

Kit's Clever Computing: Mastering Algorithms

Learning objective: To understand that algorithms are precise, step-by-step instructions used to complete a task, and to identify and correct errors (bugs) in a sequence.

Read each question carefully. Use your knowledge of logic and sequences to help Kit the fox solve these computing puzzles. Remember, an algorithm must be clear and in the right order to work correctly!

Kit the fox is building a robotic helper to organise his library. To make the robot work, Kit must write a perfect algorithm. An algorithm is just a list of steps to follow to finish a task. If the steps are out of order, or if a step is missing, the robot will have a 'bug' and will not be able to finish the job correctly.

Word bank: Algorithm · Sequence · Bug · Debug · Instruction · Logic

1. Kit wants his robot to make a cup of tea. He has written these steps: 1. Put the tea bag in the mug. 2. Drink the tea. 3. Pour in the hot water. Explain why this algorithm will not work and suggest which step needs to be moved. (2 marks)

2. Define the word 'algorithm' in your own words. Why is it important for the steps to be in the correct order? (2 marks)

3. Kit finds a 'bug' in his robot's code. What does it mean to 'debug' an algorithm? (2 marks)

4. Write a short algorithm (3-4 steps) for a robot to follow to sharpen a pencil. (3 marks)

5. If a robot is told to 'Walk forward' but there is a wall in front of it, why might this be a problem for the algorithm? (2 marks)

Draw: Draw a flowchart showing the steps for a simple task, like brushing your teeth or making a sandwich. Use arrows to show the direction the robot should follow.



Extension challenge: Imagine you are teaching a friend how to play a new board game. Write down the first three steps of your instructions. Are they clear enough for someone who has never played before?