

Exercise VSAQs

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Question 1: If two cubes each of side 6 cm are joined face to face, then find the volume of the resulting cuboid.

Solution:

Side of two equal cubes = 6 cm (Given)

When we join, two cubes face to face formed a cuboid.

Dimensions of a cuboid are:

Length = 6 cm + 6 cm = 12 cm

Breadth = 6 cm

Height = 6 cm

Therefore, volume of cuboid = $l b h = 12 \times 6 \times 6 = 432 \text{ cm}^3$

Question 2: Three cubes of metal whose edges are in the ratio 3 : 4 : 5 are melted down into a single cube whose diagonal is $12\sqrt{3}$ cm. Find the edges of three cubes.

Solution:

Given:

Ratio of edge of 3 cubes = 3 : 4 : 5

Let edges are = 3x, 4x and 5x

Diagonal of new cube formed = $12\sqrt{3}$ cm (given)

Volume of new cube = Volume of figure obtained after combining three cubes = $(3x)^3 + (4x)^3 + (5x)^3$

= $216 x^3$... (1)

New diagonal of a cube = $\sqrt{3}a = 12\sqrt{3}$

or $a = 12$

So, side of new cube is 12 cm.

Volume of cube with side 12 cm = $(12)^3$... (2)

From equation (1) and (2), we have

$(12)^3 = 216 x^3$

$$x^3 = \frac{216}{12 \times 12 \times 12} = 8$$

$$x = \sqrt[3]{8} = 2$$

Therefore, measure of edges are :

$$3x = 3 \times 2 = 6 \text{ cm}$$

$$4x = 4 \times 2 = 8 \text{ cm}$$

$$5x = 5 \times 2 = 10 \text{ cm}$$

Question 3: If the perimeter of each face of a cube is 32 cm, find its lateral surface area. Note that four faces which meet the base of a cube are called its lateral faces.

Solution:

Perimeter of each face of a cube = 32 cm (given)

Let 'a' be the edge of a cube.

We know, Perimeter of each face of a cube = 4a

$$\Rightarrow 4a = 32$$

$$\text{or } a = 8$$

Side of a cube is 8 cm.

Now,

$$\text{Lateral surface area of cube} = 4a^2 = 4 \times 8^2 = 256 \text{ cm}^2.$$