

Cubes and Cubes Roots Ex 4.4 Q10 Answer:

Volume of a cube is given by: $V=s^3$, where s = side of the cube

Now

$$s^3 = 474.552 \ cubic \ metres$$

 $\Rightarrow s = \sqrt[3]{474.552} = \sqrt[3]{\frac{474552}{1000}} = \frac{\sqrt[3]{474552}}{\sqrt[3]{1000}}$

To find the cube root of 474552, we need to proceed as follows:

On factorising 474552 into prime factors, we get: $474552=2\times2\times2\times3\times3\times3\times13\times13\times13$

On grouping the factors in triples of equal factors, we get: $474552 = \{2\times2\times2\}\times\{3\times3\times3\}\times\{13\times13\times13\}$

Now, taking one factor from each triple, we get:

$$\sqrt[3]{474552} = \sqrt[3]{\{2 \times 2 \times 2\} \times \{3 \times 3 \times 3\} \times \{13 \times 13 \times 13\}} = 2 \times 3 \times 13 = 78$$

Also

$$\sqrt[3]{1000} = 10$$

$$\therefore s = \frac{\sqrt[8]{474552}}{\sqrt[8]{1000}} = \frac{78}{10} = 7.8$$

Thus, the length of the side is 7.8 m.

Cubes and Cubes Roots Ex 4.4 Q11

Answer:

Let the numbers be 2x, 3x and 4x.

According to the question:

$$(2x)^{3} + (3x)^{3} + (4x)^{3} = 0.334125$$

$$\Rightarrow 8x^{3} + 27x^{3} + 64x^{3} = 0.334125$$

$$\Rightarrow 8x^{3} + 27x^{3} + 64x^{3} = 0.334125$$

$$\Rightarrow 99x^{3} = 0.334125$$

$$\Rightarrow x^{3} = \frac{334125}{1000000} \xrightarrow{3375}$$

$$\Rightarrow x = \sqrt[3]{\frac{3375}{1000000}}$$

$$\Rightarrow x = \frac{\sqrt[3]{3375}}{\sqrt[3]{1000000}}$$

$$\Rightarrow x = \frac{15}{100} = 0.15.$$

Thus, the numbers are:

$$2 \times 0.15 = 0.30$$

 $3 \times 0.15 = 0.45$
 $4 \times 0.15 = 0.60$

Cubes and Cubes Roots Ex 4.4 Q12

Answer:

Volume of a cube with side s is given by:

$$V = s^3$$

$$= \frac{\sqrt[3]{29 \times 29 \times 29}}{\sqrt[3]{2 \times 2 \times 2 \times 3 \times 3 \times 3}}$$
 (By prime factorisation)

$$= \frac{29}{2 \times 3}$$
$$= \frac{29}{6}$$

Thus, the length of the side is $\frac{29}{6}$ m.

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