Oklahoma Academic Standards for Computer Science {Grades 6-8 First Public Draft}

Concept	Subconcept	6th Grade	7th Grade	8th Grade
Computing Systems	Devices	6.CS.D.01 Evaluate existing computing devices and recommend improvements to design based on analysis of personal interaction with the device.	7.CS.D.01 Evaluate existing computing devices and recommend improvements to design based on analysis of how other users interact with the device.	8.CS.D.01 Develop and implement a process to evaluate existing computing devices and recommend improvements to design based on analysis of how other users interact with the device.
	Hardware & Software	6.CS.HS.01 Identify ways that hardware and software are combined to collect and exchange data.	7.CS.HS.01 Evaluate and recommend improvements to software and hardware combinations used to collect and exchange data.	8.CS.HS.01 Design and refine projects that combine hardware and software components to collect and exchange data.
	Troubleshooting	6.CS.T.01 Identify problems with computing devices and their components.	7.CS.T.01 Identify and fix problems with computing devices and their components.	8.CS.T.01 Systematically identify and fix problems with computing devices and their components.
Networks & The Internet	Network Communication & Organization	6.NI.NCO.01 Model a simple protocol for transferring information using packets.	7.NI.NCO.01 Explain and model the process to replace lost packets when using a protocol to transfer information.	8.NI.NCO.01 Explain protocols and their importance to data transmission; model how packets are broken down into smaller pieces and how they are delivered to the computer (WiFi and Ethernet).
	Cybersecurity	6.NI.C.01 Identify existing cybersecurity concerns with the Internet and systems it uses.	7.NI.C.01 Explain how to protect electronic information, both physical (e.g. hard drive) and digital, identify cybersecurity concerns and options to address issues with the Internet and the systems it uses.	8.NI.C.01 Evaluate physical and digital procedures that could be implemented to protect electronic data/information; explain the impacts of hacking, ransomware, scams, fake scans, and ethical/legal concerns.
		6.NI.C.02 Explain the importance of secured websites and describe how one method of encryption works.	7.NI.C.02 Identify and explain two or more methods of encryption used to ensure and secure the transmission of information.	8.NI.C.02 Compare the advantages and disadvantages of multiple methods of encryption to model the secure transmission of information.
ata Analysis	Storage	6.DA.S.01 Identify how the same data can be represented in multiple ways.	7.DA.S.01 Create multiple representations of data.	8.DA.S.01 Analyze multiple methods of representing data and choose the most appropriate method for representing data.
	Collection, Visualiation, & Transformation	6.DA.CVT.01 Collect data using computational tools and transform the data to make it more useful.	7.DA.CVT.01 Collect data using computational tools and transform the data to make it more useful and reliable.	8.DA.CVT.01 Develop, implement, and refine a process that utilizes computational tools to collect and transform data to make it more useful and reliable.

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D	Inference & Models	6.DA.IM.01 Use models and simulations to formulate, refine, and test hypotheses.	7.DA.IM.01 Discuss the correctness of a model representing a system by comparing the model' s generated results with observed data from the modeled system.	8.DA.IM.01 Refine computational models based on the data generated by the models.
Algorithm & Programming	Algorithms	6.AP.A.01 Use an existing algorithm in natural language or pseudocode to solve complex problems.	7.AP.A.01 Select and modify an existing algorithm in natural language or pseudocode to solve complex problems.	8.AP.A.01 Design algorithms in natural language, flow and control diagrams, comments within code, and/or pseudocode to solve complex problems.
	Variables	Not addressed at this level.	Not addressed at this level.	Not addressed at this level.
	Control	6.AP.C.01 Develop programs that utilize combinations of loops, conditionals, and the manipulation of variables representing different data types.	7.AP.C.01 Develop programs that utilize combinations of loops, compound conditionals, and the manipulation of variables representing different data types.	8.AP.C.01 Develop programs that utilize combinations of nested loops, compound conditionals, procedures without parameters, and the manipulation of variables representing different data types.
	Modularity	6.AP.M.01 Decompose problems into parts to facilitate the design, implementation, and review of programs.	7.AP.M.01 Decompose problems into parts to facilitate the design, implementation, and review of increasingly complex programs.	8.AP.M.01 Decompose problems and subproblems into parts to facilitate the design, implementation, and review of complex programs.
	Program Development	6.AP.PD.01 Seek and incorporate feedback from team members to refine a solution to a problem.	7.AP.PD.01 Seek and incorporate feedback from team members and users to refine a solution to a problem.	8.AP.PD.01 Seek and incorporate feedback from team members and users to refine a solution to a problem that meets the needs of diverse users.
		6.AP.PD.02 Incorporate existing code, media, and libraries into original programs and give attribution.	7.AP.PD.02 Incorporate existing code, media, and libraries into original programs of increasing complexity and give attribution.	8.AP.PD.02 Incorporate existing code, media, and libraries into original programs of increasing complexity and give attribution.
		6.AP.PD.03 Test and refine programs using teacher provided inputs.	7.AP.PD.03 Test and refine programs using a variety of student created inputs.	8.AP.PD.03 Systematically test and refine programs using a range of student created inputs.
		6.AP.PD.04 Break down tasks and follow an individual timeline when developing a computational artifact.	7.AP.PD.04 Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.	8.AP.PD.04 Explain how effective communication between participants is required for successful collaboration when developing computational artifacts.
		6.AP.PD.05 Document text-based programs in order to make them easier to follow, test, and debug.	7.AP.PD.05 Document text-based programs of increasing complexity in order to make them easier to follow, test, and debug.	8.AP.PD.05 Document text-based programs of increasing complexity in order to make them easier to follow, test, and debug.

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Impacts of Computing	Culture	6.IC.C.01 Explain how computing impacts peoples' everyday activities.	7.IC.C.01 Explain how computing impacts innovation in other fields.	8.IC.C.01 Describe the trade-offs associated with computing technologies (e.g. automation), explaining their effects on economies and global societies, and explore careers related to the field of computer science.
		6.IC.C.02 Identify and discuss the technology proficiencies needed in the classroom and the workplace, and how to meet the needs of diverse users.	7.IC.C.02 Relate the distribution of computing resources in a global society to issues of equity, access, and power.	8.IC.C.02 Evaluate and improve the design of existing technologies to meet the needs of diverse users and increase accessibility and usability. Evaluate how technology can be used to distort, exaggerate, and misrepresent information.
	Social Interactions	6.IC.SI.01 Individually and collaboratively develop and conduct an online survey that seeks input from a broad audience.	7.IC.SI.01 Individually and collaboratively use advanced tools to design and create online content (e.g. digital portfolio, multimedia, blog, webpage). Describe and use safe, appropriate, and responsible practices (netiquette) when participating in online communities (e.g. discussion groups, blogs, social networking sites)	8.IC.SI.01 Communicate and publish key ideas and details individually or collaboratively in a way that informs, persuades, and/or entertains using a variety of digital tools and media-rich resources.
	Safety, Law, & Ethics	6.IC.SLE.01 Differentiate between appropriate and inappropriate content on the Internet, and identify unethical and illegal online behavior.	7.IC.SLE.01 Explain the connection between the longevity of data on the Internet, personal online identity, and personal privacy.	8.IC.SLE.01 Discuss the social impacts and ethical considerations associated with cybersecurity, including the positive and malicious purposes of hacking.