MATHEMATICS · GRADES 7-9

Cube roots

Difficulty level: Intermediate

Mathematics: Grades 7-9

This document was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

Overview of the concept

This is how you work out the edge of a cube from its volume. A box that holds exactly one litre has edges of a set length, and the cube root tells you what that length is. The same idea works for a concrete block, a fish tank, or any cube-shaped container. If you know how much it holds, you can find its size without measuring a single edge.



© 2026 Brett Robbins. All Rights Reserved.

Worked examples

EXAMPLE 1

Q What is $\sqrt[3]{64}$?

SOLUTION

A cube root asks: what number, multiplied by itself three times, gives 64?

Try 4: $4 \times 4 \times 4 = 64$

So $\sqrt[3]{64} = 4$

EXAMPLE 2

Q What is $\sqrt[3]{(-27)}$?

SOLUTION

Try −3: $(-3) \times (-3) \times (-3) = -27$

So $\sqrt[3]{(-27)} = -3$

Unlike square roots, a cube root of a negative number exists: the negative keeps its sign.

© 2026 Brett Robbins. All Rights Reserved.

Practice questions

1. A cube holds 8 cm^3. What is the length of each edge?

Understand It with Pulse | Flag a mistake

2. A box in the shape of a cube holds 125 cm^3. How long is each edge?

Understand It with Pulse | Flag a mistake

3. What number, multiplied by itself three times, gives −216?

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

4 A cube has volume $343\ \text{cm}^3$. How long is each edge?

Understand It with Pulse | Flag a mistake

5 What is $\sqrt[3]{(-64)}$?

Understand It with Pulse | Flag a mistake

6 A cube has volume $512\ \text{cm}^3$. How long is each edge?

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

7 What is $\sqrt[3]{(-125)}$?

Understand It with Pulse | Flag a mistake

8 A cube has volume 1000 cm³. How long is each edge?

Understand It with Pulse | Flag a mistake

9 A cube has volume 216 cm³. How long is each edge?

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

10 **What is the cube root of 0.001?**

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

ANSWER KEY

1. 2 cm

2. 5 cm

3. –6

4. 7 cm

5. –4

6. 8 cm

7. –5

8. 10 cm

9. 6 cm

10. 0.1

© 2026 Brett Robbins. All Rights Reserved.