Colorado Computer Science

Grade 5

Computational Thinking

1 Develop, utilize, and evaluate algorithms, to model and solve problems.

1 Algorithms can be created, tested, and improved. CS.5.1.1

- a Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies. CS.5.1.1.A
- b Compare multiple algorithms for the same task and determine which is the most appropriate. CS.5.1.1.B
- c Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended. CS.5.1.1.C

2 Systematically analyze a problem using decomposition and abstraction to formulate a solution.

2 Complex problems can be broken into smaller parts to facilitate the program development process. CS.5.1.2

- a Decompose (breakdown) problems into smaller, manageable subproblems to facilitate the program development process. CS.5.1.2.A

Computing Systems and Networks

5 Develop systems solutions from a set of specifications to complete a design process.

1 When designing or improving computational artifacts, the designer should consider various perspectives. CS.5.2.1

- a Seek diverse perspectives for the purpose of improving computational artifacts. CS.5.2.1.A

Computer Programming

7 Design and create programs, individually and collaboratively, for a variety of disciplines.

1 Computer programs can include a variety of components that can be created and revised collaboratively over time to improve and expand the function of the program. CS.5.3.1

- a Create programs that use variables to store and modify data. CS.5.3.1.A
- b Create programs that include sequences, events, loops, and conditionals. CS.5.3.1.B
- c Modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features. CS.5.3.1.C
- d Use an iterative process to plan the development of a program by including others' perspectives and considering diverse viewpoints. CS.5.3.1.D
- e Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development. CS.5.3.1.E
- f Describe choices made during program development using code comments, presentations, and demonstrations. CS.5.3.1.F

Artificial Intelligence (AI)

12 Explain how AI tools work and how they are built.

1 AI systems can express information through a variety of ways and can perform tasks they were not explicitly programmed to perform through machine learning CS.5.5.1

- a Give examples of intelligent vs. non intelligent machines and discuss what makes a machine intelligent. CS.5.5.1.A
- b Identify problems as either classification problems or search problems. CS.5.5.1.B
- c Identify patterns in labeled data and determine the features that predict labels. CS.5.5.1.C

Digital Citizenship

13 Practice responsible, ethical, and safe use of computing technology and the internet.

1 Cyberbullying is the use of digital devices, sites, and apps to intimidate, harm, and/or upset someone. CS.5.6.1

- a Recognize similarities and differences between in-person bullying, cyberbullying, and being mean. CS.5.6.1.A
- b Identify strategies for dealing with cyberbullying and ways they can be an upstander for those being bullied. CS.5.6.1.B
- c Explain how certain policies and laws are created to guide online interactions. CS.5.6.1.C