Wisconsin Computer Science

Grades 3–5

Students will recognize and define computational problems using algorithms and programming AP1

A Develop algorithms. AP1.A

4 Construct and execute algorithms (sets of step-by-step instructions), which include sequencing, loops, and conditionals to accomplish a task, both independently and collaboratively, with or without a computing device. AP1.A.4.I

5 Decompose a larger computational problem into smaller sub-problems independently or in a collaborative group. AP1.A.5.I

Students will create computational artifacts using algorithms and programming AP2

A Develop and implement an artifact. AP2.A

3 Construct programs to solve a problem or for creative expression, which include sequencing, events, loops, conditionals, parallelism, and variables, using a block-based visual programming language or text-based language, both independently and collaboratively (e.g., pair programming). AP2.A.3.I

4 Create a plan as part of the iterative design process, both independently and with diverse collaborative teams (e.g., storyboard, flowchart, pseudo-code, story map). AP2.A.4.I

8 Use an iterative design process (e.g., define the problem; generate ideas; build, test, and improve solutions) to solve computational problems, both independently and collaboratively. AP2.A.8.M

Students will communicate about computing ideas AP3

A Recognize and cite sources. AP3.A

2 Use proper citations and document when ideas are borrowed and changed for their own use (e.g., using pictures created by others, using music created by others, remixing programming projects). AP3.A.2.I

B Communicate about technical and social issues. AP3.B

2 Understand that algorithms have impacted society in both beneficial and harmful ways. AP3.B.2.I

3 Compare different problem-solving techniques. AP3.B.3.I

4 Modify a set of instructions (e.g., in dancing, cooking, or other areas) and discuss how many paths can lead to the same result. AP3.B.4.I

Students will develop and use ab

Skip to main content

A Create and use abstractions (representations) to solve complex computational problems. AP4.A

2 Use several existing functions or procedures to solve a problem (e.g., using several square, circle, and triangle drawing functions to create a larger picture). AP4.A.2.I

Students will collaborate with diverse teams AP5

A Work together to solve computational problems using a variety of resources. AP5.A

3 Apply collaboration strategies to support problem solving within the design cycle of a program. AP5.A.3.I

4 Understand there are many resources that can be used or tapped to solve a problem. AP5.A.4.I

Students will test and refine computational solutions AP6

A Test and debug computational solutions. AP6.A

2 Analyze and debug an algorithm, which includes sequencing, events, loops, conditionals, parallelism, and variables. AP6.A.2.I

B Develop and apply success criteria. AP6.B

1 Determine the correctness of a computational problem solution by listening to a classmate describe the solution. AP6.B.1.I

Students will communicate about computing systems CS1

A Identify hardware and software components. CS1.A

3 Select and operate appropriate software to perform a variety of tasks and recognize that users have different needs and preferences for the technology they use. CS1.A.3.I

4 Use appropriate terminology in naming internal and external components of computing devices and describing their relationships, capabilities, and limitations. CS1.A.4.I

B Understand how the components of a computer system work together. CS1.B

2 Model how a computer system works. [Clarification Only includes basic elements of a computer system, such as input, output, processor, sensors, and storage]. CS1.B.2.I

Students will test and refine computing systems CS2

A Problem solve and debug. CS2.A

2 Identify, using accurate terminology, simple hardware and software problems that may occur during use, and apply strategies for solving problems (e.g., reboot device, check for power, check network availability, close and reopen app). CS2.A.2.I

Students will create computational artifacts using data and analysis DA1

A Represent and manipulate data. DA1.A

1 Use numeric values to represent non-numeric ideas in the computer (e.g., binary, American Standard Code for Information Interchange (ASCII), pixel attributes such as Red Green Blue (RGB)). DA1.A.1.I

2 Answer a question by using a computer to manipulate (e.g., sort, total and/or average, chart, graph) and analyze data that has been collected by the class or student. DA1.A.2.I

Skip to main content

Students will recognize and define data in computational problems DA2

A Gather data to support computational problem solving. DA2.A

2 Collect quantitative data over time from multiple sources (e.g., class or group pools, individual observations of street traffic). DA2.A.2.I

B Categorize and analyze data. DA2.B

2 Choose appropriate classifications or grouping for data by shape, color, size, or other attributes. DA2.B.2.I

Students will communicate about data in computing DA3

A Communicate about data. DA3.A

2 Organize data into new subsets to provide different views or commonalities and present insights gained using visual representations. DA3.A.2.I

3 Organize and evaluate data for its sufficiency and relevance to making accurate inferences or predictions. DA3.A.3.I

Students will develop and use data abstractions DA4

A Model with data. DA4.A

3 Create a computational artifact to model the attributes and behaviors associated with a concept (e.g., solar system, life cycle of a plant). DA4.A.3.I

Students will understand the impact and effect computing technology has on our everyday lives IC1

A Understand the impact technology has on our everyday lives and the effects of computing on the economy and culture. IC1.A

2 Discuss computing technologies that have changed the world and express how those technologies influence, and are influenced by, cultural practices. IC1.A.2.I

3 Generate examples of how computing can affect society, and also how societal values can shape computing choices. IC1.A.3.I

B Understand the effects of computing on communication and relationships. IC1.B

2 Compare and contrast the effects of communicating electronically to communicating in person. IC1.B.2.I

Students will experience learning within a collaborative, inclusive computing culture and explain the steps needed to ensure that all people have access to computing IC2

A Understand the effects of the digital divide. IC2.A

1 Brainstorm and advocate for ways in which computing devices and the internet could be made more available to all people. IC2.A.1.I

B Test and refine digital artifacts for accessibility. IC2.B

1 Brainstorm ways in which computing devices could be made more accessible to all users. IC2.B.1.I

C Collaborate ethically in the creation of digital artifacts. IC2.C

2 Use online collaborative spaces ethically and safely to work with another student to solve a problem or reach a goal. IC2.C.2.I

3 Seek out and compare diverse perspectives, synchronously or asynchronously, to improve a project. IC2.C.3.I

Skip to main content

Students will understand the importance of proper use of data and information in a computing society IC3

A Understand intellectual property and fair use. IC3.A

1 Use resources from the World Wide Web in making artifacts and recognize that the work came from others. IC3.A.1.I

B Assess the practice of digital privacy. IC3.B

3 Explain problems that relate to using computing devices and networks (e.g., logging out to deter others from using your account, cyberbullying, privacy of personal information, and ownership). IC3.B.3.I

Students will understand the importance of security when using technology NI1

A Use secure practices for personal computing. NI1.A

2 Create examples of strong passwords, explain why strong passwords should be used, and demonstrate proper use and protection of personal passwords. NI1.A.2.I

3 Remember basic concepts and facts regarding security issues with general computer use. NI1.A.3.I

B Understand the importance of institutional security. NI1.B

1 Give examples of information that organizations keep private as opposed to information that they make public. NI1.B.1.I

Students will understand how information is sent by the internet NI2

A Demonstrate how the internet works at the physical layer. NI2.A

3 Model how a device on a network sends a message from one device (sender) to another (receiver) while following specific rules. NI2.A.3.I

4 Differentiate between using the internet and not using the internet (e.g. identify difference between local and remote computation, such as collaborating on a Google Doc in “the cloud” versus editing a local document). NI2.A.4.I

5 Illustrate how information travels on the internet. NI2.A.5.I

B Demonstrate how the internet works at the protocol layer. NI2.B

1 Act out a protocol that people use in common everyday communications (e.g., checking out a book from the library, meeting a new person, making an appointment, playing a class game, or calling a friend on the phone to invite them over). NI2.B.1.I

C Demonstrate how the internet works at the addressing layer. NI2.C

2 Devise a system for sending a physical message to anyone in their school by using addressing techniques, and then draw a tree or visual representation of their addressing system, and finally act out their addressing system by sending messages. NI2.C.2.I

D Demonstrate and explain encryption methods. NI2.D

1 Communicate across a classroom using a secure method of their own design (e.g., pictures, physical movement, text). NI2.D.1.I