

Kit's Clever Algorithm Planner

Learning objective: To design, write, and debug a precise algorithm to solve a real-world problem.

Kit the fox needs your help! Algorithms are just sets of instructions to complete a task. Think of a simple task, like making a cup of tea or tidying your desk. Write your steps clearly and in the correct order. If you miss a step, the 'computer' (or person) won't know what to do! Use the boxes below to plan, refine, and test your logic.

Word bank: Algorithm · Sequence · Input · Output · Debug · Precision · Logical · Step

1. The Goal: Describe the task you want your algorithm to complete. Why is it important to have the steps in a specific order? (2 marks)

2. The Algorithm: Write your instructions in numbered steps. Remember to be as specific as possible. (4 marks)

3. The 'Bug' Hunt: Imagine someone follows your steps but makes a mistake. What might go wrong? How would you 'debug' (fix) your instructions? (3 marks)

4. Explain why an algorithm for a robot needs to be more detailed than an algorithm for a human friend. (3 marks)

5. Compare and contrast: How is following a recipe like following a computer algorithm? Justify your answer. (3 marks)

6. What might happen if you changed the order of two steps in your algorithm? Predict the outcome. (2 marks)

Extension challenge: Design a 'conditional' step for your algorithm (an 'If/Then' statement). For example: 'If the desk is empty, then stop. If not, then pick up one item.' Rewrite your algorithm to include this new logic and explain why this makes your program more efficient.