online into my own webpage? • What strategies can I use when coding to find and fix issues?	**Objectives:** Identify the reasons someone might visit a given website. Identify the reasons someone might create a given website. Explain that HTML allows a programmer to communicate the way content should be structured on a web page. Write a simple HTML document that uses opening and closing tags to structure content. Understand how to use lesson resources provided in Web Lab. Use heading tags to change the appearance of text on a web page. Structure content into headings, subheadings, and paragraphs.	Website Structure Heading Digital Footprint Citation Copyright Creative Commons Intellectual Property Bug Comment Debugging Indentation Whitespace Hyperlink CSS CSS Sector Algorithm Search Engine CSS Class	Hyperlinking

	2-IC-23 - Describe tradeoffs between allowing information to be public and keeping information private and secure. 2-AP-13 - Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. 2-AP-16 - Incorporate existing code, media, and libraries into original programs, and give attribution. 2-AP-17 - Systematically test and refine programs using a range of test cases. 2-AP-19 - Document programs in order to make them easier to follow, test, and debug. 3A-AP-20 - Evaluate licenses that limit or restrict use of computational artifacts when using resources such as libraries. **ISTE Standards** 1d - Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.		Understand and explain reasons that it is difficult to control who sees information published online. Understand and justify guidelines for safely publishing information online. Use the , , and tags to create ordered and unordered lists in an HTML page. Create and name a new HTML page. Explain the purpose of copyright. Identify the rights and restrictions granted by various Creative Commons licenses. Add an image to a web page. Describe why using whitespace, indentation, and comments makes your code easier to maintain.		

	2a - Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world. 2b - Students engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices. 2c - Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property. 2d - Students manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online. 5a - Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions. 5c - Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.		Develop a set of techniques for preventing bugs in HTML code and finding them when they occur. Connect multiple web pages into one website using hyperlinks. Use CSS selectors to style HTML text elements. Create and link to an external style sheet. Explain the differences between HTML and CSS in both use and syntax. Use CSS properties to change the size, position, and borders of elements. Create a CSS rule-set for the body element that impacts all elements on the page. Use basic web searching		

	5d - Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions. 6a - Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication. 6b - Students create original works or responsibly repurpose or remix digital resources into new creations. 6c - Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations. 6d - Students publish or present content that customizes the message and medium for their intended audiences.		techniques to find relevant information online. Identify elements that contribute to a website's trustworthiness or untrustworthiness. Group elements using classes in order to create more specific styles on their website. Apply the rgb() color function to add custom colors to their website. Apply CSS styles across an entire website. Explain the design choices they made on their website to other people. Prioritize and implement incremental improvements.		