



Algorithms: How Computers Follow Instructions

KS3 COMPUTING

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What is an Algorithm?

An **algorithm** is a set of step-by-step instructions that tells a computer exactly how to solve a problem or complete a task. Think of it like a recipe for baking a cake – if you follow each step in the right order, you'll get the right result. Computers use algorithms to do everything from searching the internet to playing music.

Every single thing your computer does follows an algorithm somewhere. When you search for something on **Google**, an algorithm helps find the best results. When your phone suggests the next song to play, an algorithm is working behind the scenes. Algorithms are the invisible instructions that make technology work.

Think of it like a set of directions: 'Turn left at the traffic light, go straight for **2 kilometres**, then turn right.' If you follow these steps in order, you'll reach your destination. A computer algorithm works the same way – it follows exact steps to reach a goal.

How Do Computers Use Algorithms?

Computers are really good at following instructions very quickly and very accurately. A single algorithm might contain hundreds or thousands of instructions, but the computer can work through them in just a few seconds. This is why computers can solve complicated problems so fast.

For example, when you use a **search engine** like Google, the algorithm doesn't just look for words. It uses a special method to rank which websites are most helpful and shows you the best ones first. Different algorithms solve different problems – some find the shortest route on a map, some filter out spam emails, and some help doctors diagnose diseases.

Think of it like a teacher marking papers. The teacher follows the same steps for every student: read the answer, check if it's correct, mark the grade. A computer does

this same thing but with **millions** of pieces of information, much faster than any human could.

Why Are Algorithms Important?

Without algorithms, computers would just be empty machines. Algorithms give computers their purpose and power. They let computers solve problems, make decisions, and help people in almost every job - from medicine to weather forecasting to entertainment.

Understanding algorithms helps us understand how technology really works. It also helps us think clearly about solving problems. When you break a big problem into smaller, step-by-step instructions, you're thinking like a computer scientist!