

Class 4 Computing: Programming and Algorithms Assessment

Learning objective: To demonstrate understanding of algorithms, debugging, and the use of repetition in programming.

Read each question carefully. Use the word bank to help you complete the sentences and show your working for any logic puzzles. Write your answers clearly in the spaces provided.

Kit the fox is writing a computer program to help a robot navigate a garden maze. The robot needs to move forward three squares, turn right, and move forward two squares to reach the prize. Kit has written the instructions, but the robot keeps bumping into a flowerpot because of an error in the code.

Word bank: Algorithm · Debug · Loop · Sequence · Input · Variable

1. Define the word 'Algorithm'. Why is it important for a computer programmer to have a clear sequence? (2 marks)

2. Kit's robot hit a flowerpot. What is the technical term for finding and fixing the error in the code? How would you help Kit fix the problem? (3 marks)

3. If Kit wants the robot to move forward 10 times, instead of writing 'Move Forward' ten times, what programming feature should Kit use to make the code more efficient? (2 marks)

4. Look at this sequence: 1. Pick up apple, 2. Walk to basket, 3. Drop apple. If you moved step 2 to the beginning, what would happen? Explain why the order of instructions matters. (4 marks)

5. Max the monkey has written a program where a sprite jumps every time you press the spacebar. Identify which part of this is the 'Input' and which part is the 'Output'. (4 marks)

6. Imagine you are designing a game where a character collects coins. Write a short plan (an algorithm) for your character to follow to find a hidden treasure chest. Include at least one 'loop' or 'repeat' command in your plan. (5 marks)

7. Why do programmers use comments in their code even when the code is already working correctly? (5 marks)

Draw: Draw a flow chart showing the steps a robot takes to make a cup of tea. Use arrows to show the direction of the process.

Extension challenge: Total: /25