

MJ Grade 7 Digital Discoveries

Powerful Computing—Guided Notes

Hardware and Software

Objectives

After completing this section, you will be able to:

- describe the relationship between hardware and software
- identify ways humans interact with computers

Vocabulary

hardware	
software	

Notes

What is a <i>computer peripheral</i> ?	
List and describe some common computer peripherals.	— — — — —
List some examples of each of the software categories.	Application software: Utility software: Programming software: Operating system software:
What is the relationship between hardware and software?	
What are the roles of firmware and the BIOS?	
What are the parts of the hierarchy of control?	1: 2: 3: 4:

Humans and Computers

Objectives

After completing this section, you will be able to:

- describe how adaptive technology assists users in their daily lives
- identify ways humans interact with computers

Vocabulary	
user interface (UI)	
adaptive technologies	
tactile	

Notes	
List some of the UI elements	— — — — —
Explain the role of each of the following technologies and provide examples.	Probes: Sensors: Handhelds:
Explain some of the adaptive software tools.	Screen readers: Screen magnification: Speech-to-Text: Eye-tracking: Text-to-Speech: Closed captioning/subtitles:
What are some of the adaptive hardware and software technologies?	

Software Development Life Cycle

Objectives
After completing this section, you will be able to: • define the phases of the software development life cycle • differentiate between usable data and miscellaneous information • analyze a problem based on a task

Vocabulary	
pseudocode	

Notes	
Explain the parts of the software development life cycle.	Planning and analysis: Designing: Building/coding: Testing/integrating: Maintenance:
What is the difference between usable data and miscellaneous information?	
Describe the difference between the <i>waterfall</i> and <i>agile</i> methods that software developers use.	
What is the role of a software developer?	

Numbers

Objectives

After completing this section, you will be able to:

- apply mathematics to real-world contexts
- complete tasks with mathematical fluency

Vocabulary

binary	
bits	
hexadecimal	

Notes

What is the range of numbers used in the decimal number system (base 10)?	
What are the values of the binary number system (base 2)?	
Convert binary 10 to decimal.	
Convert binary 11 to decimal.	
Convert binary 110 to decimal.	
What is in a byte of data?	
Describe the parts of a hexadecimal number.	
Explain the role of a pixel in a picture.	
List some real-world examples of each number system type.	Decimal:
	Binary:
	Hexadecimal:

Computational Thinking and Algorithms

Objectives

After completing this section, you will be able to:

- express solutions as computational steps
- create an algorithm to achieve a given goal

Vocabulary

algorithm	
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Notes

What is meant by <i>computational thinking</i> ?	
Explain the steps of the CPU cycle.	Fetch:

	Decode: Execute: Save:
List the steps humans and computers use to solve problems.	1: 2: 3: 4:
What are the characteristics of a solid algorithm?	— — —
What are some daily tasks that require the use of an algorithm?	
What steps can you take to make algorithms more efficient?	1: 2: 3: