Cubes and Cubes Roots Ex 4.5 Q22

Answer :

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 the cube root table, we have:

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

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

$$= 7.047 - 6.980 = 0.067.$$

$\therefore$ For the difference (342−340), i.e., 2, the difference in values

$= \frac{0.067}{10} \times 2 = 0.013$ (upto three decimal places)

$\therefore \sqrt[3]{342} = 6.980 + 0.0134 = 6.993$ (upto three decimal places)

From the cube root table, we also have:

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

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

Thus, the required cube root is 3.246.

Cubes and Cubes Roots Ex 4.5 Q23

Answer :

Volume of a cube is given by:

$V = a^3$, where a = side of the cube

$\therefore$ Side of a cube = $a = \sqrt[3]{V}$

If the volume of a cube is 275 cm^3, the side of the cube will be $\sqrt[3]{275}$.

We have:

$270 < 275 < 280 \Rightarrow \sqrt[3]{270} < \sqrt[3]{275} < \sqrt[3]{280}$

From the cube root table, we have:

$\sqrt[3]{270} = 6.463$ and $\sqrt[3]{280} = 6.542$.

For the difference (280−270), i.e., 10, the difference in values

$= 6.542 - 6.463 = 0.079$

$\therefore$ For the difference (275−270), i.e., 5, the difference in values

$= \frac{0.079}{10} \times 5 = 0.0395 \simeq 0.04$ (upto three decimal places)

$\therefore \sqrt[3]{275} = 6.463 + 0.04 = 6.503$ (upto three decimal places)

Thus, the length of the side of the cube is 6.503 cm.

********** END **********