Summing to one

Teacher notes

Why use this resource?

This thought-provoking introduction to logarithms allows students to get a feeling for how logarithms to different bases behave and how the laws of logarithms can be used. Students start with a single example and can then apply their knowledge to a more general situation.

Possible approach

Used with mini-whiteboards, the first problem could be posed as "How many $\log_{27} 3$ s make 1?" first and then try $\log_{81} 3$. After checking students' understanding, Problem 2 could work well in pairs or groups of three.

Key questions

- What are the rules of logarithms?
- Which rule of logarithms can we use to help here?
- Could we come to the same answer another way?

Possible support

Encourage students to write down the rules of logarithms that they know. Can they use logic to come up with any missing rules?

Possible extension

Students might go on to a fluency exercise such as Logarithm lattice or tackle the scaffolded task Proving the laws of logs.

A version of this resource has been featured on the NRICH website. You might like to look at some students' solutions that have been submitted there.