

Grade 3 Computing: Coding and Algorithms Assessment

Learning objective: To assess understanding of algorithms, debugging, and the use of variables and loops in programming.

Read each question carefully. Write your answers in the spaces provided. Ensure you use technical vocabulary where appropriate.

Kit the fox is writing a computer program to help a robot navigate a garden. The robot needs to move forward three steps, turn right, and then pick up a fallen apple. Kit has noticed that sometimes the robot turns left by mistake, so he is checking his code to find the error.

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

1. Define the term 'algorithm' in your own words. (2 marks)

2. Kit finds a mistake in his code where the robot turns left instead of right. What is the technical term for finding and fixing this error? (1 mark)

3. Explain why a 'loop' is useful when writing code. Give an example of a situation where you might use one. (3 marks)

4. If Kit wants the robot to keep track of how many apples it has collected, what programming concept should he use to store that number? (2 marks)

5. Look at this sequence of instructions: 1. Walk forward, 2. Walk forward, 3. Turn right. Rewrite this sequence using a loop to make the code more efficient. (4 marks)

6. Max the monkey is helping write code to calculate the cost of fruit. If apples cost 20p each, write a simple algorithm or pseudocode that tells the computer how to calculate the total cost for 5 apples. (3 marks)

7. Imagine you are designing a game where a character must collect stars. Write a detailed explanation of how you would design the 'win condition'. Describe the steps the computer must take, what happens when the goal is met, and how you would test your code to ensure it works correctly. (Total: /25) (10 marks)

Draw: Draw a flowchart showing the steps a person takes to make a cup of tea, using a start bubble, arrows for direction, and rectangles for actions.



Extension challenge: Total: /25