Surface Areas and Volume of a Cuboid and Cube Ex 18.1 Q16

Answer :

We are given the dimensions of the room as $l = 12.5$ m, $b = 9$ m, $h = 7$ m

The lateral surface area of the room,

$$A = 2(l+b)h$$
$$= 2(12.5+9)7$$
$$= 14 \times 21.5$$
$$= 301.0\,\text{m}^2$$

Surface area of each door,

$$D = (2.5 \times 1.2)$$
$$= 3\,\text{m}^2$$

Surface area of each window,

$$W = (1.5 \times 1)$$
$$= 1.5\,\text{m}^2$$

There are 2 doors and 4 windows in the room.

Hence, total area to be painted,

$$A' = A - (2D + 4W)$$
$$= 301 - (2 \times 3 + 4 \times 1.5)$$
$$= 301 - (6+6)$$
$$= 289\,\text{m}^2$$

Rate of painting the wall at the rate of, $R = \text{Rs.}3.50/\text{m}^2$

So, total cost of painting,

$$= A' \times R$$
$$= 289 \times 3.50$$
$$= \text{Rs.}1011.50$$

The total cost of painting is $\boxed{\text{Rs.}1011.50}$.

Surface Areas and Volume of a Cuboid and Cube Ex 18.1 Q17

Answer :

The length and breadth of the hall are in the ratio 4 : 3.

Hence $l = 4x$, $b = 3x$, $h = 5.5$ m

Rate of decorating the wall, $R = 6.6$ per square meter

Total cost of decoration $C = Rs.5082$

We have to find the length and breadth of the room

Surface area of the walls,

$$\begin{aligned} A &= 2(l+b)h \\ &= 2(4x+3x)5.5 \\ &= 14x \times 5.5 \\ &= 77x\,\text{m}^2 \end{aligned}$$

Cost of decoration = $A \times R$

Hence,

$$5082 = 77x \times 6.60$$

$$x = \frac{5082}{77 \times 6.60}$$

$$= 10$$

$$\text{Length}(l) = 4x$$

$$= 4 \times 10$$

$$= 40\,\text{m}$$

$$\text{Breadth}(b) = 3x$$

$$= 3 \times 10$$

$$= 30\,\text{m}$$

The length and breadth of the hall are $\boxed{40\,\text{m}}$ and $\boxed{30\,\text{m}}$ respectively.

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