

Computer Science
K-12 Standards
Networks and the
Internet



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The CSTA K–12 Computer Science Standards are created and maintained by members of the Computer Science Teachers Association (CSTA).



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The [K–12 Computer Science Framework](#), led by the [Association for Computing Machinery](#), [Code.org](#), [Computer Science Teachers Association](#), [Cyber Innovation Center](#), and [National Math and Science Initiative](#) in partnership with states and districts, informed the development of this work.

The CSTA Standards Revision Task Force crafted standards by combining concept statements and practices from the Framework. The Task Force also used descriptive material from the Framework when writing examples and clarifying statements to accompany the standards. The glossary referenced in the navigation header links directly to the Framework's glossary.

For more information about the Framework, please visit k12cs.org.

Legend for Identifiers

Unique Numbering System for the Washington Computer Science K–12 Learning Standards

To help organize and track each individual standard, a unique identifier was developed. An example appears below:

Level	Framework Concept	Number	Computer Science K–12 Learning Standard
Grades 6–8	Algorithms and Programming	17	Systematically test and refine programs using a range of test cases.
2	AP	17	Identifier: 2-AP-17

Use the following legend to interpret the unique identifier for each Computer Science K–12 Learning Standard:

The identifier code corresponds to: Level – Concept – Number		
Identifier Code		Key
Levels	1A	Grades K–2
	1B	Grades 3–5
	2	Grades 6–8
	3A	Grades 9–10
	3B	Grades 11–12
Concepts	CS	Computing Systems
	NI	Networks and the Internet
	DA	Data and Analysis
	AP	Algorithms and Programming
	IC	Impacts of Computing

Integrated into classroom activities through practices:

Practices	1	Fostering an Inclusive Computing Culture
	2	Collaborating
	3	Recognizing and Defining Computational Problems
	4	Developing and Using Abstractions
	5	Creating Computational Artifacts
	6	Testing and Refining
	7	Communicating about Computing

Figure 1: Standards Identifier Code –
Computer Science Teachers Association K–12 Computer Science Standards (2017)
Retrieved from <http://www.csteachers.org>



K-12 Networks and the Internet Standards

Identifier	Level 1A: K–2
1A-NI-04	Explain what passwords are and why we use them, and use strong passwords to protect devices and information from unauthorized access.
Identifier	Level 1B: 3–5
1B-NI-04	Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the Internet, and reassembled at the destination.
1B-NI-05	Discuss real-world cybersecurity problems and how personal information can be protected.
Identifier	Level 2: 6–8
2-NI-04	Model the role of protocols in transmitting data across networks and the Internet.
2-NI-05	Explain how physical and digital security measures protect electronic information.
2-NI-06	Apply multiple methods of encryption to model the secure transmission of information.
Identifier	Level 3A: 9–10
3A-NI-04	Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing.
3A-NI-05	Give examples to illustrate how sensitive data can be affected by malware and other attacks.
3A-NI-06	Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts.
3A-NI-07	Compare various security measures, considering tradeoffs between the usability and security of a computing system.
3A-NI-08	Explain tradeoffs when selecting and implementing cybersecurity recommendations.
Identifier	Level 3B: 11–12
3B-NI-03	Describe the issues that impact network functionality (e.g., bandwidth, load, delay, topology).
3B-NI-04	Compare ways software developers protect devices and information from unauthorized access.

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