

Represent natural numbers in expanded notation using place value and...

represent natural numbers in expanded notation using place value and powers of 10

Learning intention

- represent natural numbers in expanded notation using place value and powers of 10

Teach and model

- investigating exponent notation for powers of 10 such as “one hundred thousand” is $100\,000 = 10 \times 10 \times 10 \times 10 \times 10 = 10^5$
- relating the sequences 10, 100, 1000, 10 000 ... and 10^1 , 10^2 , 10^3 , 10^4 ...
- applying and explaining the connections between place value and expanded notations; for example, $7000 = 7 \times 10^3$ and $3750 = 3 \times 10^3 + 7 \times 10^2 + 5 \times 10^1$

Check understanding

- Explain the main idea in represent natural numbers in expanded notation using place value and... using an example.
- Show the idea in a second way: with words, a model, a diagram or symbols.
- Apply the idea to a short unfamiliar situation and justify the result.

Teaching cautions

- Ask the student to explain their choice, not only state an answer.
- Check that key vocabulary is understood in a new example.
- Mix representations so the skill is transferred rather than copied.

Quick lesson sequence

- Connect to prior knowledge and introduce the key vocabulary.
- Model one clear example, then solve a second example together.
- Finish with an independent check and a short student explanation.