Surface Areas and Volume of a Cuboid and Cube Ex 18.1 Q4

Answer :

The dimensions of the cubical block are,

$\text{length}(l) = 80\,\text{cm}$

$\text{breadth}(b) = 40\,\text{cm}$

$\text{height}(h) = 20\,\text{cm}$

We are asked to find the number of square sheet paper whose side is 40 cm

Let the total surface area of the block be $"S"\text{cm}^2$.

So, Mary would require in total $"S"\text{cm}^2$ of colored paper.

$$S = 2(lb + bh + hl)$$
$$= 2(80\times 40 + 40\times 20 + 20\times 80)$$
$$= 2(3200 + 800 + 1600)$$
$$= 11200\,\text{cm}^2$$

But the paper is available in square sheets of side, $a = 40\,\text{cm}$

Area of a single square sheet,

$$A = a^2$$
$$= 40^2$$
$$= 1600\,\text{cm}^2$$

The number of square sheets required=

$$= \frac{S}{A}$$
$$= \frac{11200}{1600}$$
$$= 7$$

Mary would require $\boxed{7}$ square sheets of paper.

Surface Areas and Volume of a Cuboid and Cube Ex 18.1 Q5

Answer :

Dimensions of the room are,

$$\text{length}(l) = 5\,\text{m}$$

$$\text{breadth}(b) = 4\,\text{m}$$

$$\text{height}(h) = 3\,\text{m}$$

Let,

S The total surface area to whitewash

A_1 The lateral surface area of the room

A_2 The surface area of ceiling

R The rate of whitewashing per m^2

We know that,

$$R = \text{Rs.}7.50\,\text{per}\,\text{m}^2$$

We are asked to find the cost of whitewashing

Now, the total surface area to whitewash,

$$\begin{aligned} S &= A_1 + A_2 \\ &= \left[2(l+b)h + lb\right] \\ &= \left[2(5+4)\times 3 + 5\times 4\right] \\ &= 74\,\text{m}^2 \end{aligned}$$

Total cost of whitewashing,

$$\begin{aligned} &= S \times R \\ &= \left(74\,\text{m}^2\right)\times\left(\text{Rs.}7.50\,\text{per}\,\text{m}^2\right) \\ &= \text{Rs.}\left(74\times 7.50\right) \\ &= \text{Rs.}555 \end{aligned}$$

Hence the cost of whitewashing the room and the ceiling is $\boxed{\text{Rs.}555}$.

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