

# Grades 3-5

## Computing Systems

- 1 Devices: Describe how internal and external parts of computing devices function to form a system.** 3-5.CS.01
- 2 Hardware and Software: Model how computer hardware and software work together as a system to accomplish tasks. Discuss task specific embedded systems.** 3-5.CS.02
- 3 Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies.** 3-5.CS.03

## Networks and the Internet

- 4 Network Communication and Organization: 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.** 3-5.NII.04
- 5 Cybersecurity: Discuss real-world cybersecurity problems and how personal information can be protected.** 3-5.NII.05

## Data and Analysis

- 6 Collection, Visualization, and Transformation: Organize and present collected data visually to highlight relationships and support a claim.** 3-5.DA.06
- 7 Interference and Models: Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.** 3-5.DA.07

## Algorithms and Programming

- 8 Algorithms: Compare and refine multiple algorithms for the same task and determine which is the most appropriate.** 3-5.AP.08
- 9 Variables: Create programs that use variables to store and modify data.** 3-5.AP.09
- 10 Control: Create programs that include sequences, events, loops, and conditionals.** 3-5.AP.10
- 11 Modularity: Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process.** 3-5.AP.11
- 12 Modularity: Modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.** 3-5.AP.12

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**13 Program Development :** Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences. 3-5.AP.13

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**14 Program Development :** Observe intellectual property rights and give appropriate attribution when creating or remixing programs. 3-5.AP.14

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**15 Program Development:** Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended. 3-5.AP.15

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**16 Program Development:** Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development. 3-5.AP.16

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**17 Program Development:** Describe choices made during program development using code comments, presentations, and demonstrations 3-5.AP.17

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## Impacts of Computing

**18 Culture:** Discuss computing technologies that have changed the world and express how those technologies influence, and are influenced by, cultural practices 3-5.IC.18

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**19 Culture:** Brainstorm ways to improve the accessibility and usability of technology products for the diverse needs and wants of users 3-5.IC.19

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**19 Social Interactions :** Seek diverse perspectives for the purpose of improving computational artifacts. 3-5.IC.19

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**20 Safety Law and Ethics:** Use public domain or Creative Commons media and refrain from copying or using material created by others without permission. 3-5.IC.20

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## Emerging and Future Technologies

**A** Explain that the field of emerging technologies will be evolving and rapidly growing 3-5.ET.A

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**B** Compare existing and emerging technologies, ideas, and concepts. 3-5.ET.B

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**C** Describe how emerging technologies are influencing current events at a local and global scale. 3-5.ET.C

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**D** Predict the positive and negative societal, cultural, and economic impacts that emerging and future technologies may generate. 3-5.ET.D

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**E** Create new or original work by applying emerging technologies. 3-5.ET.E

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