California K–8 Computer Science Standards and BTE Curriculum Alignment

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CA K-8 Computer Science Standards				BTE K-8 Curriculum				
Grade	**Standard Identifier**	**Standard**	**Framework Alignment: Concept**	**Grade Level**	**Unit 1**	**Unit 2**	**Unit 3**	**Unit 4**
K-2	K-2.CS.1	Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.	Computing Systems	K	✔	✔	✔	✔
				1st	✔	✔	✔	✔
				2nd	✔	✔	✔	✔
K-2	K-2.CS.2	Explain the functions of common hardware and software components of computing systems.	Computing Systems	K	✔	✔	✔	✔
				1st	✔	✔	✔	✔
				2nd	✔	✔	✔	✔
K-2	K-2.CS.3	Describe basic hardware and software problems using accurate terminology.	Computing Systems	K	✔	✔	✔	✔
				1st	✔	✔	✔	✔
				2nd	✔	✔	✔	✔
K-2	K-2.NI.4	Model and describe how people connect to other people, places, information and ideas through a network.	Networks & the Internet	K	✔	✔	✔	✔
				1st	✔	✔	✔	✔
				2nd	✔	✔	✔	✔
K-2	K-2.NI.5	Explain why people use passwords.	Networks & the Internet	K	✔			
				1st	✔			
				2nd			✔	
K-2	K-2.NI.6	Create patterns to communicate a message.	Networks & the Internet	K				✔
				1st				✔
				2nd				✔
K-2	K-2.DA.7	Store, copy, search, retrieve, modify, and delete information using a computing device, and define the information stored as data.	Data & Analysis	K	✔	✔	✔	✔
				1st	✔	✔	✔	✔
				2nd	✔	✔	✔	✔
K-2	K-2.DA.8	Collect and present data in various visual formats.	Data & Analysis	K			✔	
				1st			✔	
				2nd			✔	
K-2	K-2.DA.9	Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions.	Data & Analysis	K			✔	
				1st			✔	
				2nd			✔	

K-2	K-2.AP.10	Model daily processes by creating and following algorithms to complete tasks.	Algorithms & Programming	K				✔
				1st				✔
				2nd				✔
K-2	K-2.AP.11	Model the way programs store data.	Algorithms & Programming	K				
				1st				
				2nd				
K-2	K-2.AP.12	Create programs with sequences of commands and simple loops, to express ideas or address a problem.	Algorithms & Programming	K				✔
				1st				✔
				2nd				✔
K-2	K-2.AP.13	Decompose the steps needed to solve a problem into a sequence of instructions.	Algorithms & Programming	K				✔
				1st				✔
				2nd				✔
K-2	K-2.AP.14	Develop plans that describe a program's sequence of events, goals, and expected outcomes.	Algorithms & Programming	K	✔	✔	✔	✔
				1st	✔	✔	✔	✔
				2nd	✔	✔	✔	✔
K-2	K-2.AP.15	Give attribution when using the ideas and creations of others while developing programs.	Algorithms & Programming	K	✔	✔	✔	✔
				1st	✔	✔	✔	✔
				2nd	✔	✔	✔	✔
K-2	K-2.AP.16	Debug errors in an algorithm or program that includes sequences and simple loops.	Algorithms & Programming	K				✔
				1st				✔
				2nd				✔
K-2	K-2.AP.17	Describe the steps taken and choices made during the iterative process of program development.	Algorithms & Programming	K				✔
				1st				✔
				2nd				✔
K-2	K-2.IC.18	Compare how people lived and worked before and after the adoption of new computing technologies.	Impacts of Computing	K				
				1st				
				2nd				
K-2	K-2.IC.19	Work respectfully and responsibly with others when communicating electronically.	Impacts of Computing	K	✔	✔	✔	✔
				1st	✔	✔	✔	✔
				2nd	✔	✔	✔	✔
K-2	K-2.IC.20	Describe approaches and rationales for keeping login information private, and for logging off of devices appropriately.	Impacts of Computing	K	✔			
				1st	✔			
				2nd	✔			
3-5	3-5.CS.1	Describe how computing devices connect to other components to form a system.	Computing Systems	3rd	✔			
				4th	✔			
				5th	✔			
3-5	3-5.CS.2	Demonstrate how computer hardware and software work together as a system to accomplish tasks.	Computing Systems	3rd	✔			
				4th	✔			
				5th	✔			

3-5	3-5.CS.3	Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies.	Computing Systems	3rd	✔			
				4th	✔			
				5th	✔			
3-5	3-5.NI.4	Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the Internet, and reassembled at the destination.	Networks & the Internet	3rd				
				4th				
				5th				
3-5	3-5.NI.5	Describe physical and digital security measures for protecting personal information.	Networks & the Internet	3rd			✔	
				4th			✔	
				5th			✔	
3-5	3-5.NI.6	Create patterns to protect information from unauthorized access.	Networks & the Internet	3rd				
				4th				
				5th				
3-5	3-5.DA.7	Explain that the amount of space required to store data differs based on the type of data and/or level of detail.	Data & Analysis	3rd	✔			
				4th	✔			
				5th	✔			
3-5	3-5.DA.8	Organize and present collected data visually to highlight relationships and support a claim.	Data & Analysis	3rd			✔	
				4th			✔	
				5th			✔	
3-5	3-5.DA.9	Use data to highlight and/or propose relationships, predict outcomes, or communicate ideas.	Data & Analysis	3rd			✔	
				4th			✔	
				5th			✔	
3-5	3-5.AP.10	Compare and refine multiple algorithms for the same task and determine which is the most	Algorithms & Programming	3rd	✔	✔	✔	✔
				4th	✔	✔	✔	✔
				5th	✔	✔	✔	✔
3-5	3-5.AP.11	Create programs that use variables to store and modify data.	Algorithms & Programming	3rd				✔
				4th				✔
				5th				✔
3-5	3-5.AP.12	Create programs that include events, loops, and conditionals.	Algorithms & Programming	3rd				✔
				4th				✔
				5th				✔
3-5	3-5.AP.13	Decompose problems into smaller, manageable tasks which may themselves be decomposed.	Algorithms & Programming	3rd	✔	✔	✔	✔
				4th	✔	✔	✔	✔
				5th	✔	✔	✔	✔
3-5	3-5.AP.14	Create programs by incorporating smaller portions of existing programs, to develop something new or add more advanced features.	Algorithms & Programming	3rd	✔	✔	✔	✔
				4th	✔	✔	✔	✔
				5th	✔	✔	✔	✔

3-5	3-5.AP.15	Use an iterative process to plan and develop a program by considering the perspectives and preferences of others.	Algorithms & Programming	3rd				✓
				4th				✓
				5th				✓
3-5	3-5.AP.16	Observe intellectual property rights and give appropriate attribution when creating, remixing, or combining programs.	Algorithms & Programming	3rd	✓	✓	✓	✓
				4th	✓	✓	✓	✓
				5th	✓	✓	✓	✓
3-5	3-5.AP.17	Test and debug a program or algorithm to ensure it accomplishes the intended task.	Algorithms & Programming	3rd				✓
				4th				✓
				5th				✓
3-5	3-5.AP.18	Perform different roles when collaborating with peers during the design, implementation, and review stages of program development.	Algorithms & Programming	3rd	✓	✓	✓	✓
				4th	✓	✓	✓	✓
				5th	✓	✓	✓	✓
3-5	3-5.AP.19	Describe choices made during program development using code comments, presentations, and demonstrations.	Algorithms & Programming	3rd				✓
				4th				✓
				5th				✓
3-5	3-5.IC.20	Discuss computing technologies that have changed the world, and express how those technologies influence, and are influenced by, cultural practices.	Impacts of Computing	3rd				
				4th				
				5th				
3-5	3-5.IC.21	Propose ways to improve the accessibility and usability of technology products for the diverse needs and wants of users.	Impacts of Computing	3rd				✓
				4th				✓
				5th				✓
3-5	3-5.IC.22	Seek and explain the impact of diverse perspectives for the purpose of improving computational artifacts.	Impacts of Computing	3rd		✓		
				4th		✓		
				5th		✓		
3-5	3-5.IC.23	Describe reasons creators might limit the use of their work.	Impacts of Computing	3rd	✓	✓	✓	✓
				4th	✓	✓	✓	✓
				5th	✓	✓	✓	✓
6-8	6-8.CS.1	Design modifications to computing devices in order to improve the ways users interact with the devices.	Computing Systems	6th				
				7th				
				8th				
6-8	6-8.CS.2	Design a project that combines hardware and software components to collect and exchange data.	Computing Systems	6th	✓	✓	✓	✓
				7th	✓	✓	✓	✓
				8th	✓	✓	✓	✓
6-8	6-8.CS.3	Systematically apply troubleshooting strategies to identify and resolve	Computing Systems	6th	✓			
				7th	✓			

		hardware and software problems in computing systems.	Computing Systems	8th	✔			
6-8	6-8.NI.4	Model the role of protocols in transmitting data across networks and the Internet.	Networks & the Internet	6th				
				7th				
				8th				
6-8	6-8.NI.5	Explain potential security threats and security measures to mitigate threats.	Networks & the Internet	6th			✔	
				7th			✔	
				8th			✔	
6-8	6-8.NI.6	Apply multiple methods of information protection to model the secure transmission of information.	Networks & the Internet	6th				
				7th				
				8th				
6-8	6-8.DA.7	Represent data in multiple ways.	Data & Analysis	6th			✔	
				7th			✔	
				8th			✔	
6-8	6-8.DA.8	Collect data using computational tools and transform the data to make it more useful.	Data & Analysis	6th			✔	
				7th			✔	
				8th			✔	
6-8	6-8.DA.9	Test and analyze the effects of changing variables while using computational models.	Data & Analysis	6th			✔	
				7th			✔	
				8th			✔	
6-8	6-8.AP.10	Use flowcharts and/or pseudocode to design and illustrate algorithms that solve complex problems.	Algorithms & Programming	6th				✔
				7th				✔
				8th				✔
6-8	6-8.AP.11	Create clearly named variables that store data, and perform operations on their contents.	Algorithms & Programming	6th				✔
				7th				✔
				8th				✔
6-8	6-8.AP.12	Design and iteratively develop programs that combine control structures and use compound conditions.	Algorithms & Programming	6th				✔
				7th				✔
				8th				✔
6-8	6-8.AP.13	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.	Algorithms & Programming	6th	✔	✔	✔	✔
				7th	✔	✔	✔	✔
				8th	✔	✔	✔	✔
6-8	6-8.AP.14	Create procedures with parameters to organize code and make it easier to reuse.	Algorithms & Programming	6th				✔
				7th				✔
				8th				✔
6-8	6-8.AP.15	Seek and incorporate feedback from team members and users to refine a solution that meets user needs.	Algorithms & Programming	6th			✔	✔
				7th			✔	✔
				8th			✔	✔
6-8	6-8.AP.16	Incorporate existing code, media, and libraries into original programs, and	Algorithms & Programming	6th	✔	✔	✔	✔
				7th	✔	✔	✔	✔

		give attribution.	Programming	8th	✔	✔	✔	✔
6-8	6-8.AP.17	Systematically test and refine programs using a range of test cases.	Algorithms & Programming	6th	✔	✔	✔	✔
				7th	✔	✔	✔	✔
				8th	✔	✔	✔	✔
6-8	6-8.AP.18	Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.	Algorithms & Programming	6th	✔	✔	✔	✔
				7th	✔	✔	✔	✔
				8th	✔	✔	✔	✔
6-8	6-8.AP.18	Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.	Algorithms & Programming	6th				✔
				7th				✔
				8th				✔
6-8	6-8.IC.20	Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.	Impacts of Computing	6th	✔	✔	✔	✔
				7th				
				8th				
6-8	6-8.IC.21	Discuss issues of bias and accessibility in the design of existing technologies.	Impacts of Computing	6th				
				7th				
				8th				
6-8	6-8.IC.22	Collaborate with many contributors when creating a computational artifact.	Impacts of Computing	6th			✔	
				7th			✔	
				8th			✔	
6-8	6-8.IC.23	Compare tradeoffs associated with licenses for computational artifacts to balance the protection of the creators' rights and the ability for others to use and modify the artifacts.	Impacts of Computing	6th		✔		
				7th		✔		
				8th		✔		
6-8	6-8.IC.24	Compare tradeoffs between allowing information to be public and keeping information private and secure.	Impacts of Computing	6th			✔	
				7th			✔	
				8th			✔	