Computer Science Standards Alignment

Standards

Legend

●	The standard is clearly addressed by program activities.
-	This standard potentially could be addressed as part of *FIRST*® LEGO® League Challenge either by actions that the coach or teacher takes when working with the students or by conditions established by the program.

Grades 3-5

Cluster	Indicator	Indicator Statement	Addressed
Computing Systems	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 software work together as a system to accomplish tasks.	-
	1B-CS-03	Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies.	-
Networks & the Internet	1B-NI-04	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.	-
	1B-NI-05	Discuss real-world cybersecurity problems and how personal information can be protected.	-
Data & Analysis	1B-DA-06	Organize and present collected data visually to highlight relationships and support a claim.	●
	1B-DA-07	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.	●
Algorithms & Programming	1B-AP-08	Compare and refine multiple algorithms for the same task and determine which is the most appropriate.	●
	1B-AP-09	Create programs that use variables to store and modify data.	-
	1B-AP-10	Create programs that include sequences, events, loops, and conditionals.	●
	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-13	Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences.	●
	1B-AP-14	Observe intellectual property rights and give appropriate attribution when creating or remixing programs.	-
	1B-AP-15	Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.	●
	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-AP-17	Describe choices made during program development using code comments, presentations, and demonstrations.	●
Impacts of Computing	1B-IC-18	Discuss computing technologies that have changed the world, and express how those technologies influence, and are influenced by, cultural practices.	-
	1B-IC-19	Brainstorm ways to improve the accessibility and usability of technology products for the diverse needs and wants of users.	-
	1B-IC-20	Seek diverse perspectives for the purpose of improving computational artifacts.	-

	1B-IC-21	Use public domain or creative commons media, and refrain from copying or using material created by others without permission.	-

Grades 6-8

Cluster	Indicator	Indicator Statement	Addressed
Computing Systems	2-CS-01	Recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices.	-
	2-CS-02	Design projects that combine hardware and software components to collect and exchange data.	-
	2-CS-03	Systematically identify and fix problems with computing devices and their components.	-
Networks & the Internet	2-NI-04	Model the role of protocols in transmitting data across networks and the Internet.	-
	2-NI-05	Explain how physical and digital security measures protect electronic information.	-
	2-NI-06	Apply multiple methods of encryption to model the secure transmission of information.	-
Data & Analysis	2-DA-07	Represent data using multiple encoding schemes.	-
	2-DA-08	Collect data using computational tools and transform the data to make it more useful and reliable.	-
	2-DA-09	Refine computational models based on the data they have generated.	-
Algorithms & Programming	2-AP-10	Use flowcharts and/or pseudocode to address complex problems as algorithms.	●
	2-AP-11	Create clearly named variables that represent different data types and perform operations on their values.	-
	2-AP-12	Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.	-●
	2-AP-13	Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.	●
	2-AP-14	Create procedures with parameters to organize code and make it easier to reuse.	●
	2-AP-15	Seek and incorporate feedback from team members and users to refine a solution that meets user needs.	●
	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-18	Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.	●
	2-AP-19	Document programs in order to make them easier to follow, test, and debug.	●
Impacts of Computing	2-IC-20	Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.	-
	2-IC-21	Discuss issues of bias and accessibility in the design of existing technologies.	-
	2-IC-22	Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.	-
	2-IC-23	Describe tradeoffs between allowing information to be public and keeping information private and secure.	-