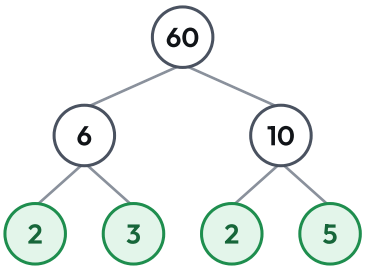
Names (pair) _____ Date _____

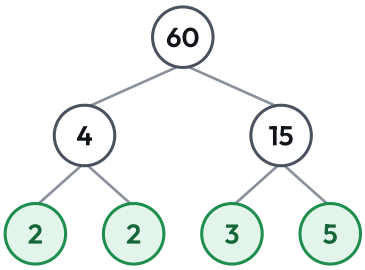
Prime Factorisation

Example

Ana started with $60 = 6 \times 10$:



Ivan started with $60 = 4 \times 15$:



They split until every factor is prime (green). Both get the same result:
$60 = 2 \times 2 \times 3 \times 5 = 2^2 \times 3 \times 5$

Remember

Every composite number can be written as a product of prime factors in only one way (apart from the order). This is its **prime factorisation**. A product of equal factors is written as a power: $2 \times 2 \times 2 = 2^3$.

1 ON YOUR OWN Use a factor tree to find the prime factorisation. Write it with powers.

24

$24 =$ _____

36

$36 =$ _____

45

$45 =$ _____

100

$100 =$ _____

Names (pair) _____ Date _____

Example

84	2
42	2
21	3
7	7
1	

Repeated division. Divide by the smallest prime that goes in each time: $84 \div 2 = 42, 42 \div 2 = 21, 21 \div 3 = 7, 7 \div 7 = 1$. The prime factors are to the right of the line: $84 = 2^2 \times 3 \times 7$.

2 ON YOUR OWN Factorise by repeated division.

90	

$90 =$ ☐

126	

$126 =$ ☐

3 ON YOUR OWN Write with powers, then work out the value.

$2 \times 2 \times 2 \times 3 \times 3 =$ ☐ $=$ ☐

$3 \times 3 \times 3 \times 3 =$ ☐ $=$ ☐

$2 \times 5 \times 5 \times 2 =$ ☐ $=$ ☐

$2 \times 3 \times 7 \times 7 =$ ☐ $=$ ☐

4 IN PAIRS **Find the mistake.** Mia writes: "Prime factorisation: $60 = 2 \times 30$." What is wrong? Write the correct factorisation.

The Factors and Prime Factors app · otooly.com/factors

Factor tree mode: with **Two trees**, factorise the same number in two ways and compare.

★ ON YOUR OWN **Exit card.** Write the prime factorisation of 72 with powers: $72 =$ ☐