RD SHARMA

Solutions

Class 8 Maths

Chapter 4

Ex *4.5*

Making use of the cube root table, find the table, find the cube roots of the following (correct to three decimal points):

1. **7**
2. **70**
3. **700**
4. **7000**
5. **1100**
6. **780**
7. **7800**
8. **1346**
9. **940**
10. **5112**
11. **9800**
12. **732**
13. **7342**
14. **133100**
15. **37800**
16. **0.27**
17. **8.6**
18. **0.86**
19. **8.65**
20. **7532**
21. **833**
22. **34.2**

Answer:

Q1. 7

Answer :

Because 7 lies between 1 and 100, we will look at the row containing 7 in the column of x.

By the cube root table, we have:

$\sqrt[3]{7} = 1.913$

Thus, the answer is 1.913.

Q2. 70

Because 70 lies between 1 and 100, we will look at the row containing 70 in the column of x.

By the cube root table, we have:

$\sqrt[3]{70} = 4.121$

Thus, the answer is 4.121

Q3. We have:

700 = 70 x 10

Cube root of 700 will be in the column of $\sqrt[3]{10x}$ against 70.

By the cube root table, we have:

$\sqrt[3]{700} = 8.879$

Thus, the answer is 8.879

Q4. We have:

7000 = 70 x 100

$\sqrt[3]{7000} = \sqrt[3]{7 \times 1000} = \sqrt[3]{7} \text{ x } \sqrt[3]{1000}$

By the cube root table, we have:

$\sqrt[3]{7} = 1.913$ and $\sqrt[3]{1000} = 10$

$\sqrt[3]{7000} = \sqrt[3]{7} = \sqrt[3]{1000} = 1.913 \text{ x } 10 = 19.13$

Thus, the answer is 19.13

Q5. We have:

1100 = 11 x 100

Therefore,

$\sqrt[3]{1100} = \sqrt[3]{11 \times 100} = \sqrt[3]{11} \text{ x } \sqrt[3]{100}$

By the cube root table, we have:

$\sqrt[3]{11} = 2.224$ and $\sqrt[3]{100} = 4.642$

$\sqrt[3]{1100} = \sqrt[3]{11} \text{ x } \sqrt[3]{100} = 2.224 \text{ x } 4.642 = 10.323$ (Up to three decimal places)

Thus, the answer is 10.323.

Q6. We have:

780 = 78 x 10

Therefore, Cube root of 780 will be in the column of $\sqrt[3]{10x}$ against 78.

By the cube root table, we have:

$\sqrt[3]{780} = 9.025$

Thus, the answer is 9.025

Q7. 7800

7800 = 78 x 100

$\sqrt[3]{7800} = \sqrt[3]{78 \times 100} = \sqrt[3]{78} \text{ x } \sqrt[3]{100}$

By the cube root table, we have:

$\sqrt[3]{78} = 4.273$ and $\sqrt[3]{100} = 4.642$

$\sqrt[3]{7800} = \sqrt[3]{78} \text{ x } \sqrt[3]{100} = 4.273 \text{ x } 4.642 = 19.835$ (up to three decimal places)

Thus, the answer is 19.835

Q8. 1346

Answer:

By prime factorisation, we have:

$1346 = 2 \text{ x } 673 \Rightarrow \sqrt[3]{1346} = \sqrt[3]{2} \text{ x } \sqrt[3]{673}$

Also $670 < 673 < 680 \Rightarrow \sqrt[3]{670} < \sqrt[3]{673} < \sqrt[3]{680}$

From the cube root table, we have:

$\sqrt[3]{670} = 8.750$ and $\sqrt[3]{680} = 8.794$

For the difference (680 – 670), i.e., 10, the difference in the values

= 8.794 – 8.750 = 0. 044

For the difference of (673 – 670), i.e., 3, the difference in the values

$= \frac{0.044 \times 3}{10} = 0.0132 = 0.013$ (up to three decimal places)

= 8.750 + 0.013 = 8.763

Now,

$\sqrt[3]{1346} = \sqrt[3]{2} \times \sqrt[3]{8.763}$ = 1.260 x 8.763 = 11.041 (up to three decimal places)

Thus, the answer is 11.041

Q**9.** 940

Answer :

We have:

250 = 25 x 100

Cube root of 250 would be in the column of $\sqrt[3]{10x}$ against 25.

By the cube root table, we have:

$\sqrt[3]{250} = 6.3$

Thus, the required cube root is 6.3.

Q10. 5112

Answer :

By prime factorisation, we have:

$5112 = 2^3 \times 3^2 \times 71 \Rightarrow \sqrt[3]{} = 2 \times \sqrt[3]{9} \times \sqrt[3]{71}$

By the cube root table, we have:

$\sqrt[3]{9} = 2.080$ and $\sqrt[3]{71} = 4.141$

$\sqrt[3]{5112} = 2 \times \sqrt[3]{9} \times \sqrt[3]{71}$ = 2 x 2.080 x 4.141 = 17.227 (up to three decimal places)

Thus, the required cube root is 17.227.

Q11. We have:

9800 = 98 x 100

$\sqrt[3]{9800} = \sqrt[3]{98 \times 100} = \sqrt[3]{98} \times \sqrt[3]{100}$

By the cube root table, we have:

$\sqrt[3]{98} = 4.610$ and $\sqrt[3]{100} = 4.642$

$\sqrt[3]{9800} = \sqrt[3]{98} \times \sqrt[3]{100}$ = 4.610 x 4.642 = 21.40 (up to three decimal places)

Thus, the required cube root is 21.40.

Q12. 732

Answer :

We have:

$730 < 732 < 740 \Rightarrow \sqrt[3]{730} < \sqrt[3]{732} < \sqrt[3]{740}$

From cube root table, we have:

$\sqrt[3]{730} = 9.004$ and $\sqrt[3]{740} = 9.045$

For the difference (740 – 730), i.e., 10, the difference in values

= 9.045 – 9.004 = 0.041

For the difference of (732 – 730), i.e., 2, the difference in values

$\frac{0.044 \times 2}{10} = 0.0082$

$\sqrt[3]{732}$ = 9.004 + 0.008 = 9.012

Q13. 7342

Answer:

We have:

7300 < 7342 < 7400 => $\sqrt[3]{7300} < \sqrt[3]{7342} < \sqrt[3]{7400}$

From the cube root table, we have:

$\sqrt[3]{7300} = 19.39$ and $\sqrt[3]{7400} = 19.48$

For the difference (7400 – 7300), i.e., 100, the difference in values

= 19.48 – 19.39 = 0.09

For the difference of (7342 – 7300), i.e., 42, the difference in the values

$= \frac{0.09 \times 42}{100} = 0.0378 = 0.037$

$\sqrt[3]{7342} = 19.39 + 0.037 = 19.427$

Q14. We have:

133100 = 1331 x 100 => $\sqrt[3]{133100} = \sqrt[3]{1331 \times 100} = 11 \times \sqrt[3]{100}$

From the cube root table, we have:

$\sqrt[3]{100} = 4.642$

$\sqrt[3]{133100} = 11 \times \sqrt[3]{100} = 11 \times 4.642 = 51.062$

Q15. We have,

$37800 = 2^3 \times 3^3 \times 175 \Rightarrow \sqrt[3]{37800} = \sqrt[3]{2^3 \times 3^3 \times 175} = 6 \times \sqrt[3]{175}$

Also 170 < 175 < 180 => $\sqrt[3]{170} < \sqrt[3]{175} < \sqrt[3]{180}$

From cube root table, we have:

$\sqrt[3]{170} = 5.540$ and $\sqrt[3]{180} = 5.646$

For the difference (180 – 170), i.e., 10, the difference in values

= 5.646 – 5.540 = 0.106

For the difference of (175 – 170), i.e., 5, the difference in values

$\frac{0.106 \times 5}{10} = 0.053$

$\sqrt[3]{175} = 5.540 + 0.053 = 5.593$

Now 37800 = $6 \times \sqrt[3]{175} = 6 \times 5.593 = 33.558$

Thus, the required cube root is 33.558.

Q16. 0.27

The number 0.27 can be written as $\frac{27}{100}$

Now,

$$\sqrt[3]{0.27} = \sqrt[3]{\frac{27}{100}} = \frac{\sqrt[3]{27}}{\sqrt[3]{100}} = \frac{3}{\sqrt[3]{100}}$$

From cube root table, we have:

$\sqrt[3]{100} = 4.642$

$$\sqrt[3]{0.27} = \frac{3}{\sqrt[3]{100}} = \frac{3}{4.642} = 0.646$$

Thus, the required cube root is 0.646.

Q17. 8.6

The number 8.6 can be written as $\frac{86}{10}$

Now

$$\sqrt[3]{8.6} = \sqrt[3]{\frac{86}{10}} = \frac{\sqrt[3]{86}}{\sqrt[3]{10}}$$

From cube root table, we have :

$$= \sqrt[3]{86} = 4.414 \text{ and } \sqrt[3]{10} = 2.154$$

$$= \sqrt[3]{8.6} = \frac{\sqrt[3]{86}}{\sqrt[3]{10}} = \frac{4.414}{2.154} = 2.049$$

Thus, the required cube root is 2.049.

Q18. 0.86

The number 0.86 can be written as $\frac{86}{100}$

Now

$$\sqrt[3]{0.86} = \sqrt[3]{\frac{86}{100}} = \frac{\sqrt[3]{86}}{\sqrt[3]{100}}$$

From cube root table, we have :

$$= \sqrt[3]{86} = 4.414 \text{ and } \sqrt[3]{100} = 4.342$$

$$= \sqrt[3]{0.86} = \frac{\sqrt[3]{86}}{\sqrt[3]{100}} = \frac{4.414}{4.642} = 0.951$$

Thus, the required cube root is 0.951.

Q19. 8.65

Answer :

The number 8.65 could be written as $\frac{865}{100}$

Now

$$\sqrt[3]{8.65} = \sqrt[3]{\frac{865}{100}} = \frac{\sqrt[3]{865}}{\sqrt[3]{100}}$$

Also, $860 < 865 < 870 \Rightarrow \sqrt[3]{860} < \sqrt[3]{865} < \sqrt[3]{870}$

From cube root table, we have :

$$= \sqrt[3]{860} = 9.510 \text{ and } \sqrt[3]{870} = 9.546$$

For the difference (870 – 860), i.e., 10, the difference in values

= 9.546 – 9.510 = 0.036

For the difference of (865 – 860), i.e., 5, the difference in values

$= \frac{0.036\times5}{10} = 0.018$ (up to three decimal places)

$\sqrt[3]{865} = 9.510 + 0.018 = 9.528$ (up to three decimal places)

From cube root table, we also have:

$\sqrt[3]{100}$ 4.642

$= \sqrt[3]{8.65} = \frac{\sqrt[3]{865}}{\sqrt[3]{100}} = \frac{9.528}{4.642} = 2.053$ (up to three decimal places)

Thus, the required cube root is 2.053

Q20. We have, 7532

$$7500 < 7532 < 7600 \Rightarrow \sqrt[3]{7500} < \sqrt[3]{7532} < \sqrt[3]{7600}$$

From cube root table, we have :

$$= \sqrt[3]{7500} = 19.57 \text{ and } \sqrt[3]{7600} = 19.66$$

For the difference of (7600 – 7500), i.e., 100, the difference in values

= 19.66 – 19.57 = 0.09

For the difference of (7532 – 7500), i.e., 32, the difference in values,

$= \frac{0.009 \times 32}{100} = 0.0288 = 0.029$ (up to three decimal places)

$\sqrt[3]{7532} = 19.57 + 0.029 = 19.599$

Thus, the required cube root is 19.599

Q21. We have, 833

$$830 < 833 < 840 \Rightarrow \sqrt[3]{830} < \sqrt[3]{833} < \sqrt[3]{840}$$

From cube root table, we have :

$$= \sqrt[3]{830} = 9.398 \text{ and } \sqrt[3]{840} = 9.435$$

For the difference of (840 – 830), i.e., 10, the difference in values

= 9.435 – 9.398 = 0.037

For the difference of (833 – 830), i.e., 3, the difference in values

$= \frac{0.037 \times 3}{10} = 0.0111 = 0.011$ (up to three decimal places)

$\sqrt[3]{833} = 9.398 + 0.011 = 9.409$

Thus, the required cube root is 9.409

Q22. 34.2

The number 34.2 could be written as $\frac{342}{10}$

Now,

$$\sqrt[3]{34.2} = \sqrt[3]{\frac{342}{10}} = \frac{\sqrt[3]{342}}{\sqrt[3]{10}}$$

Also

$$340 < 342 < 350 \Rightarrow \sqrt[3]{340} < \sqrt[3]{342} < \sqrt[3]{350}$$

From cube root table, we have :

$$= \sqrt[3]{340} = 6.980 \text{ and } \sqrt[3]{350} = 7.047$$

For the difference of (350 – 340), i.e., 10, the difference in values

= 7.047 – 6.980 = 0.067

For the difference of (342 – 340), i.e., 2, the difference in values

$= \frac{0.067 \times 2}{10}$ (up to three decimal places)

From cube root table, we also have:

$\sqrt[3]{10} = 2.154$

$\sqrt[3]{34.2} = \frac{\sqrt[3]{342}}{\sqrt[3]{10}} = \frac{6.993}{2.154} = 3.246$

Thus, the required cube root is 3.246