

UNIT 01 / 14 · LEARN & TRY

A Square and A Cube

Name: _____ Date: _____

Goal: Recognise and calculate squares cubes and their roots.

Learn

Squares multiply a number by itself; cubes use three equal factors. Pair prime factors for a square root and group in threes for a cube root. Distinguish a nonnegative square root from solutions of an equation.

Worked example

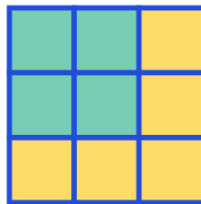
$144 = 2^4 \times 3^2$, so $\sqrt{144} = 12$. The equation $x^2 = 144$ has $x = 12$ or -12 .



$$1^2 = 1$$



$$2^2 = 4$$



$$3^2 = 9$$

Add an L-shaped odd-number layer.

Count each newly added layer. Explain how consecutive odd numbers build successive squares.

1. Find 17^2 .

2. Find $\sqrt{225}$.

UNIT 01 · PRACTISE · 3–6

A Square and A Cube

3. Find the cube root of 216.

4. What least positive integer multiplies 72 to make a perfect square?

5. Between which consecutive integers does $\sqrt{50}$ lie?

6. A child says $\sqrt{81} = \pm 9$. Explain the notation.

Explain one answer. Choose a question to revisit after a few days.

UNIT 01 · ANSWER GUIDANCE

A Square and A Cube

1. 289
2. 15
3. 6
4. 2; $72 \times 2 = 144$.
5. 7 and 8
6. $\sqrt{81}$ denotes the nonnegative root 9; $x^2 = 81$ has two solutions ± 9 .

Teaching note

Start by checking: Use prime factorisation. Model the worked example, then ask for a reason as well as an answer. Revisit tasks 2 and 6 after two days, using different numbers where appropriate.