MATHS CIRCLE PROBLEM

Lonely prime

The numbers 199 and 223 are both prime.

Only one of the numbers between 199 and 223 is also prime.

Which is it?

One of hundreds of problems, each with mentor notes.

Prompts to help your pupils

Ask

- What can you tell me about a prime number?
- Can you see another number that is also a multiple of [blank]? Why is this more efficient?
- What multiples do you know which are close to the numbers left in your list? How can this help?
- Celebrate adventurous behaviour - for example, a pupil who spots that 209 is 11 less than 220, so must be a multiple of 11.

Listen for

- Ruling out all even numbers in one step.
- Using digit sums to eliminate multiples of 3.
- Spotting multiples of 5 by their last digit.
- Reasoning from known multiples outward - not testing each number in turn.
- Realising they only need to check divisibility by primes up to $\sqrt{221} \approx 14$

Scan for a taster of a maths circle session and bring Axiom Maths to your school.