

Computer Science- 6th

Computer Science

Time: September-June

Standards:

Essential Questions

Computing Systems

- How does a computer system store and process information?
- What are some strategies to resolve problems in computer systems?

Networks and Internet

- How do networks and the internet assist computing systems to work efficiently?

Data & Analysis

- How do people use digital devices to automate data?

Enduring Understandings

- I can improve the design of devices and extend the abilities of humans.
- I can determine a computing system's capability to store and process information
- I can troubleshoot problems.
- I can explain that protocols, packets, and addressing are the key components for reliable delivery of information across networks.
- I can explain that information sent and received across networks can be protected from unauthorized access and modification in a variety of ways.
- I can explain the evolution of malware leads to understanding the key security measures and best practices needed to proactively address the threat to digital data.
- I can explain that people use digital devices and tools to automate the collection, use and transformation of data.
- I can explain which data is collected and transformed is influenced by the type of digital devices available and the intended use of the data.
- I can explain how data is represented in many formats.

- 8.1.8.CS.1 Recommend improvements to computing devices in order to improve ways users interact with the devices.
- 8.1.8.CS.2 Design a system that combines hardware and software components to process data
- 8.1.8.CS.3 Justify design decisions and explain potential system trade-offs.
- 8.1.8.CS.4 Systematically apply troubleshooting strategies to identify and resolve hardware and software problems in computing systems.
- 8.1.8.NI.1 Model how information is broken down into smaller pieces, transmitted as addressed packets through multiple devices over networks and the internet, and reassembled at the destination.
- 8.1.8.NI.2 Model the role of protocols in transmitting data across networks and the internet and how they enable secure and errorless communication.
- 8.1.8.NI.3 Explain how network security depends on a combination of hardware, software, and practices that control access to data and systems.
- 8.1.8.NI.4 Explain how new security measures have been created in response to key malware events.
- 8.1.8.DA.1 Organize and transform data collected using computational tools to make it usable for a specific purpose.
- 8.1.8.DA.2 Explain the difference between how the computer stores data as bits and how data is displayed.
- 8.1.8.DA.3 Identify appropriate tool to access data based on its file format.
- 8.1.8.DA.4 Transform data to remove errors and improve the accuracy of the data for analysis.
- 8.1.8.DA.5 Test, analyze and refine computational models.

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- I can explain the purpose of cleaning data is to remove errors and make it easier for computers to process.

8.1.8.DA.6 Analyze climate change computational models and propose refinements.

Benchmark Assessment(s)

- SWBAT explain how new security measures have been created in response to keep malware events at a minimum.
- SWBAT apply troubleshooting strategies to a give scenario.
- SWBAT explain the difference between how the computer stores data as bits and how data is displayed.

Other Assessments

- ✓ Teacher observation
- ✓ Class discussions and group work

Materials

- Chromebook/Ipad

SUGGESTED ACTIVITIES

- Research information on a topic
- <https://blog.edpuzzle.com/edtech/edtech-troubleshooting-101/>
- <https://curriculum.code.org/csd-18/unit1/2/>
- Create a video through Screencastify or other application to share troubleshooting techniques.
- <http://www.mrsnasto.com/Lessons/les6.htm>
- <https://code.org/student/middle-high>
- <https://www.weteachnyc.org/resources/collection/grade-6-computer-programming-scratch/>
- <https://www.sciencebuddies.org/teacher-resources/lesson-plans/subjects/computer-science/sixth-grade>

REINFORCEMENT

- Extra practice on devices.
- Pair students with a partner.
- Repeat activities, as needed.

ENRICHMENT

- Have students create a presentation for their peers.

Suggested Websites

- <https://www.codelicious.com/courses>

Suggested Materials

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Cross-Curricular Connections

ELA-

SL.1.1: Participate in collaborative conversations.

SL.1.2. Ask and answer questions about key details in a text read aloud or information presented orally or through other media.

SL.1.3: Ask and answer questions about what a speaker says.

SL.1.5. Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.

W.1.2. Write informative/ explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.

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