Cube numbers: answers and notes

What your child practised: what the ^{3} sign means, working out cube numbers, telling square and cube numbers apart and solving problems with both (Year 5 maths).

Page 1 · Warm up

1^3 = **1** · 2^3 = **8** · 3^3 = **27** · 5^3 = **125** · 10^3 = **1000**

Page 2 · Cube builder

2: 4 × 2 = **8** (2^3) · 3: 9 × 3 = **27** (3^3)
4: 16 × 4 = **64** (4^3) · 5: 25 × 5 = **125** (5^3)

Page 2 · A. Ring the cubes

8, 27, 64, 125, 1000. Not 9, 12, 16, 30, 36, 81 or 100 (9, 16, 36, 81 and 100 are squares).

Page 3 · B. The table

n^2: 2 → **4**, 4 → **16**, 5 → **25**
n^3: 2 → **8**, 4 → **64**, 5 → **125**

Page 3 · C. The diagram

Square only: **4, 9, 16, 36, 100**
Cube only: **8, 27, 125** · Both: **1, 64** (64 = 8^2 = 4^3)

Page 3 · D. Problems

5^3 = **125** cubes · 8 + 9 = **17** · 1000 − 100 = **900**

Page 3 · Challenge

No. 3 × 3 = 9 is 3^2 (3 squared). 3^3 = 3 × 3 × 3 = **27**.

Watch out for

- **Cubing as squaring, or as × 3.** 3^3 is not 9 and 4^3 is not 12. Ask "How many 3s are multiplied?" and count them on fingers.
- **Stopping after one step.** For 5^3, children may write 25. Remind them a cube has layers: 25 in a layer, 5 layers.
- **Big numbers.** 10^3 = 1000 often surprises children. 10 × 10 = 100, then 100 × 10 = 1000.

Going further (5 minutes, no paper)

- **Cube or square?** Say a number (8, 9, 27, 36, 64). Your child says square, cube or both, and why.
- **Box it up:** how many dice would fill a box 3 dice long, 3 wide and 3 tall? (27)
- **In the game:** this is the last chapter. Replay the quest from Factor Forest to see how factors, primes, squares and cubes link up.