

Kit's Binary Code Discovery Sheet

Learning objective: To understand that computers use binary—the digits 0 and 1—to represent data, images, and text.

Help Kit the fox decode the secret language of computers! Read the definitions provided by Kit and use the space below to explain how binary works, convert simple values, and apply your knowledge to solve a digital puzzle.

Word bank: Binary · Bit · Denary · Data · Switch · Off · On

1. What is binary? In your own words, explain why computers use a system of only 0s and 1s instead of our usual number system. (2 marks)

2. The Light Switch Analogy: If 0 represents a switch being 'OFF' and 1 represents a switch being 'ON', draw a pattern of four switches to represent the number 5 (using the 8, 4, 2, 1 place value method). (2 marks)

3. Data Storage: Kit wants to store the letter 'A' as a binary code. Explain why we need a standard 'codebook' (like ASCII) for computers to understand what those 0s and 1s mean. (3 marks)

4. Binary to Denary: Convert the binary number 1011 into a denary (base-10) number. Show your working out. (2 marks)

5. Real-world Application: Can you think of one other device, besides a laptop, that might use binary code to function? Explain your choice. (2 marks)

Extension challenge: Try to write your own name using an 8-bit binary code converter found in your classroom library or computing lab. Can you create a secret message for a friend using only 0s and 1s?