

Year 4 Computing: Mastering Scratch Logic

Learning objective: To assess understanding of algorithms, sequencing, repetition (loops), and debugging in block-based programming.

Read each question carefully. Use your knowledge of the Scratch interface and logic to provide accurate answers. Ensure your explanations are clear and use technical vocabulary.

Kit the fox is creating a game where a character needs to collect acorns. Kit has written a script: 'When green flag clicked', 'Move 10 steps', 'If touching acorn, then play sound'. Kit notices that the character moves, but does not keep checking for the acorn once the movement stops.

Word bank: Algorithm · Sequence · Loop · Debug · Sprite · Stage · Conditional · Variable

1. Define the term 'algorithm' in the context of computing. Why is the order of blocks in a sequence important? (2 marks)

2. Look at Kit's script in the passage. Which control block should Kit add to ensure the character keeps checking for the acorn throughout the entire game? (2 marks)

3. What does it mean to 'debug' a program? Describe one strategy you use to find an error in your code. (3 marks)

4. Explain the difference between a 'Sequence' and a 'Loop'. Provide an example of when you would use a 'Repeat' block instead of just stacking blocks one after another. (4 marks)

5. If you wanted to create a score counter for a game, which category of blocks would you use? Explain why this is necessary for tracking game progress. (3 marks)

6. Kit wants the character to move in a square shape. Explain the logic required to achieve this. How many degrees should the character turn, and how many times should the movement pattern repeat? (3 marks)

7. Extended Response: Imagine you are designing a complex game level. Justify why using 'Events' (like 'When space key pressed') is more effective for user interaction than having a script run automatically from the start. What might happen to the player experience if the game lacked these inputs? (5 marks)

Draw: Draw a flowchart showing the logic for a Sprite that moves forward, hits a wall, and then turns around. Label the steps using the terms: Start, Move, Decision (Condition), and Action.



Extension challenge: Challenge: If you were to add a 'Broadcast' message to your game, how would that change the way two different sprites interact with each other? Write a short paragraph explaining the benefit of using broadcasts for complex animations. Total: /25