Concept	Subconcept	3rd Grade	4th Grade	5th Grade	CSTA Standards:	Practices	Comments by Writers	
Computing Systems	Devices	3.CS.D.01 Identify how computing devices can be connected to other devices to extend their capabilities.	4.CS.D.01 Identify and explain how computing devices can be connected to other devices to extend their capabilities.	5.CS.D.01 Model and communicate how computing devices can be connected to other devices to extend their capabilities.	1B-CS-01	7 - Communicating about computing	We changed the national standard in an effort to change the verbage from describe to more specific language.	
	Hardware and Software	3.CS.HS.01 Model how information flows through hardware and software to accomplish tasks.	4.CS.HS.01 Explain how information is translated, transmitted, and processed between hardware and software in order to accomplish tasks.	5.CS.HS.01 Illustrate how information is translated into binary numbers between software and hardware. Understand that everything on a computer can be reduced to1's and 0's.	1B-CS-02	4 - Developing and using Abstractions	Modified the verabage to reduce modeling, but still leaving emphasis on needing to use practices in learning. Expanded the 5th grade standard for binary with more motivation.	
	Troubleshooting	3.CS.T.01 Identify, using accurate terminology, simple hardware and software problems and strategies for solving these problems (e.g., reboot device, check for power, close and reopen applications, check network availability, and discuss problems with peers and adults).	4.CS.T.O1 Identify, using accurate terminology, simple hardware and software problems that may occur during everyday use, discuss problems with peers and adults, and apply strategies for solving these problems (e.g., rebooting the device, checking the power, force shut down of an application).	5.CS.T.01 Using accurate terminology, identify simple hardware and software problems that may occur during everyday use.	1B-CS-03 and Washington (1B-C-7-10) and Idaho's (Idaho 3-5-CS-02) standards about using proper terminology	6 - Testing and Refining Computational Artifacts	Again, we changed the verbs to actions.	
Networks & the Internet	Network Communication & Organization	3.NI.NCO.01 Model how a device on a network sends and receives information.	4.NI.NCO,O1 Explain how information is sent and received across physical or wireless paths. (It is broken down into smaller pieces called packets and transmitted from one location to another.)	5.NI.NCO.01 Model how information is broken down into smaller pieces and transmitted through multiple devices over networks and the internet, and how these pieces are assembled at the destination.	1B-NI-04	4 - Developing and using abstractions	5th is exactly like the national standard, third and fourth were the development of skills to accomplish the fifth grade standard.	
	Cybersecurity	3.NI.C.01 Identify problems that relate to inappropriate use of computing devices and networks.	4.NI.C.01 Identify and explain issues related to responsible use of technology and information, and describe personal consequences of inappropriate use.	5.NI.C.01 Discuss real-world cybersecurity problems and identify strategies for how personal information can be protected.	1B-N1-05	3 - Recognizing and Defining Computational Problems	5th is exactly like the national standard, third and fourth were the development of skills to accomplish the fifth grade standard.	
Data Analysis	Storage	3.DA.S.01 Compare and contrast the formats and storage requirements for different types of information (e.g., music, video, images, and text).	4.DA.S.01 Classify different storage locations (physical, shared, or cloud) based on the type of file, storage requirements (file size, availability, available memory), and sharing requirements.	5.DA.S.01 Evaluate trade-offs of file types, storage requirements, and sharing requirements, including comparisons of availability and quality.	Oklahoma (DA.S.01)	7 - Communicating About Computing	Why did we add this from Oklahoma's standards? We added this as there was nothing in the CSTA but this area was being covered at the PK-2 grades and then again at grades 6-8. We wanted the gap to be filled so the content wasn't lost during these three years.	
	Collection	3.DA.C.01 Gather relevant and reliable data to solve a problem or answer a question.	4.DA.C.01 Gather and manipulate relevant and reliable data using the appropriate digital tool.	5.DA.C.01 Select the appropriate tool to collect relevant and reliable data that solves a problem	Idaho (3-5.DA.03)	5 - Creating Computational Artifacts	Why did we add this from Idaho's standards? In the CSTA, this content was grouped together combining Collection, Visualization & Transformation. We felt the concept of data collection, including relavant and reliable data, was a crucial step for students learn.	Should we add that the key in this is that our data is from reputable sources?
	Visualization & Transformation	3.DA.VT.01 Create a simple data visualization (e.g., graphs, charts and infographics) based on data collected by or provided to student.	4.DA.VT.01 Organize and present collected data visually to highlight comparisons.	5.DA.VT.01 Organize and present collected data to highlight comparisons and support a claim.	1B-DA-06	7 - Communicating about Computing		
	Inference and Models	3.DA.IM.01 Utilize data to make predictions and discuss whether there is adequate data to make reliable predictions.	4.DA.IM.01 Determine how the accuracy of conclusions are influenced by the amount and relevance of the data collected.	5.DA.IM.01 Use data to discover or propose cause and effect relationships, predict outcomes, or communicate an idea.	1B-DA-07	7 - Communicating about Computing		
Algorithms and Programming	Algorithms	3.AP.A.01 Compare multiple algorithms for the same task.	4.AP.A.01 Analyze and refine multiple algorithms for the same task.	5.AP.A.01 Analyze and refine multiple algorithms for the same task and determine which algorithm is the most efficient.	1B-AP-08	3 - Recognizing and Defining Computational Problems 6 - Testing and Refining Computational Artifacts		
	Variables	3.A.V.01 Utilize and create simple programs that use variables to store and modify grade level appropriate data.	4.AP.V.01 Utilize, create, and modify programs that use variables, with grade level appropriate data.	5.A.V.01 Utilize and create programs that create, use, modify, and combine variables with grade level appropriate data	1B-AP-09	5 - Creating Computational Artifacts		
	Control	3.AP.C.01 Create simple programs using a programming language that utilize sequencing, repetition, conditionals, and variables to solve a problem or express ideas both independently and collaboratively.	4.AP.C.01 Create programs using a programming language that utilize sequencing, repetition, conditionals and variables using math operations manipulate values to solve a problem or express ideas both independently and collaboratively.	5.AP.C.01 Create programs using a programming language that utilize sequencing, repetition, conditionals, event handlers, and variables using math operations to manipulate values to solve a problem or express ideas both independently and collaboratively.	1B-AP-10	5 - Creating Computational Artifacts		
	Modularity	3.AP.M.01 Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.	4.AP.M.01 Decompose large problems into smaller, manageable subproblems to facilitate the program development process.	5.AP.M.01 Decompose large problems into smaller, more manageable subproblems. T'hen form algorithms to solve each subproblem	1B-AP-11	3 - Recognizing and Defining Computational Problems		
		3.AP.M.02 With grade appropriate complexity, modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.	4.AP.M.02 With grade appropriate complexity, modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.	5.AP.M.02 With grade appropriate complexity, 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-12	3 - Recognizing and Defining Computational Problems 5 - Creatng Computational Artifacts		
		3.AP.PD.01 Create a plan using an iterative process to plan the development of a program while solving simple problems (e.g., storyboard, flowchart, pseudo-code, story map).	4.AP.PD.01 Create a plan using an iterative process to plan the development of a program that includes user preferences while solving simple problems.	5.AP.PD.01 Create a plan using an iterative process for the development of a program that includes others' perspectives and user preferences while solving simple problems.	1B-AP-13	1 - Fostering an Inclusive Computing Culture 5 - Creating Computational Artifacts		

	Program Development	3.AP.PD.02 Use proper citations and document when ideas are borrowed and changed for their own use (e.g., using pictures created by others, using music created by others, remixing programming projects).	4.AP.PD.02 Use proper citations and document when ideas are borrowed and changed for their own use (e.g., using pictures created by others, using music created by others, remixing programming projects).	5.AP.PD.02 Use proper citations and document when ideas are borrowed and changed for their own use (e.g., using pictures created by others, using music created by others, remixing programming projects).	1B-AP-14	5 - Creating Computational Artifacts 7.- Communicating About Computing		
		3.AP.PD.03 Analyze and debug (identify/fix errors) a program that includes sequencing, repetition and variables in a programming language.	4.AP.PD.03 Analyze, debug (identify/fix errors), and create a program that includes sequencing, repetition and variables in a programming language.	5.AP.PD.03 Analyze, debug (identify/fix errors), and create a program that includes sequencing, repetition and variables in a programming language.	1B-AP-15	1 - Fostering an Inclusive Computing Culture 2 - Collaborating Around Computing 6 - Testing and Refining Computational Artifacts		
		3.AP.PD.04 Communicate and explain your program development using comments, presentations and demonstrations.	4.AP.PD.04 Communicate and explain your program development using comments, presentations and demonstrations.	5.AP.PD.04 Take on varying roles collaborating with peers to give feedback at different stages of program development, including design and implementation.	1B-AP-17 1B-AP-16	2 - Collaborating Around Computing 7.- Communicating About Computing	As a group, we decided to combine both the 1B-AP-16 and 1B-AP-17. First, students will learn to comunicate their code, comunicate and collaborate with their own, then with peers, then be able to collborate on projects and communicate as a team	
Impacts of Computing	Culture	3.IC.C.01 Identify possible problems and how computing devices have built in features for increasing accessibility to all users.	4.IC.C.01 Brainstorm problems and ways to improve computing devices to increase accessibility to all users.	5.IC.C.01 Develop, test, and refine digital artifacts to improve accessibility and usability for a computing device or program.	1B-IC-19	4 - Developing and Using Abstractions 5 - Creating Computational Artifacts 6 - Testing and Refining Computational Artifacts		
	Social Interactions	3.IC.SI.01 Develop a code of conduct, explain, and practice grade-level appropriate behavior and responsibilities while participating in an online community. Identify and report inappropriate behavior. (Digital Citizenship)	4.IC.SI.01 Develop a code of conduct, explain, and practice grade-level appropriate behavior and responsibilities while participating in an online community. Identify and report inappropriate behavior. (Digital Citizenship)	5.IC.SI.01 Develop a code of conduct, explain, and practice grade-level appropriate behavior and responsibilities while participating in an online community. Identify and report inappropriate behavior. (Digital Citizenship)	Oklahoma IC.SI.01	1 - Fostering an Inclusive Computing Culture 7 - Communicating About Computing	as schools become 1 to 1, and with the increase in social media digital citizanship is needed	
		3.IC.SI.02 Identify how computational products may be, or have been, improved to incorporate diverse perspectives.	4.IC.SI.02 As a team, consider each others perspectives on improving a computational product.	5.IC.SI.02 As a team, collaborate with people and resources outside of your normal space to include diverse perspectives to improve computational products.	1B-IC-20	1 - Fostering an Inclusive Computing Culture 2 - Collaborating Around Computing		
	History	3.IC.H.01 Identify computing technologies that have changed the world, and express how those technologies influence, and are influenced by, society.	4.IC.H.01 Identify and give examples of computing technologies that have changed the world, and express how those technologies influence, and are influenced by, society.	4.IC.H.01 Identify and explain the evolution of computing technologies that have changed the world.	1B-IC-18	1 - Fostering an Inclusive Computing Culture 7 - Communicating About Computing		
	Safety, Law, & Ethics	3.IC.SLE.01 Identify types of digital data that may have intellectual property rights that prevent copying or require attribution.	4.IC.SLE.01 Discuss the social impact of violating intellectual property rights.	5.IC.SLE.01 Observe intellectual property rights and give appropriate credit when using resources.	1B-IC-21	5 - Creating Computational Artifacts		
	Community Partnerships	3.IC.CP.01 Design a visual product depicting the connections between computer science and other fields.	4.IC.CP.01 Design a visual product depicting the connections between computer science and other fields.	5.IC.CP.01 Design a visual product depicting the connections between computer science and other fields.		1 - Fostering an Inclusive Computing Culture 2 - Collaborating Around Computing 7 - Communicating About Computing	We felt this was the overall reason for the standards themselves. We also wanted students to be able to connect the content to the real world within their own community.	