Prime or not? Answers and notes

What your child practised: telling prime and composite numbers apart, recalling the primes up to 19, checking numbers up to 100 and writing a number as a product of prime factors (Year 5 maths).

Page 1 · Warm up

4 **C** · 9 **C** · 13 **P** · 19 **P** · 21 **C**

Page 2 · Prime sieve

15 primes: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47.
Odd numbers crossed out: 9, 15, 21, 25, 27, 33, 35, 39, 45, 49.

Page 2 · A. Ring the primes

11, 17, 23, 29, 37. The rest are composite: 9, 15, 21, 27, 33, 39, 51.

Page 3 · B. Prove it

57 composite: **3 × 19** · 43 **prime**
91 composite: **7 × 13** · 61 **prime**
87 composite: **3 × 29** · 49 composite: **7 × 7**

Page 3 · C. Factor trees

24 = **2 × 2 × 2 × 3** · 45 = **3 × 3 × 5** · 70 = **2 × 5 × 7**. Trees can start with any pair (24 = 4 × 6 or 3 × 8): the primes at the ends are always the same.

Page 3 · Challenge

No. 9 is odd but 9 = 3 × 3, so it is composite (so are 15, 21, 25…). Also, 2 is prime but even.

Watch out for

- **Thinking odd means prime.** Ask for a factor pair: 51 = 3 × 17, 21 = 3 × 7. A quick check for 3: add the digits (5 + 1 = 6, which is in the 3 times table).
- **Thinking 1 is prime.** A prime has exactly two different factors; 1 has only one.
- **Stopping a factor tree too soon.** Every end must be prime: 4 and 6 still split.

Going further (5 minutes, no paper)

- **Prime spotting:** look at house numbers or bus numbers on a walk. Prime or not? Prove it.
- **Prime ping-pong:** take turns saying the primes in order: 2, 3, 5, 7, 11… How far can you go?
- **In the game:** Chapter 4, Square Garden, multiplies numbers by themselves.