

Grades 6-8

COMPUTATIONAL THINKING (CT)

Computing Systems

- 1 Apply troubleshooting strategies for solving hardware and software problems. 6-8.CT.1.1
- 2 Compare and contrast the ways that humans and machines process instructions and sense the world. 6-8.CT.1.2
- 3 Navigate a variety of technologies and transfer their knowledge and skills to learn how to use new technologies. 6-8.CT.1.3
- 4 Select appropriate platforms and tools to create, share and communicate their work effectively. 6-8.CT.1.4
- 5 Create original works or responsibly repurpose or remix other digital resources into new creative artifacts. 6-8.CT.1.5
- 6 Communicate complex ideas clearly using various digital tools to convey the concepts textually, visually, graphically, etc. 6-8.CT.1.6

Data and Analysis

- 1 Compare and contrast the factors that affect quality and file size of stored data. 6-8.CT.2.1
- 2 Justify the selection of the data, collection, and analysis needed to answer a question. 6-8.CT.2.2
- 3 Demonstrate that data collection is used to make recommendations to influence decisions as well as predict behavior. 6-8.CT.2.3
- 4 Encode and decode information using encryption/decryption schemes. 6-8.CT.2.4
- 5 Identify layers of abstraction in different contexts (e.g., objected oriented programming, video and animation, etc.) 6-8.CT.2.5
- 6 Apply problem solving techniques by computing for data analysis, modeling or algorithmic thinking. 6-8.CT.2.6

Impacts of Computing

- 1 Design user interfaces to be more user-friendly, free of bias, and accessible. 6-8.CT.3.1
- 2 Find or organize data and use technology to analyze and represent it to solve problems, and make decisions about trade-offs and risks. 6-8.CT.3.2
- 3 Demonstrate an understanding of how automation works and use algorithmic thinking to design and automate solutions. 6-8.CT.3.3

- 4 Explore how computer science fosters innovation and enhances other careers and disciplines. 6-8.CT.3.4
 - 5 Articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes. 6-8.CT.3.5
 - 6 Manage their digital identities and reputations within school policy, including demonstrating an understanding of how digital actions are never fully erasable. 6-8.CT.3.6
 - 7 Demonstrate an understanding of what personal data is and how to keep it private and secure, including the awareness of terms such as encryption, HTTPS, password, cookies, computer malware and social engineering; they also understand the limitations of data management and how data collection technologies work. 6-8.CT.3.7
 - 8 Publish or present content designed for specific audiences and select platforms that will effectively convey their ideas to those audiences. 6-8.CT.3.8
 - 9 Apply digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally. 6-8.CT.3.9
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Networks and the Internet

- 1 Demonstrate (e.g., physically or digitally) the flow of information as packets on the Internet and networks. 6-8.CT.4.1
 - 2 Compare and contrast the trade-offs between wired, wireless, and mobile networks (e.g. speed, security, and cost). 6-8.CT.4.
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Algorithms and Programming

- 1 Compare different algorithms that may be used to solve the same problem. 6-8.CT.5.1
- 2 Interpret, modify, and analyze content-specific models used to run simulations. 6-8.CT.5.2
- 3 Apply an iterative design process (define the problem, generate ideas, build, test, and improve solutions) in problem solving. 6-8.CT.5.3
- 4 Create, analyze, and modify control structures (if-else statements, switch-case statements, looping, etc.) to create programming solutions. 6-8.CT.5.4
- 5 Predict the outcome of an algorithm and then step through it to verify your predictions. 6-8.CT.5.5
- 6 Decompose a problem into sub- problems and demonstrate how the parts can be incorporated to create a solution. 6-8.CT.5.6
- 7 Use debugging and testing to remove errors and improve program quality. 6-8.CT.5.7
- 8 Break problems into component parts, identify key pieces and use that information to problem solve. 6-8.CT.5.8

- 9 Select and use digital tools to support a design process; to identify constraints and trade-offs, and to weigh risks. 6-8.CT.5.9
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DIGITAL LITERACY (DL)

- 1 Actively collect performance feedback from people, including teachers, and from functionalities embedded in digital tools to improve their learning process, and they select technology to demonstrate their learning in a variety of ways. 6-8.DL.1.1
 - 2 Compare and contrast the capabilities of different hardware and software in computer systems. 6-8.DL.1.2
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Digital Citizen

- 1 Explore security risks associated with using weak passwords, lack of encryption and/or insecure transactions. 6-8.DL.2.1
 - 2 Describe the positive and negative impacts of computing devices in daily life. 6-8.DL.2.2
 - 3 Explain ethical issues that relate to equity of access, security, privacy, ownership and information sharing, copyright, and licensing. 6-8.DL.2.3
 - 4 Understand and explain the elements of federal, state, and local regulations and policies including COPPA, CIPA, state laws, district policies that relate to digital citizenship. 6-8.DL.2.4
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Knowledge Constructor

- 1 Identify different features of everyday objects that contain computing components. 6-8.DL.3.1
 - 2 Predict positive and negative social impacts of existing or student created content and computational artifacts including economic, entertainment, education, or political. 6-8.DL.3.2
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Creative Communicator

- 1 Create and communicate computational artifacts that have a positive social impact. 6-8.DL.4.1
 - 2 Evaluate a variety of resources for accuracy, perspective, credibility, and relevance using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others. 6-8.DL.4.2
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Global Collaborator

- 1 Explain how the Internet impacts global communication and collaboration. 6-8.DL.5.1
- 2 Summarize current events and changes resulting from computing and their effects on education, the workplace, and society. 6-8.DL.5.2