

What is fluency in maths?

Fluency in maths is a fairly broad concept. The basics of mathematical fluency – as defined by the KS1 / KS2 National Curriculum for maths – involve knowing key mathematical facts and being able to recall them quickly and accurately.

But true fluency in maths (at least up to Key Stage 2) means being able to apply the same skill to multiple contexts, and being able to choose the most appropriate method for a particular task.

Fluency in maths lessons means we teach the content using a range of representations, to ensure that all pupils understand and have sufficient time to practise what is taught.

What is reasoning in maths?

Reasoning in maths is the process of applying logical thinking to a situation to derive the correct problem solving strategy for a given question, and using this method to develop and describe a solution.

Put more simply, mathematical reasoning is the bridge between fluency and problem solving. It allows pupils to use the former to accurately carry out the latter.

Logical reasoning requires metacognition (thinking about thinking). It influences behaviour and attitudes through greater engagement, requesting appropriate help (self-regulation) and seeking conceptual understanding.

Reasoning promotes these traits because it requires children to use their mathematical vocabulary. In short, reasoning requires a lot of active talk.

It is worth mentioning that with reasoning, active listening is equally important and if done right can also ensure increased learning autonomy for pupils.

What is problem solving in maths?

It's sometimes easier to start off with what problem solving is not. Problem solving is not necessarily just about answering word problems in maths. If a child already has a readily available method to solve this sort of problem, problem solving has not occurred. Problem solving in maths is finding a way to apply knowledge and skills you have to answer unfamiliar types of problems.

