Example 5: Find the cube root of 343×125.

Solution: For any two numbers a and b

$$\sqrt[3]{a \times b} = \sqrt[3]{a} \times \sqrt[3]{b}$$

Making use of this property, we have:

$$\sqrt[3]{343 \times 125} = \sqrt[3]{343} \times \sqrt[3]{125} = 7 \times 5 = 35$$

Hence $\sqrt[3]{343 \times 125} = 35$.

Example 6: Find the value of $1{,}000 \div 1{,}331$.

Solution: For any two numbers a and b:

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

Making use of this property, we have:

$$\frac{\sqrt[3]{1{,}000}}{\sqrt[3]{1{,}331}} = \frac{10}{11}$$

Therefor $\sqrt[3]{\frac{1{,}000}{1{,}331}} = \frac{10}{11}$

Example 7: Is 375 a perfect cube? If not, find the smallest number with which you will have to multiply 375 to make it a perfect cube.

Solution: First we will take out the prime factors of 375.

So $375 = 5 \times 5 \times 5 \times 3$.

Hence 3 is not appearing as a triplet. To make it a triplet, we have to multiply the given number by 3×3—that is, 9.

Hence 375 will become a perfect cube on multiplying it by 9. Thus the required smallest number is 9.

Therefore $375 \times 9 = 3{,}375$ and

$$\sqrt[3]{3{,}375} = \sqrt[3]{5 \times 5 \times 5 \times 3 \times 3 \times 3} = 5 \times 3 = 15.$$

1. Find the cubes of the following numbers:

   (a) $2\frac{1}{5}$ (b) 1.1 (c) 0.04 (d) 7

2. Which of the following numbers are cubes of even numbers?

   (a) 729 (b) 1,000 (c) 2,744 (d) 6,859

3. Which of the following are perfect cubes?

   (a) 1,728 (b) 2,190 (c) 18,225 (d) 9,261

4. Find the cube root of the following numbers by successive subtraction of numbers 1, 7, 9, ... :

   (a) 27 (b) 125 (c) 1,000 (d) 1,331

5. Find the cube roots of the following numbers by finding their ones and tens digits:

   (a) 3,375 (b) 729 (c) 4,096 (d) 12,167

6. Find the cube root of the following numbers by using prime factorization:

   (a) 2,197 (b) 5,832 (c) 6,859 (d) 15,625

7. Find the values of the following:

   (a) $\sqrt[3]{125 \times 64}$ (b) $\sqrt[3]{1,125 \times 648}$ (c) $\sqrt[3]{274.625}$ (d) $\sqrt[3]{\frac{5,832}{6,859}}$

8. Find the volume of a cube if each of its side measures 5.2 cm.

9. Find the smallest number by which 2025 must be multiplied to make it a perfect cube. Also find the cube root of the number thus obtained.

10. Find the smallest number by which 1,40,625 must be divided, so that the quotient thus obtained is a perfect cube. Also find the cube root of the number thus obtained.

11. Find the edge of a cube whose volume is 166.375 cm^3.

12. Three numbers are in the ratio 1:3:4. Sum of their cubes is 47,104. Find the numbers.

Class - VIII

Subject - Mathematics

Date
15.7.20 Chap-3 Square and Square Root; Cube and Cube Root

Ex 3.5 (Worksheet - 10)

7 Find the values of the following -

(a) $\sqrt[3]{125 \times 64}$ (b) $\sqrt[3]{1,125 \times 648}$

(c) $\sqrt[3]{274.625}$ (d) $\sqrt[3]{\frac{5,832}{6,859}}$

(a) $\sqrt[3]{125 \times 64}$

$\sqrt[3]{a \times b} = \sqrt[3]{a} \times \sqrt[3]{b}$.

$\sqrt[3]{125 \times 64} = \sqrt[3]{125} \times \sqrt{64}$.

$= \sqrt{5 \times 5 \times 5} \times \sqrt{2 \times 2 \times 2 \times 2 \times 2 \times 2}$

$= 5 \times 4$

$= 20$

Ans = 20.

5	125
5	25
5	5
	1

2	64
2	32
2	16
2	8
2	4
2	2
	1

(b) $\sqrt[3]{1,125 \times 648}$

$\sqrt[3]{1,125 \times 648} = \sqrt{3 \times 3 \times 5 \times 5 \times 5} \times \sqrt{2 \times 2 \times 2 \times 3 \times 3 \times 3}$

$= 3 \times 5 \times 2 \times 3$

$= 90$

Ans = 90.

3	1125
3	375
5	125
5	25
5	5
	1

2	648
2	324
2	162
3	81
3	27
3	9
3	3
	1

(c) Ans - 6.5

(d) Ans - $\frac{18}{19}$.

8 - Ans - 140.608 cm^3

9 - Ans. 45, 45

10. Ans - 9, 25

11 - Ans - 5.5 cm

12 Ans - 8, 24 and 32