Unit 1 Parts of the Computer

Content Area: **Computer Science**
Course(s):
Time Period: **Marking Period 1**
Length: **10 days**
Status: **Published**

Summary

Through a hands-on, project-based investigation, students become “experts” on the major components of a computer. Each student or small group is assigned a single component, researches its purpose and function, and teaches the rest of the class through a presentation. Students then write test questions about their assigned component, and the class takes a unit assessment based on the questions they created. A backup design project asks students to build a complete PC within a set budget, justifying each component selection and the trade-offs involved. Throughout the unit, students develop an understanding of how hardware and software work together as a system and how design decisions and trade-offs shape the computers people use every day.

Revision Date: July 2026

Essential Questions

- How do hardware and software work together to make a computer function?
- Why is each computer component important, and how do the components work together as a complete system?
- How do compatibility, purpose, and budget influence the design or selection of a computer?
- Why is there rarely a single "best" computer configuration for every user or task?
- How does effective communication help people understand and solve technical problems?
- Why is collaboration important when learning about or designing technology?

Enduring Understandings

- A computing system is made of hardware (physical parts) and software (instructions), which work together to store and process information.
- Each component has a specific function, and components must be compatible to form a working system.
- Selecting or designing a computer involves multiple considerations and trade-offs — there is rarely one “best” answer, only the best choice for a given purpose and budget.
- Clear communication and teamwork are essential to sharing technical knowledge.

Students Will Know

- Hardware is the physical parts of a computer that can be seen and touched; software is the programs that run on it.
- The function of major components: CPU (processor), GPU (graphics), RAM (memory), storage (SSD vs. HDD), motherboard, power supply (PSU), cooling, and case.
- The roles of input devices, output devices, peripherals, the operating system, and drivers/firmware.
- Key specifications people pay attention to (e.g., GHz, cores, GB, watts) and what they mean.
- That components must be compatible and that choices involve trade-offs in cost, performance, power, and size.

Students Will Be Skilled At

• Identifying the major parts of a computer and explaining their functions in their own words.
• Explaining how hardware and software work together as a system.
• Researching a technical component and comparing options (e.g., Intel vs. AMD, SSD vs. HDD).
• Creating and delivering a clear, well-organized presentation with supporting visuals.
• Writing fair, accurate test questions and answering classmates' questions.
• Selecting compatible parts to build a complete PC within a budget and justifying the trade-offs.

Learning Plan

• Open with a video and discussion on computer hardware vs. software and how they work together; students answer questions in writing and share with the class.

• Introduce the major components and key vocabulary (CPU, GPU, RAM, storage, motherboard, PSU, cooling, case, OS, drivers).

• Assign parts and distribute the research template; model strong vs. weak research with an example.

• Research and slide-building work time, with teacher check-ins and a peer draft review.

• Group presentations; classmates take brief notes and ask questions.

• Groups submit test questions; the teacher curates them into the class unit test.

• Whole class takes the student-built unit test, followed by review.

• If time allows (or as an alternative assessment), run the Build-a-PC-on-a-Budget project and class debrief.

Assessment

Assessments

• Formative: Research template check-ins, draft slide reviews, and exit tickets on part functions.
• Summative: The student-built class test (questions contributed by every group), the part presentation, and the project rubric scores.
• Benchmark: Check-for-understanding quiz on the core terms (CPU, GPU, RAM, storage, motherboard, PSU, cooling, case, OS, drivers; hardware vs. software; how they work together).
• Alternative Assessment: The Build-a-PC-on-a-Budget design project (backup/extension).

Materials

Core instructional materials:

- PC Part Research Template and PC Build Worksheet (provided above).
- Presentation software (e.g., Google Slides).
- Intro video on basic parts of a computer and hardware vs. software.
- Free PC part-picker / build site or PC building simulator (free build mode) for the budget project.

Supplemental: materials: CodeHS, Khan Academy, GCFGlobal computer-basics lessons.

Standards

English Language Development Standard 4: English language learners communicate information, ideas and concepts necessary for academic success in the content area of science.

For Computer Science & Design Thinking specifically, the climate change standards are:

- 8.1.12.DA.1 – Create interactive data visualizations using software and analyze data to communicate information about complex issues, including climate change.

- 8.2.12.ETW.3 – Identify a complex global environmental or climate change issue, develop a systemic plan of investigation, and propose an innovative sustainable solution.

CS	Computing Systems
L.SS.6.1	Demonstrate command of the system and structure of the English language when writing or speaking.
	The study of human–computer interaction can improve the design of devices and extend the abilities of humans.
	Software and hardware determine a computing system's capability to store and process information. The design or selection of a computing system involves multiple considerations and potential trade-offs.
	Troubleshooting a problem is more effective when knowledge of the specific device along with a systematic process is used to identify the source of a problem.
NI	Networks and the Internet
	Protocols, packets, and addressing are the key components for reliable delivery of information across networks.
	The information sent and received across networks can be protected from unauthorized access and modification in a variety of ways. The evolution of malware leads to understanding the key security measures and best practices needed to proactively address the threat to digital data.
	Engineering design requirements and specifications involve making trade-offs between competing requirements and desired design features.
SL.PE.6.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

Suggested Strategies for Modification

Suggested Strategies for Modification for Computer Science