

See the power

Teacher notes

Why use this resource?

This problem is an introduction to the meaning of, use of and size of logarithms, without formally defining them or even using the word. The resource encourages students to estimate the power of ten needed to achieve a given value and hence solve an equation. Calculators should not be used.

Preparation

A copy of the main table for each student could be used or alternatively printed on A3 for groups to fill in collaboratively.

Possible approach

The warm-up could be used as a mini-whiteboard show-me exercise followed by some discussion of the equation $10^x = 562$.

Alternatively students could do the warm-up in pairs or small groups.

Working on the problem in groups could be a good way to stimulate discussion and exploration.

Key questions

- What does the whole number part of the power of ten tell us about the value of y ?
- How is this whole number part of the power connected with standard form?
- How can you use the given information?

Possible support

Prompting questions such as:

- What does $10^{\frac{1}{2}}$ mean? How could rules of indices help us? What is it approximately? How can you estimate it?
- What does that tell you about $10^{1.5}$?
- What connects all of the y -values in the 4th row? And the x -values?
- What patterns do you see in the table?

Possible extension

Students may go on to look at [1950s calculator](#) next.