



IT Midterm Study Guide - Grade 8

This guide outlines the key topics you need to know for your exam from "Project Design" and "Data Transmission and Protocols."

Lesson 1: Project Design

1. The Design Thinking Process

- You should know the steps of the design thinking process.
- The first step is to learn about the needs of the users.

2. User Experience and Prototyping

- You need to know the **principle** that helps in designing a new laptop with a good user experience.
- You should be able to name the **type of tests** that designers conduct to ensure a product is easy and enjoyable to use, where real people try the product.
- You should be able to describe a basic prototype for a device, such as a smart fitness band, detailing its components and features. This includes:
 - Listing sensors and the activities they can monitor.
 - Describing how a mobile screen will show real-time statistics.
 - Identifying a potential issue a user could face during a usability test and proposing a solution to resolve it.

3. Device Components and Accessibility

- Technology devices have components whose purpose is to collect or exchange data. You should be able to list the four categories of components, explain what one of the categories does, and give an example of a component in that category.
- You should know how to use the "Check Accessibility" tool in Microsoft Word to find and fix issues in a document.

Lesson 2: Data Transmission and Protocols

1. Fundamentals of Data Transmission

- The path through which a message is sent in data transmission is called the **medium**.
- You should know how to ensure that data is accurately received, or sent again if it is not.

2. Network Analysis and Troubleshooting

- The **ping command** is used to check a network connection. You will need to analyze the number of packets sent, received, and lost to determine if a connection is good.
- In a network diagram, you must be able to identify the shortest and longest paths in terms of hops and state the hop count for each.

3. Secure Data Transmission

- You will need to know the names of **protocols used for secure data transmission**, which keep data safe when sent over the internet and protect it from hackers.
 - You should be able to describe how **digital signatures** help ensure secure data transmission and explain why they are important.
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General Exam Tips

- **Understand the Concepts:** Don't just memorize terms; understand what they mean and how they apply to real-world technology.
- **Practice:** Use tools like the **ping command** and Accessibility Checker to become familiar with them.
- **Explain Clearly:** For questions that ask you to "describe" or "explain," provide detailed and complete answers.