

Computer Science: Grades 6-8

Algorithms and Programming

- 1 Use flowcharts and/or pseudocode to address complex problems as algorithms.** 6-8.AP.A.1

- 2 Create clearly named variables that represent different data types and perform operations on their values.** 6-8.AP.V.1

- 3 Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.** 6-8.AP.C.1

- 4 Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.** 6-8.AP.M.1

- 5 Create procedures with parameters to organize code and make it easier to reuse.** 6-8.AP.M.2

- 6 Design meaningful solutions for others, incorporating data from collaborative team members and the end user, to meet the end user's needs.** 6-8.AP.PD.1

- 7 Incorporate existing code, media, and libraries into original programs, and give attribution.** 6-8.AP.PD.2

- 8 Systematically test and refine programs using a range of test cases.** 6-8.AP.PD.3

- 9 Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.** 6-8.AP.PD.4

- 10 Document programs (throughout the design, development, troubleshooting, and user experience phases) in order to make them easier to follow, test, and debug by others.** 6-8.AP.PD.5

Computing Systems

- 1 Recommend improvements to the design of computing devices based on an analysis of how users interact with the devices, noting that advantages may have disadvantages and unintended consequences.** 6-8.CS.D.1

- 2 Design and evaluate projects that combine hardware and software components to collect and exchange data.** 6-8.CS.HS.1

- 3 Systematically identify and fix problems with computing devices and their components.** 6-8.CS.T.1

Data and Analysis

- 1 Model encoding schema used by software tools to access data, stored as bits, into forms more easily understood by people (e.g., encoding schema include binary and ASCII).** 6-8.DA.S.1

- 2 Collect data using computational tools and transform the data to make it more meaningful and useful.** 6-8.DA.CVT.1

- 3 Refine computational models based on the reliability and validity of the data they generate.** 6-8.DA.IM.1

Impacts of Computing

- 1 Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.** 6-8.IC.C.1

- 2 Discuss and evaluate issues of bias and accessibility in the design of existing technologies.** 6-8.IC.C.2

- 3 Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.** 6-8.IC.SI.1

- 4 Identify risks associated with sharing information digitally (e.g., phishing, identity theft, hacking).** 6-8.IC.SLE.1

- 5 Evaluate how legal and ethical issues shape computing practices.** 6-8.IC.SLE.2

Networks and the Internet

- 1 Compare and contrast modeled protocols used in transmitting data across networks and the Internet.** 6-8.NI.NCO.1

- 2 Explain how physical and digital security measures protect electronic information.** 6-8.NI.C.1

- 3 Apply multiple methods of encryption to model the secure transmission of information.** 6-8.NI.C.2