

Grades 9-12

IMPACTS OF COMPUTING

Society

- 1 Evaluate the impact of computing technologies on equity, access, and influence in a global society. [9-12.IC.1](#)
- 2 Debate laws and regulations that impact the development and use of computing technologies and digital information. [9-12.IC.2](#)

Ethics

- 3 Debate issues of ethics related to real-world computing technologies. [9-12.IC.3](#)
- 4 Assess personal and societal trade-offs related to computing technologies and data privacy. [9-12.IC.4](#)
- 5 Describe ways that complex computer systems can be designed for inclusivity and to mitigate unintended consequences. [9-12.IC.5](#)

Accessibility

- 6 Create accessible computational artifacts that meet standard compliance requirements or otherwise meet the needs of users with disabilities. [9-12.IC.6](#)

Career Paths

- 7 Investigate the use of computer science in multiple fields. [9-12.IC.7](#)

Computational Thinking

Modeling and Simulation

- 1 Create a simple digital model that makes predictions of outcomes. [9-12.CT.1](#)

Data Analysis and Visualization

- 2 Collect and evaluate data from multiple sources for use in a computational artifact. [9-12.CT.2](#)
- 3 Refine and visualize complex data sets to tell different stories with the same data set. [9-12.CT.3](#)

Abstraction and Decomposition

- 4 Implement a program using a combination of student-defined and third-party functions to organize the computation. [9-12.CT.4](#)
- 5 Modify a function or procedure in a program to perform its computation in a different way over the same inputs, while preserving the result of the overall program. [9-12.CT.5](#)

Algorithms and Programming

- 6 Demonstrate how at least two classic algorithms work, and analyze the trade-offs related to two or more algorithms for completing the same task. 9-12.CT.6
 - 7 Design or remix a program that utilizes a data structure to maintain changes to related pieces of data. 9-12.CT.7
 - 8 Develop a program that effectively uses control structures in order to create a computer program for practical intent, personal expression, or to address a societal issue. 9-12.CT.8
 - 9 Systematically test and refine programs using a range of test cases, based on anticipating common errors and user behavior. 9-12.CT.9
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Networks and Systems Design

Hardware and Software

- 1 Design a solution to a problem that utilizes embedded systems to automatically gather input from the environment. 9-12.NSD.1
 - 2 Explain the levels of interaction existing between the application software, system software, and hardware of a computing system. 9-12.NSD.2
 - 3 Develop and communicate multistep troubleshooting strategies others can use to identify and fix problems with computing devices and their components. 9-12.NSD.3
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Networks and the Internet

- 4 Describe the components and design characteristics that allow data and information to be moved, stored, and referenced over the internet. 9-12.NSD.4
 - 5 Describe how emerging technologies are impacting networks and how they are used. 9-12.NSD.5
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Cybersecurity

Risks

- 1 Determine the types of personal and organizational information and digital resources that an individual may have access to that need to be protected. 9-12.CY.1
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Safeguards

- 2 Describe physical, digital, and behavioral safeguards that can be employed to protect the confidentiality, integrity, and accessibility of information. 9-12.CY.2
 - 3 Explain specific trade-offs when selecting and implementing security recommendations. 9-12.CY.3
 - 4 Evaluate applications of cryptographic methods. 9-12.CY.4
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Response

- 5 Recommend multiple actions to take prior and in response to various types of digital security breaches. 9-12.CY.5
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Digital Literacy

Digital Use

- 1 Type proficiently on a keyboard. 9-12.DL.1
 - 2 Communicate and work collaboratively with others using digital tools to support individual learning and contribute to the learning of others. 9-12.DL.2
 - 3 Independently select advanced digital tools and resources to create, revise, and publish complex digital artifacts or collection of artifacts. 9-12.DL.4
 - 4 Transfer knowledge of technology in order to use new and emerging technologies on multiple platforms. 9-12.DL.5
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Digital Citizenship

- 5 Actively manage digital presence and footprint to reflect an understanding of the permanence and potential consequences of actions in online spaces. 9-12.DL.6
- 6 Design and implement strategies that support safety and security of digital information, personal identity, property, and physical and mental health when operating in the digital world. 9-12.DL.7