

## Kit's Code-Cracking Challenge

*Learning objective: To understand algorithms, debugging, and the basic principles of logical programming sequences.*

Help Kit the fox fix his buggy computer programs! Read each question carefully and circle the best answer. Good luck, young programmers!

Answer Key: 1: C, 2: True, 3: Sequence, 4: B, 5: False, 6: Debug, 7: A, 8: True, 9: D, 10: Loop. Explanation: An algorithm is a precise set of instructions. Debugging is the process of identifying and removing errors. A sequence is the order in which steps occur. A loop allows a set of instructions to repeat automatically.

*Word bank: Algorithm · Debug · Sequence · Loop · Input · Variable · Bug*

**1. What do we call a set of step-by-step instructions designed to complete a specific task?  
A) A glitch, B) A memory, C) An algorithm\*, D) A hardware. (1 mark)**

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**2. True or False: A 'bug' is an error in a computer program that prevents it from running correctly. (1 mark)**

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**3. What term describes the specific order in which instructions must be carried out to reach the correct outcome? (1 mark)**

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**4. If Kit wants his character to move forward 10 steps five times, which command is most efficient? A) Forward, Forward, Forward, Forward, Forward, B) A loop\*, C) An input, D) A variable. (1 mark)**

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**5. True or False: Computers are smart enough to guess what you mean even if your instructions are in the wrong order. (1 mark)**

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**6. What is the name of the process used to find and fix errors in a program? (1 mark)**

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**7. Which of these is an example of an 'input'? A) Typing on a keyboard\*, B) A monitor screen, C) A printer, D) A computer case. (1 mark)**

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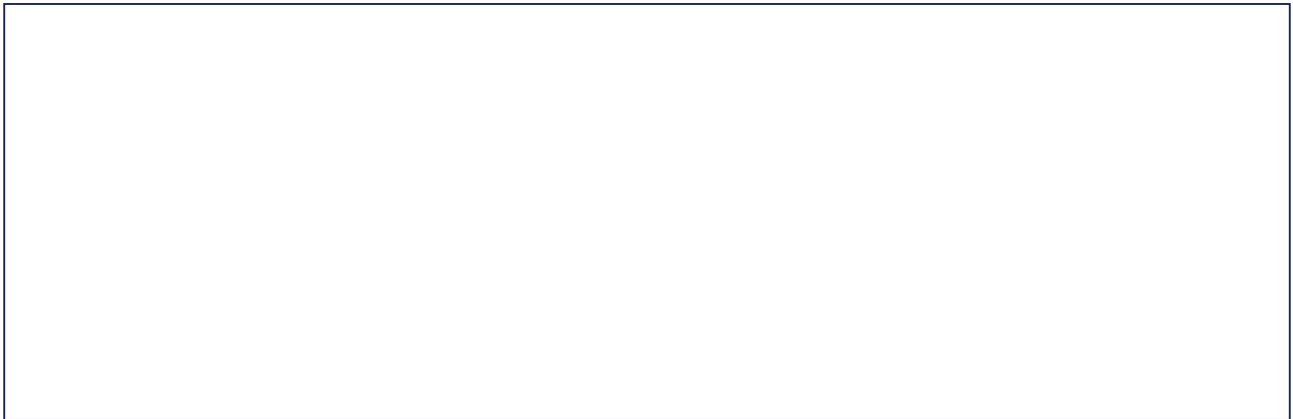
**8. True or False: An algorithm must be precise and clear for a computer to follow it accurately. (1 mark)**

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9. What happens if a sequence of instructions has a missing step? A) The program runs faster, B) The program runs correctly, C) The program changes colour, D) The program fails or produces the wrong result\*. (1 mark)

10. Which programming concept allows a block of code to repeat itself until a condition is met? (1 mark)

Draw: Draw a flowchart showing the steps to make a cup of tea or brush your teeth. \_\_\_\_\_  
Remember to use different shapes for the start, the steps, and the end!



*Extension challenge: 1. Explain why it is important for a programmer to test their code multiple times. 2. Compare and contrast an 'algorithm' with a 'recipe' for baking a cake. 3. Justify why using a 'loop' is more efficient than repeating a command manually. 4. What might happen if you swapped the order of two steps in a sequence? 5. If you were designing a robot to tidy a room, what are the first three instructions you would include? 6. Design a 'variable' that could store a player's score in a game and explain why it is useful.*