Computer Science Standards

Grade 6

# **Computing Systems**

# **Devices**

* 6.CS.D.01 Review and analyze device(s) based on personal use and recommend improvements to the device.

# **Hardware and Software**

* 6.CS.HS.01 Identify ways that hardware and software (User Interface) design are combined to collect and exchange data.

# **Troubleshooting**

* 6.CS.T.01 Identify and discuss increasingly complex software and hardware problems with computing devices and their components.

# **Network and the Internet**

# **Network Communication and Organization**

* 6.NI.NCO.01 Model a simple protocol for transferring information using packets.

# **Cybersecurity**

* 6.NI.C.01 Identify existing cybersecurity concerns with the Internet and systems it uses.
* 6.NI.C.02 Explain the importance of secured websites and describe how one method of encryption works.

# **Data Analysis**

# **Storage**

* 6.DA.S.01 Identify how the same data can be represented in multiple ways.

# **Collection, Visualization and Transformation**

* 6.DA.CVT.01 Collect data using computational tools and transform the data to make it more useful (e.g., spreadsheet formulas)

# **Inference and Models**

* 6.DA.IM.01 Use models and simulations to formulate, refine, and test hypotheses.

# **Algorithms and Programming**

# **Algorithms**

* **6.AP.A.01** Use an existing algorithm in natural language or pseudocode to solve complex problems.

# **Variables**

* 6.AP.V.01 Develop programs that utilize combinations of repetition, conditionals, functions, and the manipulation of variables representing different data types.

# **Control**

# **Modularity**

* 6.AP.M.01 Decompose (break down) problems into abstraction layers to facilitate the design, implementation, and review of programs.

## **Program Development**

* 6.AP.PD.01 Seek and incorporate feedback from team members to refine a solution to a problem.
* 6.AP.PD.02 Incorporate existing code, media, and libraries into original programs and give attribution.
* 6.AP.PD.03 Test and refine programs using teacher provided inputs.
* 6.AP.PD.04 Break down tasks and follow an individual timeline when developing a computational artifact.
* 6.AP.PD.05 Document block‐based or text‐based programs in order to make them easier to follow, test, and debug.

# **Community, Global and Ethical Impacts**

# **Culture**

* 6.GCEI.C.01 Explain how computing impacts people's' everyday activities and explore carriers related to the field of computer science.
* 6.GCEI.C.02 Identify and discuss the technology proficiencies needed in the classroom and the workplace, and how to meet the needs of diverse users.

# **Social Interactions**

* 6.GCEI.SI.01 Individually and collaboratively develop and conduct an online survey that seeks input from a broad audience. Describe and use safe, appropriate, and responsible practices (netiquette) when participating in online communities (e.g., discussion groups, blogs, social networking sites).

# **Safety, Law and Ethics**

* 6.GCEI.SLE.01 Differentiate between appropriate and inappropriate content on the Internet, and identify unethical and illegal online behavior.
* 6.GCEI.SLE.02 Identify what distinguishes humans from machines focusing on human intelligence versus machine intelligence (e.g., robot motion; speech and language understanding; computer vision)