

Grade 4 Computing: Programming and Algorithms Assessment

Learning objective: To demonstrate understanding of algorithms, debugging, selection, and sequence 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 program to help his friends navigate a maze. He has written a sequence of instructions, but his program keeps crashing when it hits a wall. He needs to add a 'selection' step to check if the path is clear before moving forward.

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

1. Define the term 'algorithm' in your own words. Why are algorithms important in programming? (2 marks)

2. Kit finds an error in his code that prevents his character from moving. What is the technical term for finding and fixing this error? (1 mark)

3. Explain the difference between 'sequence' and 'selection' in a computer program. Give one example of when you might use selection. (4 marks)

4. If you wanted a character to repeat an action five times, which programming structure would you use? (1 mark)

5. Imagine a program that asks a user for their age. If the user is under 10, the program prints 'Hello!', otherwise it prints 'Welcome!'. Explain how you would structure this using an 'if-then-else' statement. (4 marks)

6. Look at this line of code: 'Score = Score + 1'. What is the purpose of the word 'Score' in this context? (3 marks)

7. Extended Writing Task: You are designing a simple game where a character must collect coins. Write a set of instructions (an algorithm) for the character. Include at least one loop and one selection (e.g., 'if' a coin is touched, increase the score). (10 marks)

Draw: Draw a flowchart showing the logic for a simple program: 'If it is raining, take an umbrella; otherwise, wear sunglasses.' Use standard flowchart shapes (ovals for start/end, rectangles for processes, diamonds for decisions).



Extension challenge: Total: /25. Challenge: Research how variables are used to store data in a game. How might you use a variable to track the number of lives a player has left?