Exercise 4.5

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

1. $7 = \sqrt[3]{7} = 1.913$

(2) $\sqrt[3]{70} = 4.121$

(3) $\sqrt[3]{700} = \sqrt[3]{70} \times \sqrt[3]{10}$

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

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

(4) $\sqrt[3]{7000} = \sqrt[3]{70} \times \sqrt[3]{100}$

$\therefore$ cube root of 7000 will be in the column of $\sqrt[3]{100x}$ against 70

$\therefore \sqrt[3]{7000} = 19.13$

(5) $\sqrt[3]{1100} = \sqrt[3]{11} \times \sqrt[3]{100}$

$\therefore$ cube root of 1100 will be in the column of $\sqrt[3]{100x}$ against 11.

$\therefore \sqrt[3]{1100} = 10.32$

docs.aglasem.com
aglasem.com

6) $\sqrt[3]{780} = \sqrt[3]{78} \times \sqrt[3]{10}$

$\therefore$ $\sqrt[3]{10}$ x against 7.8

$\therefore$ $\sqrt[3]{780} = 9.205$

7) $\sqrt[3]{7800} = \sqrt[3]{78} \times \sqrt[3]{100}$

$\therefore$ $\sqrt[3]{100}$ x against 7.8.

$\therefore$ $\sqrt[3]{7800} = 19.835$

8) $\sqrt[3]{1346} = \sqrt[3]{2 \times 673}$

$= \sqrt[3]{2} \times \sqrt[3]{673}$

$\because$ $670 < 673 < 680 = \sqrt[3]{670} < \sqrt[3]{673} < \sqrt[3]{680}$

By Cube root table $\sqrt[3]{670} = 8.750$

$\sqrt[3]{680} = 8.794$

Difference $680 - 670 = 10$

$\therefore$ difference in values $= 8.794 - 8.750$

$= 0.044$

For the difference $(673 - 670)$ which is 3

$\therefore$ difference in the values $= \frac{0.044}{10} \times 3 = 0.0132$

$\therefore$ $\sqrt[3]{673} = 8.750 + 0.013 = 8.763$

docs.aglasem.com

aglasem.com

$\therefore \sqrt[3]{1346} = \sqrt[3]{2} \times \sqrt[3]{673}$

$= 1.260 \times 8.763 = 11.041$

$\therefore \sqrt[3]{1346} = 11.041$

Q.9 $\sqrt[3]{250} = \sqrt[3]{25} \times \sqrt[3]{10}$

$\therefore \sqrt[3]{250}$ will be $\sqrt[3]{10}$ against 25

$\therefore \sqrt[3]{250} = 6.300$

Q.10 $\sqrt[3]{5112} = \sqrt[3]{2^3 \times 3^2 \times 71}$

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

$= 2 \times 2.080 \times 4.141$

$= 17.227$

Q.11 $\sqrt[3]{9800} = \sqrt[3]{98} \times \sqrt[3]{100}$

$\therefore$ It well be $\sqrt[3]{100}$ against 98.

$\therefore \sqrt[3]{9800} = 21.40$

Q.12 $\sqrt[3]{732} = \sqrt[3]{4 \times 3 \times 61} = \sqrt[3]{4} \times \sqrt[3]{3} \times \sqrt[3]{61}$

$= 1.587 \times 1.442 \times 3.936$

$= 9.007$

docs.aglasem.com

aglasem.com

Q.13 $\sqrt[3]{7342}$

$\because \sqrt[3]{7300} < \sqrt[3]{7342} < \sqrt[3]{7400}$.

$\because \sqrt[3]{7300} = 19.39, \quad \sqrt[3]{7400} = 19.48.$

Since difference between the values $(7400 - 7300 = 100)$

$\therefore$ the difference in cube root values will be.

$19.48 - 19.39 = 0.09$

Difference in values $(7342 - 7300 = 42)$

So, the difference in cube root values will be

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

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

$= 19.427$

Q.14 $\sqrt[3]{133100} = \sqrt[3]{11^3} \times \sqrt[3]{100}$

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

$= 11 \times 4.62$

$= 51.062$

Q.15 $\sqrt[3]{37800} = \sqrt[3]{378} \times \sqrt[3]{100}$

$= \sqrt[3]{2^1 \times 3^3 \times 7^1} = 3 \times \sqrt[3]{14} \times \sqrt[3]{100}$

$= 3 \times 11.19 = 33.558$

docs.aglasem.com

aglasem.com

Q.16 $\sqrt[3]{0.27} = \sqrt[3]{\frac{27}{100}} = \frac{\sqrt[3]{27}}{\sqrt[3]{100}} = \frac{3}{4.642}$

$= 0.646$

Q.17 $\sqrt[3]{8.6} = \sqrt[3]{\frac{86}{10}} = \frac{\sqrt[3]{86}}{\sqrt[3]{10}} = \frac{4.414}{2.154} = 2.049$

Q.18 $\sqrt[3]{0.86} = \sqrt[3]{\frac{86}{100}} = \frac{\sqrt[3]{86}}{\sqrt[3]{100}} = \frac{4.414}{4.642} = 0.9508.$

$\simeq 0.951$

Q.19 $\sqrt[3]{8.65} = \sqrt[3]{\frac{865}{100}} = \frac{\sqrt[3]{865}}{\sqrt[3]{100}}$

$\because$ $\sqrt[3]{865}$ lie between $\sqrt[3]{860}$ and $\sqrt[3]{870}$

$\sqrt[3]{860} = 9.510$

$\sqrt[3]{870} = 9.546$

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

By unitary Method

Diff. in values $= (870 - 860) = 10$

$\therefore$ Diff. in values $= 9.546 - 9.510 = 0.036.$

Difference between the values $= 865 - 860 = 5$

So, the difference in cube root values will be

$= \frac{(0.036 \times 5)}{10} = 0.018$

$\sqrt[3]{865} = 9.510 + 0.018$

$= 9.528$

docs.aglasem.com

aglasem.com

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

$= \frac{9.528}{4.642} = 2.0525$

(20) $\sqrt[3]{7532} =$

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

$\because \sqrt[3]{7500} = 19.57$, $\sqrt[3]{7600} = 19.66$

By using unitary method,

Difference between values $= (7600 - 7500) = 100$.

So, the difference in cube root values will be

$= 19.66 - 19.57 = 0.09$

Diff. in values $= 7532 - 7500 = 32$

So, the diff. in cube root values will be

$= \frac{0.09}{100} \times 32 = 0.029$

$\sqrt[3]{7532} = 19.57 + 0.029 = 19.599 \simeq 19.60$

(21) $\sqrt[3]{833}$

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

From cube root table we get

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

docs.aglasem.com

aglasem.com

By using unitary method

Diff between the values $(840 - 830 = 10)$

So, the diff. in cube root values will be

$$= 9.435 - 9.398 = 0.037$$

Difference between the values $(833 - 830 = 3)$

So, the difference in cube root values will be

$$= \frac{0.037}{10} \times 3 = 0.011$$

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

Q.22 $\sqrt{34.2} = \sqrt[3]{\frac{342}{10}} = \frac{\sqrt[3]{342}}{\sqrt[3]{10}}$

2	342
3	171
3	57
19	19
	1

$$= \frac{\sqrt[3]{2 \times 3 \times 3 \times 19}}{\sqrt[3]{10}} = \frac{\sqrt[3]{2} \times \sqrt[3]{9} \times \sqrt[3]{19}}{\sqrt[3]{10}}$$

$$= \frac{1.26 \times 2.08 \times 2.668}{2.154} = 3.2461$$

Q.22 What is the length of the side of a cube whose volume is $275\ cm^3$. Make use of table to find cube root

Sol. $Vol = 275\ cm^3$

$$\Rightarrow \text{Side} = \sqrt[3]{275} = \sqrt[3]{25} \times \sqrt[3]{11}$$

$$= 2.924 \times 2.224$$

$$= 6.5029 \simeq 6.503\ cm.$$

docs.aglasem.com

aglasem.com