Washington Computer Science

Grades 6, 7, 8

Adopted 2016

Algorithms and Programming

2-A-2-1. Solicit and integrate peer feedback as appropriate to develop or refine a program. 2-A-2-1

2-A-7-2. Compare different algorithms that may be used to solve the same problem, but one might be faster than the other. (e.g., different algorithms solve the same problem, but one might be faster than the other). [Clarification: Students are not expected to quantify these differences.] 2-A-7-2

2-A-7-3. Provide proper attribution when code is borrowed or built upon. 2-A-7-3

2-A-7-4. Interpret the flow of execution of algorithms and predict their outcomes. [Clarification: Algorithms can be expressed using natural language, flow and control diagrams, comments within code, and pseudocode.] 2-A-7-4

2-A-5-5. Design, develop, and present computational artifacts such as mobile applications that address social problems both independently and collaboratively. 2-A-5-5

2-A-5-6. Develop programs, both independently and collaboratively, that include sequences with nested loops and multiple branches. [Clarification: At this level, students may use block-based and/or text-based programming languages.] 2-A-5-6

2-A-5-7. Create variables that represent different types of data and manipulate their values. 2-A-5-7

2-A-4-8. Define and use procedures that hide the complexity of a task and can be reused to solve similar tasks. [Clarification: Students use and modify, but do not necessarily create, procedures with parameters.] 2-A-4-8

2-A-3-9. Decompose a problem into parts and create solutions for each part. 2-A-3-9

2-A-6-10. Use an iterative design process (e.g., define the problem, generate ideas, build, test, and improve solutions) to solve problems, both independently and collaboratively. 2-A-6-10

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Computing Systems	**2-C-7-11.**	**Justify the hardware and software chosen to accomplish a task (e.g., comparison of the features of a tablet vs. desktop, selecting which sensors and platform to use in building a robot or developing a mobile app).** 2-C-7-11
	2-C-4-12.	**Analyze the relationship between a device's computational components and its capabilities. [Clarification: Computing Systems include not only computers, but also cars, microwaves, smartphones, traffic lights, and flash drives.]** 2-C-4-12
	2-C-6-13.	**Use a systematic process to identify the source of a problem within individual and connected devices (e.g., follow a troubleshooting flow diagram, make changes to software to see if hardware will work, restart device, check connections, swap in working components).** 2-C-6-13
Data and Analysis	**2-D-7-14.**	**Describe how different formats of stored data represent tradeoffs between quality and size. [Clarification: compare examples of music, text and/or image formats.]** 2-D-7-14
	2-D-7-15.	**Explain the processes used to collect, transform, and analyze data to solve a problem using computational tools (e.g., use an app or spreadsheet form to collect data, decide which data to use or ignore, and choose a visualization method.).** 2-D-7-15
	2-D-5-16.	**Revise computational models to more accurately reflect real-world systems (e.g., ecosystems, epidemics, spread of ideas).** 2-D-5-16
	2-D-4-17.	**Represent data using different encoding schemes (e.g., binary, Unicode, Morse code, shorthand, student-created codes).** 2-D-4-17
Impacts of Computing	**2-I-7-18.**	**Summarize negative and positive impacts of using data and information to categorize people, predict behavior, and make recommendations based on those predictions (e.g., customizing search results or targeted advertising, based on previous browsing history, can save search time and limit options at the same time).** 2-I-7-18
	2-I-7-19.	**Explain how computer science fosters innovation and enhances nearly all careers and disciplines.** 2-I-7-19
	2-I-1-20.	**Provide examples of how computational artifacts and devices impact health and wellbeing, both positively and negatively.** 2-I-1-20
	2-I-1-21.	**Describe ways in which the Internet impacts global communication and collaborating.** 2-I-1-21
	2-I-1-22.	**Describe ethical issues that relate to computing devices and networks (e.g., equity of access, security and plagiarism), hacking, intellectual property, copyright, Creative Commons licensing.** 2-I-1-22

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	2-I-6-23. **Redesign a computational artifact to remove barriers to universal access (e.g., using captions on images, high contrast colors, and/or larger font sizes).** 2-I-6-23
Networks and the Internet	**2-N-7-24.** **Summarize security risks associated with weak passwords, lack of encryption, insecure transactions, and persistence of data.** 2-N-7-24
	2-N-4-25. **Simulate how information is transmitted as packets through multiple devices over the Internet and Networks.** 2-N-4-25