



### Surface Areas and Volume of a Cuboid and Cube Ex 18.2 Q19

**Answer :**

“When an object is completely immersed in a liquid, the volume of the liquid displaced is equal to the volume of the object”

Using this principle, we shall now solve this problem.

We have,

Edge of the immersed cube ( $a$ ) = 9 cm

Length of the rectangular container ( $l$ ) = 15 cm

Breadth of the rectangular container ( $b$ ) = 12 cm

Let,

$h \rightarrow$  The rise in water level

Volume of the immersed cube ( $v$ ) =  $a^3$

$$= 9^3 \text{ cm}^3$$

As per the above mentioned principle,

$$lbh = v$$

$$\begin{aligned} h &= \frac{v}{lb} \\ &= \frac{9^3}{15 \times 12} \\ &= \frac{9 \times 9 \times 9}{15 \times 12} \\ &= \frac{3 \times 3 \times 9}{5 \times 4} \end{aligned}$$

$$= \frac{81}{20}$$

$$= 4.05 \text{ cm}$$

The rise in water level is 4.05 cm.

### Surface Areas and Volume of a Cuboid and Cube Ex 18.2 Q20

**Answer :**

“When an object is completely immersed in a liquid, the volume of the liquid displaced is equal to the volume of the object”

Using this principle, we shall now solve this problem.

We have,

Length of the container ( $l$ ) = 5 cm

Breadth of the container ( $b$ ) = 5 cm

Height to which the water raised ( $h$ ) = 1 cm

Volume of the water displaced,

$V =$  volume of the water raised + volume of the water over flown

$$= (lbh + 2) \text{ cm}^3$$

$$= 5 \times 5 \times 1 + 2 \text{ cm}^3$$

$$= 27 \text{ cm}^3$$

We need to calculate the volume and edge of the cube

Let,

$v \rightarrow$  Volume of the cube submerged

$a \rightarrow$  Edge of the cube submerged

According to the principle mentioned above,

$$v = V$$

$$a^3 = 27$$

$$a = 3 \text{ cm}$$

Volume of the cube is  $\boxed{27\text{cm}^3}$  and edge of the cube is  $\boxed{3\text{cm}}$ .

\*\*\*\*\* END \*\*\*\*\*