

K-2 Computer Science Teachers Association (CSTA) Computer Science Standards

Concept	Subconcept	Standard	Level 1A (Ages 5-7) By the end of Grade 2, students will be able to. . .	Coding Lessons	In-App Content	Challenge Cards	Curriculum Guide	
Computing Systems	Devices	1A-CS-01	Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use.		●		●	
	Hardware & Software	1A-CS-02	Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware).	●				
	Troubleshooting	1A-CS-03	Describe basic hardware and software problems using accurate terminology.				●	
Data Analysis	Storage	1A-DA-05	Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.	●	●		●	
	Collection, Visualization & Transformation	1A-DA-06	Collect and present the same data in various visual formats.				●	
	Inference & Models	1A-DA-07	Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions.				●	
Algorithms & Programming	Algorithms	1A-AP-08	Model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks.	●				
	Variables	1A-AP-09	Model the way programs store and manipulate data by using numbers or other symbols to represent information.	●	●	●	●	
	Control	1A-AP-10	Develop programs with sequences and simple loops, to express ideas or address a problem.		●	●	●	
	Modularity	1A-AP-11	Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.	●		●	●	
	Program Development		1A-AP-12	Develop plans that describe a program's sequence of events, goals, and expected outcomes.	●		●	●
			1A-AP-13	Give attribution when using the ideas and creations of others while developing programs.	●			●
			1A-AP-14	Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.		●	●	●
1A-AP-15			Using correct terminology, describe steps taken and choices made during the iterative process of program development.	●			●	
Impacts of Computing	Culture	1A-IC-16	Compare how people live and work before and after the implementation or adoption of new computing technology.	●				
	Social Interactions	1A-IC-17	Work respectfully and responsibly with others online.	●				
	Safety, Law & Ethics	1A-IC-18	Keep login information private, and log off of devices appropriately,				●	

3-5 Computer Science Teachers Association (CSTA) Computer Science Standards

Concept	Subconcept	Standard	Level 1B (Ages 8-11) By the end of Grade 5, students will be able to. . .	Coding Lessons	In-App Content	Challenge Cards	Curriculum Guide
Computing Systems	Devices	PB-CS-01	Describe how internal and external parts of computing devices function to form a system.	●			
	Hardware & Software	1B-CS-02	Model how computer hardware and software work together as a system to accomplish tasks.	●			
	Troubleshooting	1B-CS-03	Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies.				●
Data Analysis	Storage	1A-DA-05	Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.		●	●	
	Collection, Visualization & Transformation	1B-DA-06	Organize and present collected data visually to highlight relationships and support a claim.	●			●
	Inference & Models	1B-DA-07	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.	●			●
Algorithms & Programming	Algorithms	1B-AP-08	Compare and refine multiple algorithms for the same task and determine which is the most appropriate.			●	●
	Variables	1B-AP-09	Create programs that use variables to store and modify data.		●	●	
	Control	1B-AP-10	Create programs that include sequences, events, loops, and conditionals.		●	●	●
	Modularity	1B-AP-11	Decompose (break down) problems into smaller, manageable sub-problems 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.		●	●	
	Program Development	1B-AP-13	Use an iterative process to plan the development of a program by including other's perspectives and considering user preferences.	●		●	●
		1B-AP-15	Test and debug (identify and fix errors) a program or algorithm to insure 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.	●			●	

3-5 Computer Science Teachers Association (CSTA) Computer Science Standards (continued)

Concept	Subconcept	Practice	Level 1B (Ages 8-11) By the end of Grade 5, students will be able to. . .	Coding Lessons	In-App Content	Challenge Cards	Curriculum Guide
Impacts of Computing	Culture	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.	●			
	Social Interactions	1B-IC-20	Seek diverse perspectives for the purpose of improving computational artifacts.	●			●

International Society for Technology in Education (ISTE) for Students

Standards		Coding Lessons	In-App Content	Challenge Cards	Curriculum Guide
Empowered Learner	Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:				
	1a articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.	●			
	1b build networks and customize their learning environments in ways that support the learning process.	●			
	1c use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.				●
	1d 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.	●	●		●
Knowledge Constructor	Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others. Students:				
	3a use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.	●			●
	3b evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.				
	3c curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.				●
	3d build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.	●			
Innovative Designer	Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions. Students:				
	4a know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.	●			●
	4b select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.	●			●
	4c develop, test and refine prototypes as part of a cyclical design process.	●			●
	4d exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.			●	●

International Society for Technology in Education (ISTE) for Students (continued)

Standards		Coding Lessons	In-App Content	Challenge Cards	Curriculum Guide
Computational Thinker	Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions. Students:				
	5a formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.	●			
	5b collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.	●			●
	5c break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.			●	●
	5d understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.	●	●	●	●
Creative Communicator	Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals. Students:				
	6a choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.	●	●		●
	6b create original works or responsibly repurpose or remix digital resources into new creations.	●			
	6c communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.	●			●
	6d publish or present content that customizes the message and medium for their intended audiences.	●			●
Global Collaborator	Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally. Students:				
	7a use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.	●			●
	7b use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.	●		●	●
	7c contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.	●		●	●
	7d explore local and global issues and use collaborative technologies to work with others to investigate solutions.	●			