

# Negative Exponents and Standard Form

Chapter 2: Power Play · Topic 2

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## Key Concept

For example,  $2^{-2} = 1/2^2 = 1/4$ , and the speed of light (approximately 300,000,000 m/s) is written in standard form as  $3 \times 10^8$  m/s, far more compact than writing all the zeros. Standard form is especially valuable in science, where quantities can range from the incredibly vast (distances between galaxies) to the incredibly tiny (sizes of atoms), and writing these out in full would be impractical and error-prone.

## Quick Revision Notes

- A negative exponent means a reciprocal:  $a^{-n} = 1/a^n$ .
- Example:  $2^{-2} = 1/4$ .
- Standard form writes numbers as (a number between 1-10)  $\times$  a power of 10.
- Standard form makes very large or very small numbers easier to read and compare.

## Practice Questions

- 1 Write 45000 in standard form.
- 2 Simplify:  $5^{-3}$ .
- 3 Convert 0.00034 into standard form.