Kit’s Code-Cracking Challenge: The Debugging Workshop

Learning objective: To understand that algorithms can contain errors (bugs) and to demonstrate the process of identifying and correcting these logical faults.

Kit the Fox is building a robot to help in the garden, but the code has a few 'bugs' that make the robot act strangely! Use the drawing space below to illustrate the robot's journey and help Kit fix the sequence.

Draw: Draw a large, clear scene showing Kit the Fox standing next to a slightly tangled-looking robot. The scene should include a 'pathway' on the ground represented by a grid. Use bright colours to show the 'correct' intended path in green and the 'buggy' incorrect path in red. Include speech bubbles for Kit, who is looking thoughtful. The style should be clean, line-art based, and suitable for annotating with labels from the word bank.

Label words: Algorithm · Bug · Debug · Sequence · Input · Output · Logic Error

Steps:

1. Step 1: Draw the robot's intended path (a straight line to the flowerbed) and a separate, 'buggy' path where the robot has gone the wrong way. Label the 'Bug' where the robot went off course.

2. Step 2: Explain why it is important for a programmer to test their code in small sections rather than all at once.

3. Step 3: If Kit's robot was supposed to turn 90 degrees right but turned left instead, what type of error is this? Justify your answer.

4. Step 4: Draw a 'Debugger' tool in Kit’s hand and label how it interacts with the robot's code.

5. Step 5: Compare and contrast a 'syntax error' (a typo in the code) with a 'logic error' (the code runs, but does the wrong thing).

6. Step 6: What might happen if a programmer ignores a minor bug in a complex piece of software? Explain the potential consequences.