

Year 5 Computing: Understanding Coding and Algorithms

Learning objective: To assess knowledge of algorithms, debugging, selection, and the use of variables in coding.

Read each question carefully before answering. Ensure your explanations are clear and use correct computing terminology. Total marks available: 25.

Kit the fox is building a new computer program to help his friends organise their library books. He has written a set of instructions for the computer to follow, but he has noticed that the program sometimes crashes when a book is missing from the shelf. Kit is now checking his code line by line to find the error.

Word bank: algorithm · bug · debugging · variable · selection · sequence · loop

1. Define the term 'algorithm' in your own words. (2 marks)

2. Kit finds an error in his program. What is the technical term for this error, and what is the process of fixing it called? (2 marks)

3. Explain what 'selection' means in coding. Give an example of how a programmer might use an 'if/then' statement. (4 marks)

4. Why do programmers use 'variables' in their code? Provide an example of what a variable might store in a game. (4 marks)

5. Describe the difference between a 'sequence' and a 'loop' in a computer program. (4 marks)

6. Kit is designing a system where a user enters the price of a book in £. If the price is over £10, the computer displays 'Expensive'. If it is £10 or less, it displays 'Budget'. Write the logic for this program using pseudocode. (4 marks)

7. Imagine you are designing a computer game character. Describe a set of instructions (an algorithm) for your character to follow to move across the screen, reach a treasure chest, and increment a score variable by 1. (5 marks)

Draw: Draw a flowchart that shows a simple decision process: 'Is it raining?'. Use a diamond shape for the decision and rectangles for the actions.



Extension challenge: Total: /25. Challenge: Research what a 'nested loop' is and explain how it differs from a standard loop.