Kit’s Computing Logic: Designing an Algorithm

Learning objective: To understand how to represent an algorithm as a sequence of logical steps using flowcharts and symbols.

Follow the prompts below to draw a flowchart that helps Kit the fox navigate through a maze to find his favourite book. Use standard flowchart symbols: Ovals for the Start and End, Rectangles for actions, and Diamonds for decisions.

Draw: Draw a clear, vertical flowchart on your page. Use a ruler to draw straight lines with arrows pointing downwards to show the sequence. Use a diamond shape for the decision 'Is the path clear?'. Ensure your drawing is neat and uses clear, capitalised labels from the word bank to identify each stage of Kit’s journey.

Label words: Start · Decision · Algorithm · Input · Process · End · Loop

Steps:

1. Step 1: Draw an oval at the top of your page. Label it 'Start'. What is the purpose of this shape in a flowchart?
2. Step 2: Draw a rectangle below your start point. Write 'Check for obstacles' inside it. Explain why this is a 'process' rather than a 'decision'.
3. Step 3: Draw a diamond shape. Label it 'Is the path clear?'. If the answer is 'No', draw an arrow leading

back to the 'Check' rectangle. What is this repeating sequence called in programming?

4. Step 4: Draw a rectangle at the end of the path and write 'Collect book'. Justify why the order of these steps (the sequence) is essential for Kit to succeed.

5. Step 5: Label the arrows connecting your shapes. How do these arrows demonstrate the 'flow' of the algorithm?

6. Step 6: Draw a final oval at the bottom and label it 'End'. Compare and contrast a flowchart with a written set of instructions. Which is easier to debug and why?