

First Grade: Computer Science

In First Grade, students learn how computing components work together to form systems for collecting and sharing data/information. Students continue to develop problem-solving skills that apply computational thinking and can be applied with addressing hardware and software issues. Students refine computational thinking practices through activities such as planning, document creation, and construction of programs that consist of events and sequences. Students will further their knowledge on the importance of simple safeguards to protect private information and apply responsible behaviors and proper use of computing devices.

Algorithms and Programming (AP)

- 1.AP.1 The student will apply computational thinking by sorting items into categories based on multiple attributes and create patterns.**
- a. Describe attributes of a set of objects.
 - b. List the attributes a set of objects have in common.
 - c. Sort and classify concrete objects based on multiple attributes.
 - d. Create repeating and increasing patterns.
- 1.AP.2 The student will plan and implement algorithms that include the use of sequence and an event based on a predetermined task.**
- a. Plan and create a design document that illustrates thoughts, ideas, and stories in a sequential manner.
 - b. Construct step-by-step instructions that include decision-making and repetition.
 - c. Identify and explain the role of events that are used in an algorithm.
 - d. Test algorithms that are sequential and contain an event.
- 1.AP.3 The student will use the iterative design process to construct, test, and debug algorithms that include sequencing and an event.**
- a. Discuss and describe the concept of debugging.
 - b. Analyze and explain the results of an algorithm.
 - c. Revise and improve an algorithm to produce desired outcomes.

Computing Systems (CSY)

- 1.CSY.1 The student will describe how computing components work together to create a computing system.**
- a. Identify and define hardware, software, and computing systems.
 - b. Identify common components of computing systems in different types of computing devices.

- c. Describe how hardware and software work together to form a computing system.

1.CSY.2 The student will use accurate terminology to describe when a computing system might not work as expected.

- a. Identify and describe a problem with a device or computing system when it does not work as expected.
- b. Propose a solution to simple hardware or software issues.

Cybersecurity (CYB)

1.CYB.1 The student will demonstrate safe and responsible use of computing technologies.

- a. Describe safe and responsible uses of computing technologies based on the school rules and acceptable use policy (AUP).
- b. Demonstrate safe and responsible behaviors when using computing technologies and online communication.
- c. Discuss the process for reporting inappropriate technology use at school or home.
- d. Classify appropriate and inappropriate uses of technology at school or at home.
- e. Explain the consequences of inappropriate uses of computing technologies.

1.CYB.2 The student will discuss the importance of using a password to protect private information.

- a. Describe the purpose of usernames and passwords.
- b. Discuss how passwords are private information and are used to protect the privacy of information.

Data and Analysis (DA)

1.DA.1 The student will explore how data can be stored and retrieved from various computing devices.

- a. Identify data formats used for various purposes, including audio, images, text, and video.
- b. Explore and identify computing devices that collect, store, and/or display data.

1.DA.2 The student will create representations of data to make predictions and draw conclusions.

- a. Collect and organize data with or without a computing device.
- b. Create tables, object graphs, picture graphs, and models using abstraction.
- c. Identify patterns and describe trends in data visualizations of various formats.

- d. Use data to answer questions, draw conclusions, and make predictions.

Impacts of Computing (IC)

1.IC.1 The student will describe how computing technologies impact daily tasks and communication.

- a. Determine when tasks should be completed with or without computing devices.
- b. Describe how computing devices are used in communication.
- c. Describe healthy habits for using computing technologies.

1.IC.2 The student will describe tasks and activities that use screens and categorize them based on their use.

- a. Identify daily routines and activities that can be completed with or without screens.
- b. Classify the different uses of screen time as learning, entertainment, or communication.

1.IC.3 The student will compare and contrast ways people complete tasks with and without computing technologies.

- a. Identify tasks that can be completed with and without computing technologies.
- b. Discuss advantages and disadvantages of using and not using computing technologies.
- c. Describe how the appropriate use of computing technologies can improve efficiency.
- d. List computing technologies used in various careers.

Networks and the Internet (NI)

1.NI.1 The student will explain that computing devices and the use of the Internet allow people the ability to gather information and connect with others.

- a. Describe how the Internet can be used to gather information.
- b. Explain ways people communicate using computing devices and the Internet.