Kit’s Computational Logic Challenge

Learning objective: To understand and apply sequence, selection, and variable concepts within Scratch programming logic.

Kit the Fox is building a new game in Scratch but has mixed up the logic blocks. Read the 'Code Snippets' below and match them to the correct programming concept. Then, answer the deeper thinking questions to demonstrate your understanding of algorithms.

Word bank: Sequence · Selection · Variable · Iteration · Broadcast · Event

1. Snippet A: 'If score > 10, then change backdrop to Level 2.' Which programming concept is being used here? Justify your choice. (2 marks)

2. Snippet B: 'Repeat 10 times: move 10 steps, turn 15 degrees.' What will happen to the sprite on screen if this loop runs? Explain why. (2 marks)

3. Kit wants to keep track of how many coins a player collects. Which programming element should he create? Explain how this element changes during gameplay. (2 marks)

4. Compare and contrast a 'Repeat' loop with a 'Forever' loop. In what specific game scenario would you choose one over the other? (2 marks)

5. What might happen if a programmer forgets to include an 'Event' block (like 'When green flag clicked') at the start of their code? (2 marks)

6. Design a simple algorithm using the word bank terms to make a sprite say 'Hello!' only when it touches the edge of the stage. (2 marks)

Draw: Draw a flowchart showing the logic for a simple 'Game Over' screen, including a condition where the sprite touches a red obstacle.

Extension challenge: Imagine you are creating a digital shop where items cost between £1.50 and £5.00. Write a piece of pseudocode for a program that checks if the player has enough money (£) to purchase an item. Explain how you would use a variable to store the player's balance.