

Grade 6

Computational Thinker

Abstraction

- 1 Remove background details from an everyday process to highlight essential properties. Examples: When making a sandwich, the type of bread, condiments, meats, and/or vegetables do not affect the fact that one is making a sandwich. [6.1](#)
- 2 Define a process as a function. Example: Functions or sets of steps combined to produce a process: turning off your alarm + getting out of bed + brushing your teeth + getting dressed = morning routine. [6.2](#)

Algorithms

- 3 Create pseudocode that uses conditionals. Examples: Using if/then/else (If it is raining then bring an umbrella else get wet). [6.3](#)
- 4 Differentiate between flowcharts and pseudocode. Example: Flowcharts use shapes to indicate what to do at each step while pseudocode uses text. [6.4](#)
- 5 Identify algorithms that make use of sequencing, selection or iteration. Examples: Sequencing is doing steps in order (put on socks, put on shoes, tie laces); selection uses a Boolean condition to determine which of two parts of an algorithm are used (hair is dirty? True, wash hair; false, do not); iteration is the repetition of part of an algorithm until a condition is met (if you're happy and you know it clap your hands, when you're no longer happy you stop clapping). [6.5](#)

Programming and Development

- 6 Identify steps in developing solutions to complex problems using computational thinking. [6.6](#)
- 7 Describe how automation works to increase efficiency. Example: Compare the amount of time/work to hand wash a car vs. using an automated car wash. [6.7](#)
- 8 Create a program that initializes a variable. Example: Create a flowchart in which the variable or object returns to a starting position upon completion of a task. [6.8](#)

Citizen of a Digital Culture

Safety, Privacy, and Security

- 9 Differentiate between a secure and a non-secure website including how they affect personal data. Example: HTTP vs. HTTPS. [6.9](#)

Legal and Ethical Behavior

- 10 Describe the causes and effects of illegal use of intellectual property as it relates to print and digital media, considering copyright, fair use, licensing, sharing, and attribution. 6.10
- 11 Differentiate between appropriate and inappropriate digital content and the use of that content. 6.11

Digital Identity

- 12 Define digital permanence. 6.12
- 13 Define personal privacy, digital footprint, and open communication. 6.13

Impact of Computing

- 14 Discuss digital globalization and Internet censorship. Examples: Software that scans a website for posts about potential threats; a person's ability to order a product directly from a manufacturer in another part of the world; a student in Africa can take an online math course created in the United States; web-hosting company prevents posting of content. 6.14
- 15 Identify emerging technologies in computing. 6.15

Global Collaborator

Creative Communications

- 16 Communicate and/or publish collaboratively to inform others from a variety of backgrounds and cultures about issues and problems. 6.16

Digital Tools

- 17 Type 30 words per minute with 95% accuracy using appropriate keyboarding techniques. 6.17

Social Interactions

- 18 Define censorship. 6.18

Computing Analyst

Data

- 19 Track data change from a variety of sources. Example: Use editing or versioning tools to track changes to data. 6.19
- 20 Identify data transferring protocols, visualization, and the purpose of data and methods of storage. Examples: Using an online collection tool or form to collect data that is then stored in a spreadsheet or database. 6.20
- 21 Identify varying data structures/systems and methods of classification, including decimal and binary. Examples: Difference between a bit and a byte, bit representation, pixels. 6.21
- 22 Summarize the purpose of the American Standard Code for Information Interchange (ASCII). 6.22

Systems

- 23 Discuss how digital devices may be used to collect, analyze, and present information. 6.23
- 24 Compare and contrast types of networks. Examples: Wired, wireless (WiFi), local, wide area, mobile, Internet, and intranet. 6.24
- 25 Differentiate between secure and non-secure systems. 6.25

Modeling and Simulation

- 26 Explain why professionals may use models as logical representations of physical, mathematical, or logical systems or processes. Example: Students will discuss why an engineer may build a model of a building before actually constructing the building. 6.26
- 27 Explain how simulations serve to implement models. 6.27

Innovative Designer

Human/Computer Partnerships

- 28 Define assistive technologies and state reasons they may be needed. 6.28
- 29 Define artificial intelligence and identify examples of artificial intelligence in the community. Examples: Image recognition, voice assistants. 6.29

Design Thinking

- 30 Discuss and apply the components of the problem-solving process. Example: Students will devise a plan to alleviate traffic congestion around the school during drop-off and pick-up. 6.30