Computing Systems Vertical Articulation Chart

SOL	Standard	Notes:
K.5	The student will identify components of computing systems (e.g., keyboard, mouse, desktop computer, laptop computer, tablet, and printer).	
K.6	The student will identify, using accurate terminology, simple hardware and software problems that may occur during use (e.g., app or program is not working as expected, no sound is coming from a device, device will not turn on).	
1.7	The student will identify components of computing systems that are common among different types of computing devices including desktop and laptop computers, tablets, and mobile phones.	
1.8	The student will identify, using accurate terminology, simple hardware and software problems that may occur during use (e.g., app or program is not working as expected, no sound is coming from the device, the device won't turn on).	
2.7	The student will describe the characteristics of computing systems to include hardware, software, input, and output.	
2.8	The student will identify, using accurate terminology, simple hardware and software problems that may occur during use (e.g., app or program not working as expected, no sound, device won't turn on).	
3.8	The student will model how a computing system works including input and output.	
3.9	The student will identify, using accurate terminology, simple hardware and software problems that may occur during use, and apply strategies for solving problems (e.g., rebooting the device, checking for power, checking network availability, closing and reopening an app).	
4.8	The student will model how a computing system works including input and output, processors, and sensors.	

4.9	The student will identify, using accurate terminology, simple hardware and software problems that may occur during use, and apply strategies for solving problems (e.g., rebooting the device, checking for power, checking for network availability, closing and reopening an app).	
5.7	The student will model how a computing system works including input and output, processors, sensors, and storage.	
5.8	The student will identify, using accurate terminology, simple hardware and software problems that may occur during use and apply strategies for solving problems (e.g., rebooting the device, checking for power, checking network availability, closing and reopening an app.).	
6.5	The student will design projects that combine hardware and software components to collect and exchange data.	
7.5	The student will describe how the Internet connects devices and networks all over the world. Exclusion: Specific devices used to implement the Internet are beyond the scope of these standards.	
8.5	The student will, using the elements of computing devices such as primary memory, secondary storage, processor, input and output devices, and network connectivity, analyze the advantages and limitations of a given computing system.	
MSCSE.19	The student will systematically identify and correct problems with computing devices and their components.	
MSCSE.20	The student will explore the relationship between hardware and software using the Internet of Things.	
MSCSE.24	The student will recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices.	
MSCSE.25	The student will design projects that combine hardware and software components to collect and exchange data.	
CSF.1	The student will: a. compare the structures, functions, and interactions between	

	application software, system software, and hardware b. explore the relationship between hardware and software using the Internet of Things.	
CSP.1	The student will develop and apply criteria for evaluating a computer system for a given purpose.	
CSP.2	The student will illustrate ways computing systems implement logic, input, and output through hardware components.	