

# Grade 5

## Computing Systems CS

### D. Devices D

- 1 Describe and model how internal and external parts of computing devices function to form a system. Describe how some components rely on others for correct functionality 5.CS.D.01
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### HS. Hardware & Software HS

- 1 Model and explain how information flows through hardware and software to accomplish a task. 5.CS.HS.01
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### T. Troubleshooting T

- 1 Identify, using appropriate technical terminology, simple hardware and software problems that may occur during everyday use, discuss problems with peers and adults, apply a variety of strategies for solving these problems, and provide evidence why these strategies did or did not work. 5.CS.T.01
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## Networks and the Internet NI

### NCO. Network Communication & Organization NCO

- 1 Model how information is deconstructed into packets (smaller pieces), transmitted through multiple devices over the internet and networks, and reassembled at the final destination. 5.NI.NCO.01
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### C. Cybersecurity C

- 1 Define personal identifiable information (e.g., digital footprint) and why it should be protected as related to real-world cyber security problems. 5.NI.C.01
  - 2 Discuss real-world cybersecurity problems and explain how personal information can be protected (e.g., antivirus software, backing up data, strong passwords). 5.NI.C.02
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## Data Analysis DA

### S. Storage S

- 1 Convert different types of information into various formats to be used across multiple software/hardware. 5.DA.S.01
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### CVT. Collection, Visualization & Transformation CVT

- 1 Interpret and communicate data in a variety of visual formats to highlight the relationships among the data to support a claim 5.DA.CVT.01

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**IM. Inference & Models** IM

- 1 Refer to data sets to highlight or propose cause-and-effect relationships, predict outcomes, or communicate ideas. 5.DA.IM.01
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**Algorithms and Programming** AP**A. Algorithms** A

- 1 Develop, compare, and refine multiple algorithms for the same task and determine which algorithm is the most appropriate. 5.AP.A.01
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**V. Variables** V

- 1 Create programs that use variables to store and modify grade-appropriate data. 5.AP.V.01
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**C. Control** C

- 1 Create programs using a programming language that includes sequences, loops, conditionals, event handlers, and variables that utilize mathematics operations to manipulate values in order to solve a problem or express an idea. 5.AP.C.01
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**M. Modularity** M

- 1 Decompose a large problem into smaller, manageable sub-problems and then further into sets of sequenced instructions to facilitate the program development process. 5.AP.M.01
  - 2 Modify, remix, or incorporate portions of an existing program into one's own work, to develop or add more advanced features (grade-level appropriate). 5.AP.M.02
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**PD. Program Development** PD

- 1 Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences while solving problems. 5.AP.PD.01
  - 2 Observe intellectual property rights and give appropriate attribution when creating or remixing programs 5.AP.PD.02
  - 3 Create, test, and debug a program that includes sequencing, repetition, and variables in a programming language to ensure its runs as intended. 5.AP.PD.03
  - 4 Communicate and explain program development to peers and adults using comments, presentations, and demonstrations. 5.AP.PD.04
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**Impacts of Computing** IC**C. Culture and Diversity** C

- 1 Evaluate how different technologies created by people from diverse backgrounds have contributed to computing and helped to change the world. 5.IC.C.01
- 2 Develop, test, and refine computational artifacts to improve accessibility and usability for all users. 5.IC.C.02

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**SI. Social Interactions** SI

- 1 Develop a code of conduct, explain, and practice grade-level appropriate behavior and responsibilities while participating online. Identify and report inappropriate behavior. 5.IC.SI.01
- 2 Discuss ways existing computing devices or computational products can be improved by collaborating with outside resources (other gradelevels, businesses) to gain their diverse perspectives. 5.IC.SI.02

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**SLE. Safety, Law & Ethics** SLE

- 1 Discuss personal consequences and social impact of violating intellectual property rights or failing to provide appropriate attribution. 5.IC.SLE.01