Kit's Recipe for a Perfect Algorithm

1. C, A, B, D (2 marks)

Working: Logical order: 1. Place tea bag (C), 2. Pour water (A), 3. Remove tea bag (B), 4. Add milk (D).

2 marks for correct order; 1 mark for 3 out of 4 correct.

2. An algorithm needs a logical sequence because computers follow instructions exactly as written. If steps are out of order, the outcome will be incorrect or the task will fail. (2 marks)

Look for: The idea that computers follow instructions literally and order affects the final result.

Good: Because if you do it wrong, the robot won't work properly.

Better: It is important because computers follow steps in order. If the order is wrong, the robot will make a mistake.

Best: Algorithms must be logical because computers execute instructions literally. If the sequence is incorrect, the robot cannot complete the task successfully.

What moves an answer up: Moving from vague statements to specific references about computer logic and task failure.

3. B) If the traffic light is red, wait. (1 mark)

Working: Selection uses a condition (if) to decide which path to take.

1 mark for correct option.

4. Loop (1 mark)

Working: Repeating an action until a condition is met is defined as a loop.

1 mark for correct term.

5. The bug is that the sequence only moves forward and turns once. To draw a square, the robot needs to repeat the 'Move and Turn' sequence four times. (2 marks)

Working: A square has four sides and four corners; the current code only completes one side.

2 marks for identifying the lack of repetition; 1 mark for identifying it only draws one side.

What a secure answer looks like

A secure answer demonstrates an understanding that algorithms are precise, sequential, and require repetition or selection to handle complex tasks.

If your child is stuck

Ask the child to physically act out the steps. If they try to put the milk in before the water, they will quickly see why the sequence matters.

Common mistakes to watch for

Children often forget that computers cannot 'guess' the next step, and they may confuse 'selection' (if/then) with 'loops' (repeat).