Year 7 | Number

Powers and prime factorisation

Learn and practise | Free preview

A sample from this topic. The complete topic collection contains three different resources and worked solutions.

Read the explanation and worked example. Show your working; use a calculator only where asked.

What you will practise

- Write numbers using powers of ten and prime factors.
- Explain a method and check the reasonableness of a result.

Useful starting skills: Use the prerequisite operations and representations shown in the worked example.

In a^n the base a is multiplied by itself n times. Place value writes each digit times a power of ten; for example $5402 = 5 \times 10^3 + 4 \times 10^2 + 2$.

A prime factorisation uses prime numbers only. Keep dividing by small primes until every factor is prime, then collect repeated factors using exponents.

Worked example

Write 180 as a product of prime powers.

$180 = 18 \times 10 = 2 \times 3 \times 3 \times 2 \times 5$.

Collect equal primes.

Answer: $2^2 \times 3^2 \times 5$

Try it yourself

Name: _____ Date: _____

1. Evaluate 3^4.

2. Expand 6025 using powers of ten.

Answers and explanations

Check the method as well as the final answer. An alternative correct method is also valid.

1. 81

Multiply four factors of 3.

2. $6 \times 10^3 + 2 \times 10 + 5$

The hundreds digit is zero.

Curriculum reference: VC2M7N02

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