

Kit's Computing: Mastering Algorithms

Learning objective: To understand, design, and debug algorithms, and use logical reasoning to explain how simple algorithms work.

Read the front of the flashcard to test your knowledge of algorithms. Flip to the back to check your answer. Use these to help Kit the fox solve his computing puzzles!

What is an algorithm?

An algorithm is a precise, step-by-step set of instructions designed to complete a specific task or solve a problem.

In programming, what is a 'sequence'?

A sequence is the specific order in which instructions must be carried out to achieve the correct result.

What does it mean to 'debug' a program?

Debugging is the process of identifying, finding, and fixing errors or 'bugs' in an algorithm or code.

What is 'selection' in an algorithm?

Selection is when an algorithm makes a decision based on a condition, often using 'if' or 'else' statements (e.g., IF it is raining, THEN take an umbrella).

What is 'iteration' in computing?

Iteration is the process of repeating a specific set of instructions or a block of code multiple times, often called a loop.

What is 'decomposition'?

Decomposition is the method of breaking down a large, complex problem into smaller, more manageable parts that are easier to solve.

What is a 'variable' used for in an algorithm?

A variable is a placeholder or a 'container' used to store a value, such as a score in a game or the number of lives a player has.

Why do we use flowcharts in computing?

Flowcharts are visual diagrams used to map out the steps of an algorithm, helping us see the path and decisions clearly.

What is 'logical reasoning'?

Logical reasoning is using your knowledge to predict the behavior of a program or to spot errors in the order of steps.

If you are writing an algorithm to make a sandwich, why is the order of steps important?

If the steps are in the wrong order (e.g., putting the filling on the plate before the bread), the algorithm fails to achieve the desired outcome.

What does 'efficiency' mean when writing an algorithm?

Efficiency refers to creating an algorithm that completes the task using the fewest steps possible, saving time and memory.

True or False: Algorithms are only used for computers.

False. Algorithms are used for everyday tasks, such as following a recipe or giving someone directions to your house.