

# Discovering Computer Science: Grades 6, 7, 8

Adopted 2017

## Computational Thinking

1. Use the basic steps in algorithmic problem solving to design solutions (e.g., problem statement and exploration, examination of sample instances, design, implementing a solution, testing, evaluation). [TCS.DCS.1](#)

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2. Describe the process of parallelization as it relates to problem solving. [TCS.DCS.2](#)

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3. Define an algorithm as a sequence of instructions that can be processed by a computer. [TCS.DCS.3](#)

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4. Evaluate ways that different algorithms may be used to solve the same problem. [TCS.DCS.4](#)

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5. Act out searching and sorting algorithms. [TCS.DCS.5](#)

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6. Describe and analyze a sequence of instructions being followed (e.g., describe a character's behavior in a video game as driven by rules and algorithms). [TCS.DCS.6](#)

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7. Represent data in a variety of ways including text, sounds, pictures, and numbers. [TCS.DCS.7](#)

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8. Use visual representations of problem states, structures, and data (e.g., graphs, charts, network diagrams, flowcharts). [TCS.DCS.8](#)

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9. Interact with content-specific models and simulations (e.g., ecosystems, epidemics, molecular dynamics) to support learning and research. [TCS.DCS.9](#)

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10. Evaluate what kinds of problems can be solved using modeling and simulation. [TCS.DCS.10](#)

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11. Analyze the degree to which a computer model accurately represents the real world. [TCS.DCS.11](#)

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12. Use abstraction to decompose a problem into sub problems. [TCS.DCS.12](#)

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13. Understand the notion of hierarchy and abstraction in computing including high level languages, translation, instruction set, and logic circuits. [TCS.DCS.13](#)

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14. Examine connections between elements of mathematics and computer science including binary numbers, logic, sets and functions. [TCS.DCS.14](#)
  15. Provide examples of interdisciplinary applications of computational thinking. [TCS.DCS.15](#)
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## Collaboration

16. Apply productivity/multimedia tools and peripherals to group collaboration and support learning throughout the curriculum. [TCS.DCS.16](#)
  17. Collaboratively design, develop, publish, and present products (e.g., videos, podcasts, websites) using technology resources that demonstrate and communicate curriculum concepts. [TCS.DCS.17](#)
  18. Use collaborative practices such as pair programming, working in project teams, and participating in group active learning activities. [TCS.DCS.18](#)
  19. Demonstrate characteristics necessary for collaboration: providing useful feedback, integrating feedback, understanding and accepting multiple perspectives, socialization. [TCS.DCS.19](#)
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## Computing Practice & Programming

20. Select appropriate tools and technology resources to accomplish a variety of tasks and solve problems. [TCS.DCS.20](#)
21. Use a variety of multimedia tools and peripherals to support personal productivity and learning throughout the curriculum. [TCS.DCS.21](#)
22. Design, develop, publish, and present products (e.g., webpages, mobile applications, animations) using technology resources that demonstrate and communicate curriculum concepts. [TCS.DCS.22](#)
23. Demonstrate an understanding of algorithms and their practical application. [TCS.DCS.23](#)
24. Implement problem solutions using a programming language, including: looping behavior, conditional statements, logic, expressions, variables, and functions. [TCS.DCS.24](#)
25. Demonstrate good practices in personal information security, using passwords, encryption, and secure transactions. [TCS.DCS.25](#)
26. Identify interdisciplinary careers that are enhanced by computer science. [TCS.DCS.26](#)
27. Demonstrate characteristics used in open ended problem solving and programming (e.g., comfort with complexity, persistence, brainstorming, adaptability, patience, propensity to tinker, creativity, accepting challenge). [TCS.DCS.27](#)

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**28. Collect and analyze data that is output from multiple runs of a computer program.** TCS.DCS.28

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**Computers &  
Communications  
Devices**

**29. Recognize that computers are devices that execute programs.** TCS.DCS.29

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**30. Identify a variety of electronic devices that contain computational processors.** TCS.DCS.30

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**31. Demonstrate an understanding of the relationship between hardware and software.** TCS.DCS.31

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**32. Use developmentally appropriate, accurate terminology when communicating about technology.** TCS.DCS.32

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**33. Apply strategies for identifying and solving routine hardware problems that occur during everyday computer use.** TCS.DCS.33

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**34. Describe the major components and functions of computer systems and networks.** TCS.DCS.34

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**35. Describe what distinguishes humans from machines focusing on human intelligence versus machine intelligence and ways we can communicate.** TCS.DCS.35

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**36. Describe ways in which computers use models of intelligent behavior (e.g., robot motion, speech and language understanding, and computer vision).** TCS.DCS.36

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**Community, Global, and  
Ethical Impacts**

**37. Demonstrate legal and ethical behaviors when using information and technology and discuss the consequences of misuse.** TCS.DCS.37

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**38. Demonstrate knowledge of changes in information technologies over time and the effects those changes have on education, the workplace, and society.** TCS.DCS.38

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**39. Analyze the positive and negative impacts of computing on human culture.** TCS.DCS.39

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**40. Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems.** TCS.DCS.40