

Kit's Computing Challenge: Mastering Algorithms

Learning objective: To understand that algorithms are sets of precise instructions for computers and to learn how to debug simple sequences.

Read each question carefully. Use your knowledge of programming logic to help Kit the Fox solve these computing puzzles.

Word bank: algorithm · debug · sequence · input · output · loop

1. Kit is writing an algorithm to make a robot move forward 3 steps, turn right, and move forward 2 steps. Define what an 'algorithm' is in your own words. (2 marks)

2. Kit's robot code is: [Move Forward] -> [Move Forward] -> [Turn Left] -> [Move Forward]. The robot is meant to go around a square obstacle, but it hits the wall. What do we call the process of finding and fixing this error? (1 mark)

3. Look at this sequence: 1. Pick up pen, 2. Open notebook, 3. Write name. If you swapped step 1 and 2, would the outcome change? Explain why the order of steps is important in computing. (2 marks)

4. If you wanted a character to jump over a puddle 5 times in a row, would it be more efficient to write the 'jump' command 5 times, or use a 'loop'? Explain your choice. (2 marks)

5. Kit wants to create a program where the computer asks, 'How much is £2.50 plus £1.50?' Write a simple sequence of steps for the computer to follow to give the correct answer. (3 marks)

Draw: Draw a flowchart showing the steps to make a cup of tea. Use arrows to show the direction of your algorithm.



Extension challenge: Imagine you are programming a robot to tidy your bedroom. Write a list of 5 precise instructions (an algorithm) for the robot to follow. Remember: robots only do exactly what you tell them!