

Important Questions for Class 8 Maths Chapter 6: Chapter 6 of Class 8 Maths, Cubes and Cube Roots, focuses on understanding the properties and applications of cubes and cube roots. Key topics include identifying perfect cubes, finding cube roots using prime factorization, and solving problems involving real-life applications. The chapter also emphasizes patterns in cubes and their mathematical significance.

Important questions involve calculating cube roots of numbers, verifying whether a number is a perfect cube, and solving word problems related to volume and geometry. Mastery of these concepts helps in building a strong foundation for advanced algebra and geometry. Practice is key to excelling in this chapter.

Important Questions for Class 8 Maths Chapter 6 Overview

Chapter 6 of Class 8 Maths, **Cubes and Cube Roots**, is essential for developing problem-solving skills and a deeper understanding of number properties. This chapter introduces the concept of perfect cubes and cube roots, laying the groundwork for advanced mathematical topics like algebra and geometry.

Key questions involve identifying perfect cubes, finding cube roots using factorization, and solving real-life problems involving volume. These questions enhance logical thinking and numerical proficiency. Understanding cubes and cube roots is crucial for students as it connects abstract mathematical concepts with practical applications, making it a vital topic for academic growth and competitive exam preparation.

Cube Root Symbol

" $\sqrt[3]{}$ " is the sign for the cube root. We have only utilised the root sign, such as " $\sqrt{}$," which is also known as a radical, in the instance of the square root. Therefore, we can use the following symbol to denote the cube root of various numbers: Cube root of 5 = $\sqrt[3]{5}$ $\sqrt[3]{11}$ is the cube root of 11. And so forth.

Cube Root Formula

The cube root yields a value that may be cubed to get the original value, as we already know. Assume that the cube root of "a" yields the value "b," so that $\sqrt[3]{a} = b$. This formula, $a = b^3$, is only feasible if and only if
When determining the cubic root of perfect cubes, this formula is helpful.

Number

Cubes

1

1

2	8
3	27
4	64
5	125
6	216
7	343
8	512
9	729
10	1000

Important Questions for Class 8 Maths Chapter 6 Cubes and Cube Roots

Below we have Important Questions for Class 8 Maths Chapter 6 Cubes and Cube Roots -

8. $\sqrt[3]{ab} = ?$

Ans: $\sqrt[3]{a} \times \sqrt[3]{b}$

9. $\sqrt[3]{\frac{a}{b}} = ?$

Ans: $\frac{\sqrt[3]{a}}{\sqrt[3]{b}}$

10. A natural number is said to be _____ if it is the cube of some natural number.

Ans: Perfect cube

Short Answer Questions 2 Marks

11. Show that 192 is not a perfect cube.

Ans: By prime factorization,

$$\sqrt[3]{192} = \sqrt[3]{(2 \times 2 \times 2) \times (2 \times 2 \times 2) \times 3}$$

Here, the product cannot be expressed in the form of triplets.

Hence, this is not a perfect cube.

12. Find the cube of (-9)

Ans: $(-9)^3 = -9 \times -9 \times -9$

$$= 81 \times (-9)$$

$$= -729$$

13. Find the cube of $2\frac{2}{3}$

Ans: $\left(2\frac{2}{3}\right)^3 = 2\frac{2}{3} \times 2\frac{2}{3} \times 2\frac{2}{3}$

$$= \frac{8}{3} \times \frac{8}{3} \times \frac{8}{3}$$

$$= \frac{512}{27}$$

14. Find the cube of (0.09)

Ans: $(0.09)^3 = 0.09 \times 0.09 \times 0.09$

$$= 0.0081$$

$$= 0.000729$$

15. Show that 4096 is a perfect cube.

Ans: By prime factorization,

$$\sqrt[3]{4096} = \sqrt[3]{(2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (2 \times 2 \times 2)}$$

Here, the number can be expressed as the product of triplets.

Hence, a given number is a perfect square.

16. By what least number should 336 be divided to get a perfect cube?

Ans: By prime factorization,

$$\sqrt[3]{336} = \sqrt[3]{(2 \times 2 \times 2) \times 2 \times 3 \times 7}$$

It should be divided by $2 \times 3 \times 7 = 42$

17. By what least number should 675 multiplied to get a perfect cube?

Ans: By prime factorization,

$$\sqrt[3]{675} = \sqrt[3]{(3 \times 3 \times 3) \times 5 \times 5}$$

Hence to make it a perfect cube, we must multiply by 5.

Long Answer Questions 4 Marks

18. What is the smallest number by which 2048 may be multiplied so that the product is a perfect cube?

Ans: By prime factorization,

$$\sqrt[3]{2048} = \sqrt[3]{(2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times 2 \times 2}$$

Clearly 2048 should be multiplied with 4 to make perfect cube.

19. Find $\sqrt[3]{125 \times (-343)}$

Ans: By prime factorization

$$= \sqrt[3]{5 \times 5 \times 5 \times (-7) \times (-7) \times (-7)}$$

$$= 5 \times (-7)$$

$$= -35$$

20. $\sqrt[3]{\frac{8000}{1331}}$

Ans: $\sqrt[3]{\frac{8000}{1331}}$ can be written as $\frac{\sqrt[3]{8000}}{\sqrt[3]{1331}}$

Calculate each value by prime factorization,

$$\sqrt[3]{8000} = \sqrt[3]{(2 \times 2 \times 2) \times (5 \times 5 \times 5) \times (2 \times 2 \times 2)}$$

$$\sqrt[3]{1331} = \sqrt[3]{(11 \times 11 \times 11)}$$

Now,

$$\sqrt[3]{\frac{8000}{1331}} = \sqrt[3]{\frac{2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 2 \times 2 \times 2}{11 \times 11 \times 11}}$$

$$= \frac{2 \times 5 \times 2}{11}$$

$$= \frac{20}{11}$$

Very Long Answer Questions 5 Marks**21. Find the value of 31^3 by shortcut method.****Ans:** Let $(31)^3 = (30 + 1)^3$ We know, $(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$

$$(31)^3 = (30 + 1)^3$$

$$= (30)^3 + 3(30)^2 + 3(30) + 1$$

$$= 27000 + (3 \times 900) + 90 + 1$$

$$= 27000 + 2700 + 90 + 1$$

$$= 29791$$

22. Evaluate $\sqrt[3]{4913}$ **Ans:** By prime factorization,

$$17 \overline{)4913}$$

$$17 \overline{)289}$$

$$17 \overline{)17}$$

$$= \sqrt[3]{4913}$$

$$= \sqrt[3]{17 \times 17 \times 17}$$

$$= 17$$

23. Find $\sqrt[3]{-13824}$

Ans: By prime factorization,

$$-\sqrt[3]{13824} = -\sqrt[3]{(2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (3 \times 3 \times 3)}$$

$$= -2 \times 2 \times 2 \times 3$$

$$= -4 \times 6$$

$$= -24$$

24. Evaluate $\sqrt[3]{512 \times 343}$

Ans: By prime factorization,

$$\sqrt[3]{512 \times 343} = \sqrt[3]{(2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (7 \times 7 \times 7)}$$

$$= 2 \times 2 \times 2 \times 7$$

$$= 56$$

Benefits of Using Important Questions for Class 8 Maths Chapter 6

Using important questions for Chapter 6, **Cubes and Cube Roots**, in Class 8 Maths offers several benefits for students:

1. Focused Learning

These questions help students concentrate on the most relevant topics, ensuring a targeted approach to mastering the chapter.

2. Conceptual Clarity

Solving important questions strengthens understanding of key concepts like identifying perfect cubes, finding cube roots, and applying these to solve real-world problems.

3. Practice for Exams

These questions mirror the type and difficulty level of questions asked in exams, aiding in effective exam preparation.

4. Boosts Problem-Solving Skills

Regular practice of these questions enhances analytical and logical reasoning, fostering a stronger mathematical foundation.

5. Confidence Building

Familiarity with frequently asked questions boosts confidence and reduces anxiety during exams.

6. Time Management

Practicing these important questions helps students learn to manage their time effectively by focusing on the patterns and structures of questions.

7. Improved Performance

Focused practice with these questions leads to better retention of concepts and improved overall academic performance.