



SpeedLabs

MATHS

ICSE 8th

TEEVRA EDUTECH PVT. LTD.

SQUARE ROOTS & CUBE ROOTS

1. The students of a class arranged a picnic. Each student contributed as many rupees as the number of students in the class. If the total contribution is Rs. 2601, find the strength of the class.

Ans. Let the number of students = x

Each student contributed x Rupees.

Therefore $x^2 = 2601$ or $x = 51$

2. Find the least square number which is exactly divisible by each of the numbers 8, 9, 10 and 15.

Ans. $8 = 2 \times 2 \times 2$

$9 = 3 \times 3$

$10 = 2 \times 5$

$15 = 3 \times 5$

Therefore, the number is $2 \times 2 \times 2 \times 5 \times 3 \times 3 = 360$

3. Find the square root of each of the following by division method

(i) 225625

(ii) 4401604

(iii) 11449

Ans. (i) 225625

$$\begin{array}{r} 4 \quad \boxed{22 \ 56 \ 25} \quad \underline{475} \\ \quad \quad \quad 16 \\ \hline 87 \quad \quad \quad 6 \ 56 \\ \quad \quad \quad \underline{6 \ 09} \\ 945 \quad \quad \quad 47 \ 25 \\ \quad \quad \quad \underline{47 \ 25} \\ \quad \quad \quad \quad \quad 0 \end{array}$$

(ii) 4401604

$$\begin{array}{r} 4 \quad \boxed{4 \ 40 \ 16 \ 04} \quad \underline{2098} \\ \quad \quad \quad 4 \\ \hline 409 \quad \quad \quad 40 \ 16 \\ \quad \quad \quad \underline{36 \ 81} \\ 4188 \quad \quad \quad 3 \ 35 \ 04 \\ \quad \quad \quad \underline{3 \ 35 \ 04} \\ \quad \quad \quad \quad \quad 0 \end{array}$$

(iii) 11449

$$\begin{array}{r} 1 \quad \overline{1 \quad 14 \quad 49} \quad 107 \\ \underline{1} \\ 207 \quad \overline{0 \quad 14 \quad 49} \\ \quad \underline{14 \quad 49} \\ \quad \quad 0 \end{array}$$

4. Find the value of $\sqrt[3]{38}$ correct to 2 places of decimal

Ans. $\sqrt[3]{\frac{3}{8}} = \sqrt[3]{\frac{6}{16}} = \frac{\sqrt[3]{6}}{4} = \frac{2.44}{4} = 0.61$

5. Find the value of $\sqrt{15625}$ and hence evaluate $\sqrt{156.25} + \sqrt{1.5625}$

Ans. $\sqrt{15625} = \sqrt{25 \times 625} = 5 \times 25 = 125$

$$\sqrt{156.25} = \frac{\sqrt{15625}}{\sqrt{100}} = \frac{125}{10} = 12.5$$

$$\sqrt{1.5625} = \frac{\sqrt{15625}}{\sqrt{10000}} = \frac{125}{100} = 1.25$$

therefore $\sqrt{156.25} + \sqrt{1.5625} = 13.75$

6. Find the value of $\sqrt{103.0225}$ and hence find the square root of:

Ans. $\sqrt{103.0225} = \frac{\sqrt{1030225}}{\sqrt{10000}} = \frac{1015}{100} = 10.15$

(i) 10302.25

$$\sqrt{10302.25} = \frac{\sqrt{1030225}}{\sqrt{100}} = \frac{1015}{10} = 101.5$$

(ii) 0.01030225

$$\sqrt{0.01030225} = \frac{\sqrt{1030225}}{\sqrt{100000000}} = \frac{1015}{10000} = 0.1015$$

7. Find the smallest number by which 8788 must be divided so that the quotient is a perfect cube.

Ans. $8788 = 2 \times 2 \times 13 \times 13 \times 13$

Hence divide the number by 4 so that the quotient is a perfect square

8. Evaluate:

(i) $\sqrt[3]{1352} \times \sqrt[3]{1625}$

(ii) $\sqrt[3]{\frac{51.2}{0.4096}}$

(iii) $\sqrt[3]{\sqrt{0.000064}}$

Ans. (i) $\sqrt[3]{1352} \times \sqrt[3]{1625}$
 $= \sqrt[3]{2 \times 2 \times 2 \times 13 \times 13} \times \sqrt[3]{5 \times 5 \times 5 \times 13}$
 $= 2 \times 5 \times 13 = 130$

(ii) $\sqrt[3]{\frac{51.2}{0.4096}}$
 $= \sqrt[3]{\frac{512000}{4096}}$
 $= \sqrt[3]{\frac{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 10 \times 10 \times 10}{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2}} = 5$

(iii) $\sqrt[3]{0.000064}$
 $= \sqrt[3]{0.008}$
 $= 0.2$

9. Find the cube root of:

- (i) 1728 (ii) 5832 (iii) 10648

Ans. (i) 1728
 $= 2^3 \times 2^3 \times 3^3$ Therefore the cube root of 1728 is 12
(ii) 5832
 $= 2^3 \times 9^3$ Therefore the cube root of 5832 is 18
(iii) 10648
 $2^3 \times 11^3$ Therefore the cube root of 10648 is 22

10. $\sqrt[3]{2875}$

Ans. $= \sqrt[3]{2 \times 3 \times 3 \times 3 \times 41}$
 $= \sqrt[3]{5 \times 5 \times 5 \times 3 \times 23}$
 $= 5\sqrt[3]{23}$
 $= 14.22$

11. $\sqrt[3]{2214}$

Ans. $= \sqrt[3]{2 \times 3 \times 3 \times 3 \times 41}$
 $= 3\sqrt[3]{82}$
 $= 3 \times 4.344$
 $= 13.032$

12. $\sqrt[3]{110}$

Ans. $= \sqrt[3]{11 \times 10}$
 $= 4.791$

13. $\sqrt[3]{490}$

Ans. $= \sqrt[3]{49 \times 10}$
 $= 7.884$

14. $\sqrt[3]{350}$

Ans. $= \sqrt[3]{35 \times 10}$
 $= 7.047$

15. $\sqrt[3]{914}$

Ans. $\sqrt[3]{910} < \sqrt[3]{914} < \sqrt[3]{920}$
 $\sqrt[3]{91 \times 10} < \sqrt[3]{914} < \sqrt[3]{920}$
 $9.691 < \sqrt[3]{914} < 9.726$

For a difference of 10, the difference in values = $9.726 - 9.691 = 0.035$

For a difference of 4, the difference in values = $(0.035 \times 4) / 10 = 0.014$

Therefore $\sqrt[3]{914} = 9.691 + 0.014 = 9.705$