Kit’s Binary Code Challenge

1. B) 0 and 1 (1 mark)

Working: Binary is a base-2 system using only two digits.

Award 1 mark for the correct option.

2. B) 1 (1 mark)

Working: The rightmost position represents 2^0, which is 1.

Award 1 mark for the correct option.

3. True (1 mark)

Working: Computers use transistors that act as switches for electrical current.

Award 1 mark for the correct answer.

4. 10 (1 mark)

Working: 2 = (1 * 2) + (0 * 1).

Award 1 mark for the correct binary string.

5. 110 (1 mark)

Working: 6 = (1 * 4) + (1 * 2) + (0 * 1).

Award 1 mark for the correct binary string.

6. C) 8 (1 mark)

Working: A byte is defined as a group of 8 bits.

Award 1 mark for the correct option.

7. 0111 (1 mark)

Working: 7 = 4 + 2 + 1.

Award 1 mark for the correct binary string.

8. 8 (1 mark)

Working: 1000 = (1 * 8) + (0 * 4) + (0 * 2) + (0 * 1).

Award 1 mark for the correct decimal number.

9. False (1 mark)

Working: 101 in binary is 5. 12 in binary is 1100.

Award 1 mark for the correct answer.

10. D) 1010 (1 mark)

Working: 1010 = 10, 1001 = 9, 1000 = 8, 0111 = 7.

Award 1 mark for the correct option.

What a secure answer looks like

A secure answer demonstrates an understanding of place value in base-2, where each column represents a power of 2 (1, 2, 4, 8, 16...).

If your child is stuck

Ask your child to write the numbers 8, 4, 2, 1 across the top of their page to act as column headings for their binary digits.

Common mistakes to watch for

Children often confuse the right-to-left order of binary place values or forget that a '0' is required as a placeholder in a specific column.