Nested surds

Teacher notes

Why use this resource?

Nested surds encourages students to question the 'facts' they might know about surds and to explore some less familiar statements. Some of these statements are true for all values and some are not. In order to identify when these statements are true, students will use techniques such as rationalising the denominator, 'simplifying' surds by taking out factors, and general manipulation of unfamiliar equations involving nested surds.

Possible approaches

Rather than give all the cards to a group, you might choose to give one or two cards to each student, and then pair them up to share and discuss their work.

Key questions

- Does it work for all positive/negative values?
- Does it work when a or b is zero?
- Have you been careful when manipulating the equation? Did you make sure you weren't dividing by zero?

Possible support

The set of cards could be reduced to a, b, d, e, f and h with the others held back as extension.

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.