Kit's Code-Cracking Challenge

1. C (1 mark)

Working: An algorithm is defined as a set of instructions to complete a task.

C

2. A (1 mark)

Working: Selection uses a condition (if) to decide which path to take.

A

3. B (1 mark)

Working: Debugging is the process of finding and fixing errors.

B

4. True (1 mark)

Working: Loops are used for repetition.

True

5. Variable (1 mark)

Working: A variable acts as a container for changing data.

Variable

6. B (1 mark)

Working: This is the only sequence that describes movement.

B

7. D (1 mark)

Working: Checking the code is the logical first step in debugging.

D

8. False (1 mark)

Working: Testing should happen throughout the process, not just at the end.

False

9. Debug (1 mark)

Working: Debugging fixes logic errors.

Debug

10. A (1 mark)

Working: A variable assigns a value to a name.

A

11. A loop is more efficient because it saves time and reduces the chance of making a mistake by typing the same thing repeatedly. For example, in a game, instead of writing 'move forward' ten times, you just use a loop to repeat it ten times. (3 marks)

Look for: Explanation of efficiency (time/errors) and a relevant example.

Good: It is faster to use a loop because you don't have to write the code ten times.

Better: Using a loop is more efficient because it saves time and prevents errors. In a game, you could use a loop to make a character jump ten times instead of writing the jump command ten times.

Best: A loop is more efficient because it reduces the amount of code, which saves time and lowers the risk of typos or logic errors. For example, in a platform game, instead of writing 'move right' ten times, I would use a 'repeat 10' loop, which makes the code cleaner and easier to debug.

What moves an answer up: Moving from good to best involves explaining the 'why' (reducing errors) and providing a specific, clear context.

What a secure answer looks like

A secure student understands that programming is logical and iterative. They should be able to distinguish between sequence, selection, and repetition.

If your child is stuck

Ask your child to write down the 'algorithm' for making a piece of toast, including every small step like finding the bread and plugging in the toaster.

Common mistakes to watch for

Children often confuse 'selection' (if/then) with 'loops' (repetition). They also sometimes think debugging is only for when a program crashes, rather than a continuous process of checking for errors.