Binary Numbers Introductory Level

Multiple choice questions

Question 1	Question 2	Question 3
What are the two symbols used in binary code?	**What is the value of the first digit in the binary number 1011?**	**What is the decimal equivalent of the binary number 1011?**
A. High and Low **B.** True and False **C.** 0 and 1 **D.** On and Off	**A.** 2 to the power of 2 **B.** 2 to the power of 0 **C.** 2 to the power of 3 **D.** 2 to the power of 1	**A.** 13 **B.** 15 **C.** 11 **D.** 10

Short-answer questions

1. What is a bit in binary code?
2. How is the decimal number system similar to the binary number system?
3. Explain how computers use binary to store information.

Open-ended questions

1. Think about how you use technology in your daily life. How do you think the binary code that computers use helps you to do the things you enjoy?
2. Imagine you are trying to explain to a friend who has never heard of binary code how it works. What would you say to them to help them understand?
3. Computers use binary code to store information like numbers, letters, and pictures. What other types of information do you think computers store using binary code?

Binary Numbers Introductory Level ANSWERS

Multiple choice questions

Question 1	Question 2	Question 3
What are the two symbols used in binary code?	**What is the value of the first digit in the binary number 1011?**	**What is the decimal equivalent of the binary number 1011?**
A. High and Low **B.** True and False **C. 0 and 1** **D.** On and Off	**A.** 2 to the power of 2 **B.** 2 to the power of 0 **C. 2 to the power of 3 (The leftmost digit in 1011 is in the $2^3 = 8$ place.)** **D.** 2 to the power of 1	**A.** 13 **B.** 15 **C. 11 (1×8 + 0×4 + 1×2 + 1×1 = 8 + 0 + 2 + 1 = 11)** **D.** 10

Short-answer questions

1. What is a bit in binary code?

A bit is the smallest unit of data in binary code and represents a single binary digit, either 0 or 1.

2. How is the decimal number system similar to the binary number system?

Both systems use place value to determine the value of a number. The decimal system is base 10 (each place is a power of 10), while binary is base-2 (each place is a power of 2).

3. Explain how computers use binary to store information.

Computers use binary code to represent all types of data (like numbers, text, images) using combinations of 0s and 1s. Each bit is stored electronically using components that can be in an "on" (1) or "off" (0) state.

Open-ended questions

1. Think about how you use technology in your daily life. How do you think the binary code that computers use helps you to do the things you enjoy?

Sample Answer:

Binary code lets my devices process and display everything I do, whether I'm watching videos, playing games, or chatting with friends. It's the language that makes my phone or computer understand what I want it to do.

2. Imagine you are trying to explain to a friend who has never heard of binary code how it works. What would you say to them to help them understand?

Sample Answer:

I'd tell them binary is like a secret code made of only two numbers 0 and 1. Just like how we count with 1, 2, 3…. computers only use 0 and 1. These numbers control everything the computer does.

3. Computers use binary code to store information like numbers, letters, and pictures. What other types of information do you think computers store using binary code?

Sample Answer:

Computers also store things like music, videos, animations, instructions for apps, fingerprints, passwords, and even your voice, all using binary code.