

What is an algorithm?

KS2 KS3 Ages 7-14 ⌚ 3 min read

An algorithm is a set of step-by-step instructions for solving a problem or completing a task. That's it. A recipe is an algorithm. Directions from A to B are an algorithm. Long division is an algorithm. The concept is ancient — the word comes from the name of a 9th-century Persian mathematician, al-Khwārizmī.

What makes modern algorithms interesting isn't the concept, but the scale: when run on computers handling billions of decisions per second, simple rules produce extraordinary — and sometimes alarming — results.

Imagine you're sorting a massive pile of 1,000 books by height. One approach: pick up every book, find its correct position, insert it. That works, but it's slow. A better algorithm: split the pile in half, sort each half, then merge them. Split, sort, merge — repeated until done. This "merge sort" algorithm handles 1,000 books dramatically faster. The same logic, scaled to billions of data points, is how computers sort your email, rank search results, and process financial transactions — all in milliseconds.

Why do social media algorithms matter?

Platforms like YouTube, TikTok, and Instagram use algorithms to decide what to show you next. Their goal is maximising "engagement" — time spent on the platform. The algorithm learns what content keeps you watching and shows you more of it. This is extremely effective at keeping people's attention, but it can also create filter bubbles (only seeing content you already agree with) and push people towards increasingly extreme content, because outrage and strong emotion drive engagement particularly well.

Are algorithms neutral?

No. An algorithm reflects the values built into it — usually the goals of whoever created it (profit, engagement, efficiency) and the biases present in the data it was trained on. Algorithms used in hiring, lending, and criminal justice have been shown to reflect and amplify racial and socioeconomic biases present in historical data. "The algorithm decided" is never a neutral statement — it means "the rules we programmed decided, based on patterns in data we chose."

