Virginia Computer Science

Grade 8

Adopted 2017

Algorithms and Programming	**1. The student will construct programs to accomplish a task as a means of creative expression or scientific exploration using a block based or text based programming language, both independently and collaboratively,** 8.1 a. combining control structures such as if-statements and loops including nested conditionals and loops; 8.1.A b. Using clearly named variables that represent different data types, including numeric and non-numeric data, and perform operations on their values; and [Related SOL: Math 7.1, 7.2] 8.1.B c. Create procedures with parameters. 8.1.C
	2. The student will systematically test and refine programs using a range of test cases. 8.2
	3. The student will explain how effective communication between participants is required for successful collaboration when developing programs. 8.3
	4. The student will use flowcharts and/or pseudo code to address complex problems as algorithms. 8.4
Computing Systems	**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.** 8.5
Cybersecurity	**6. The student will identify physical and digital security measures used protect electronic information.** 8.6
	7. The student will identify impacts of hacking, ransomware, scams, fake vulnerability scans, and the ethical and legal concerns involved. 8.7
Data and Analysis	**8. The student will** 8.8 a. explain the difference between a model and a simulation, and 8.8.A b. create computational models to conduct simulations. 8.8.B

Impacts of Computing	**9.** **The student will describe tradeoffs between allowing information to be public, and keeping information private.** 8.9
	10. **The student will evaluate online and print sources for appropriateness and credibility.** 8.10
	11. **The student will discuss the social impacts and ethical considerations associated with the field of cybersecurity.** 8.11
	12. **The student will explore careers related to the field of cybersecurity.** 8.12
Networking and the Internet	**13.** **The student will identify existing cybersecurity concerns associated with Internet use and Internet-based systems and potential options to address these issues.** 8.13