Computer Science Standards

Grade 4

# **Computing Systems**

# **Devices**

* 4.CS.D.01 Define and discuss how computer hardware and software work together as a system to accomplish tasks (e.g., input, output, processor, sensors, and storage).

# **Hardware and Software**

* 4.CS.HS.01 Define and discuss how information flows through hardware and software to accomplish tasks using binary.

# **Troubleshooting**

* 4.CS.T.01 Identify and research simple hardware and software problems that may occur during everyday use.

# **Network and the Internet**

# **Network Communication and Organization**

* 4.NI.NCO.01 Recognize and explain how information is sent and received over both physical and wireless paths.

# **Cybersecurity**

* 4.NI.C.01 Define cybersecurity and discuss real‐world cybersecurity problems and how physical and digital personal information can be protected.

# **Data Analysis**

# **Storage**

* 4.DA.S.01 Explain how many kilobytes make one megabyte, and how many megabytes make one gigabyte.

# **Collection, Visualization and Transformation**

* 4.DA.CVT.01 Collect and organize data to highlight and display relationships.

# **Inference and Models**

* 4.DA.IM.01 Determine the accuracy of conclusions and how they are influenced by the amount of data collected.

# **Algorithms and Programming**

# **Algorithms**

* 4.AP.A.01 Create, compare & refine multiple algorithms for the same task.

# **Variables**

* 4.AP.V.01 Create programs that use variables to store and modify grade level appropriate data.

# **Control**

# **Modularity**

* 4.AP.M.01 Modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.

# **Program Development**

* 4.AP.PD.01 Create and debug programs using variables, loops, functions that intake, store, and display data.
* 4.AP.PD.02 Observe intellectual property rights and give appropriate credit when creating or remixing programs.

# **Community, Global and Ethical Impacts**

# **Culture**

* 4.CGEI.C.01 Discuss ongoing trends in technologies that have changed the world, and express how those trends influence and are influenced by cultural practices.
* 4.CGEI.C.02 Brainstorm ways to improve the accessibility and usability of technology pro ducts for the diverse needs and wants of users.

# **Social Interactions**

* 4.CGEI.SI.01 Develop a code of conduct, explain, and practice grade‐level appropriate behavior and responsibilities while participating in an online community. Identify and report inappropriate behavior.
* 4.CGEI.SI.02 As a collaborative team, consider and leverage each other’s diverse perspectives on improving a computational product.

# **Safety, Law and Ethics**

* 4.CGEI.SLE.01 Discuss the social impact of violating intellectual property rights. Use public domain or creative commons media, and refrain from copying or using material created by others without permission.