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MATHEMATICS

MENSURATION

PART - 4

RIMC JUNE 2022 RESULT IS OUT

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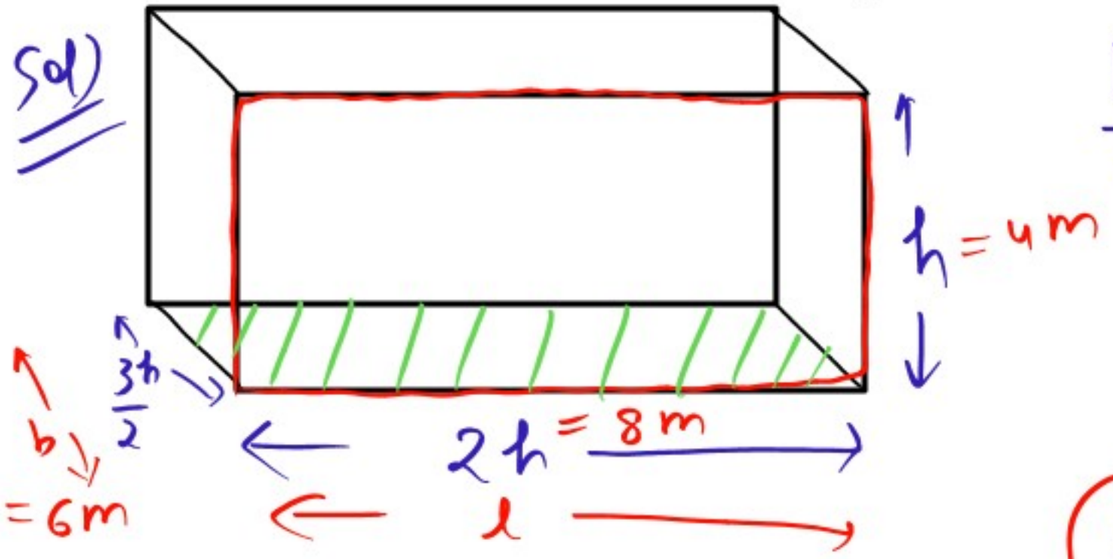
1.Length of a classroom twice its height and its breadth 1 ½ times its height . The cost of white washing the 4 walls at a rate of Rs 1.60 per m^2 is Rs 179.20 . Find the cost of tiling the floor at the rate of Rs 6.75 per m^2 ?

Sol)



Area of 4 walls = 2lh + 2bh

= 2h(l+b)

By using unitary

1.60₹ ⟶ 1 m^2

179.20₹ ⟶ more

More / less × Individual value

$\frac{179.20}{1.60} \times 1\ m^2$

$= 112\ m^2$

Area of 4 walls = 112 m^2

$2h(l+b) = 112$

$2h\left(2h+\frac{3h}{2}\right) = 112$

$2h\left(\frac{7h}{2}\right) = 112$

$7h^2 = 112$

$h^2 = 112/7$

$h^2 = 16$

$h = 4\ m$

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$\therefore$ $l = 8\,m$

$b = 6\,m$

$h = 4\,m$

Area of floor $= l \times b$

Area of floor $= 8 \times 6 = 48\,m^2$

By using unitary method

$1\,m^2 \longrightarrow 6.75\,F$

$48\,m^2 \longrightarrow$ more

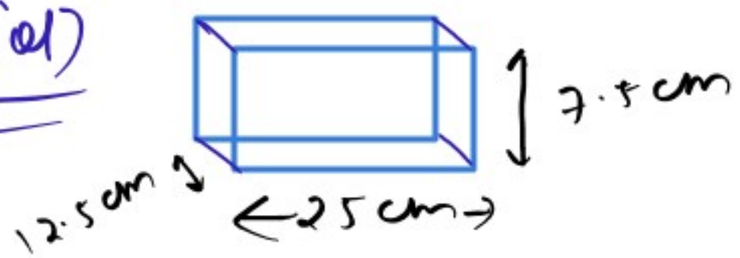
More / less $\times$ I.V

$\frac{48}{1} \times 6.75\,F$

$= 324\,F$

2. The brick measures 25 cm x 12.5cm x 7.5 cm and is used to construct a wall of size 6m x 5m x 0.5m . If the cement and sand occupies 1/20 th of the volume of the wall. Then find the no. of bricks required?

Sol)



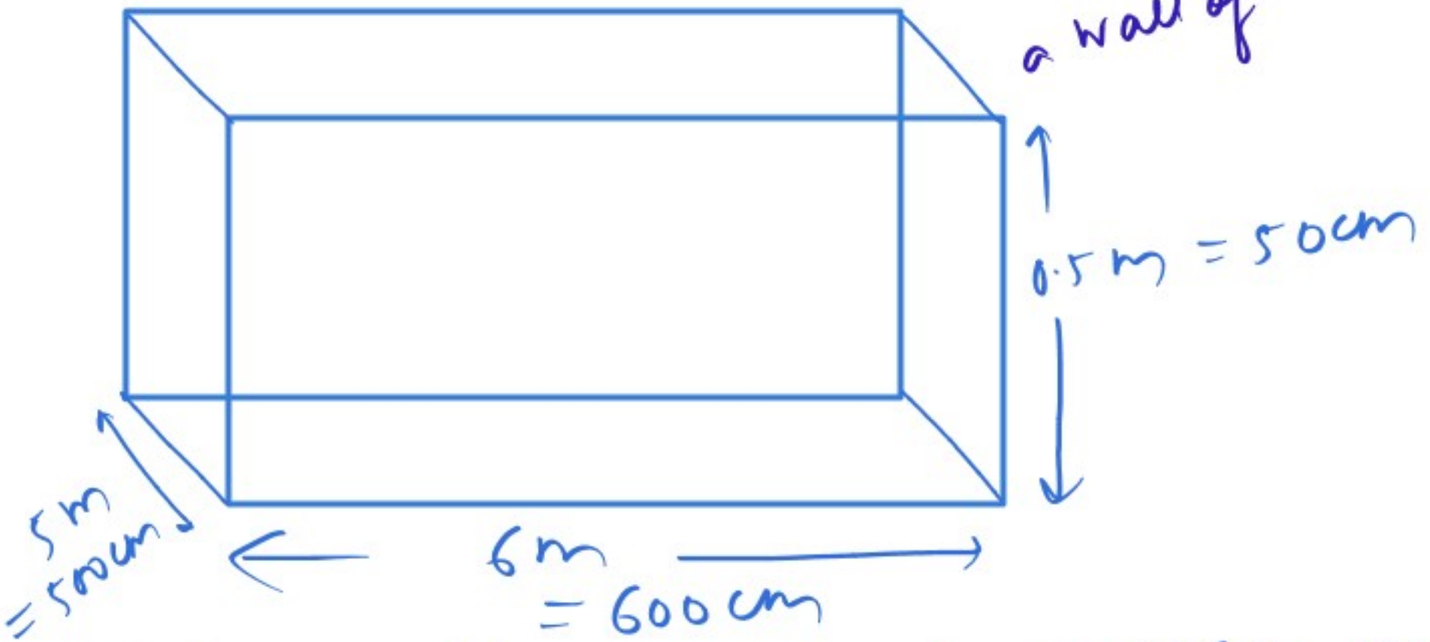
$l = 25$ cm

$b = 12.5$ cm

$h = 7.5$ cm

Volume of a brick $= l \times b \times h$

$= 25 \times 12.5 \times 7.5$ cm^3



Volume of wall $= 600 \times 500 \times 50$ cm^3

Cement & sand occupies $= \frac{1}{20}$ of the Volume of wall

Volume of wall (excluded cement & sand) $= \frac{19}{20} \times$ volume of wall

$= \frac{19}{20} \times 600 \times 500 \times 50\ cm^3$

By using unitary method.

$25 \times 12.5 \times 7.5 \Longrightarrow$ 1 brick

$\frac{19}{20} \times 600 \times 500 \times 50 \Rightarrow$ More

$\frac{\text{More}}{\text{less}} \times \text{I.V}$

$\frac{19}{20} \times \frac{\overset{10}{\cancel{600}} \times \overset{4}{\cancel{500}} \times \overset{2}{\cancel{50}}}{\underset{1}{\cancel{25}} \times \underset{5}{\cancel{125}} \times \underset{3}{\cancel{75}}} \times \overset{4}{\cancel{100}}$ bricks

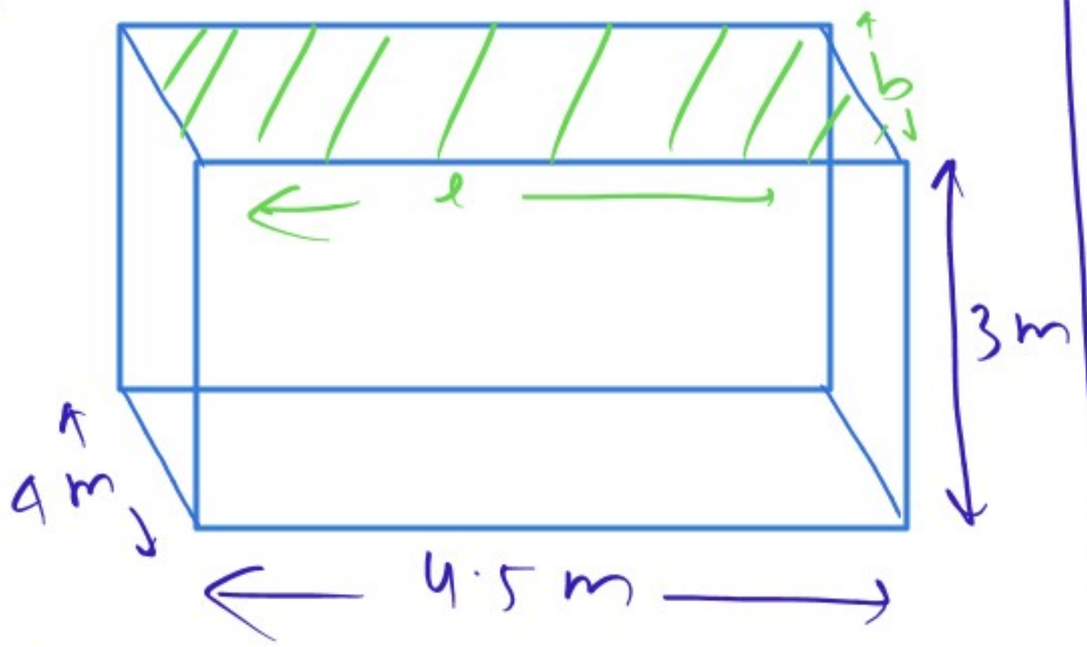
$= 19 \times 10 \times 4 \times 2 \times 4$ bricks

$= 19 \times 32 \times 10$

$= 6080$ bricks

3. A room is 4.5 m long and 4m wide and 3m high . Then find the cost of white washing of the walls and the roof at the rate of Rs 11 per square metre?

Sol)



Given

$l = 4.5\ m$

$b = 4\ m$

$h = 3\ m$

Area of 4 wall + Area of roof

$2h(l+b) + lb$

$(2 \times 3(4.5+4) + 4.5 \times 4)\ m^2$

$6 \times 8.5 + 18$

$51 + 18$

$69\ m^2$

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By using unitary method

$1\ m^2 \longrightarrow 11₹$

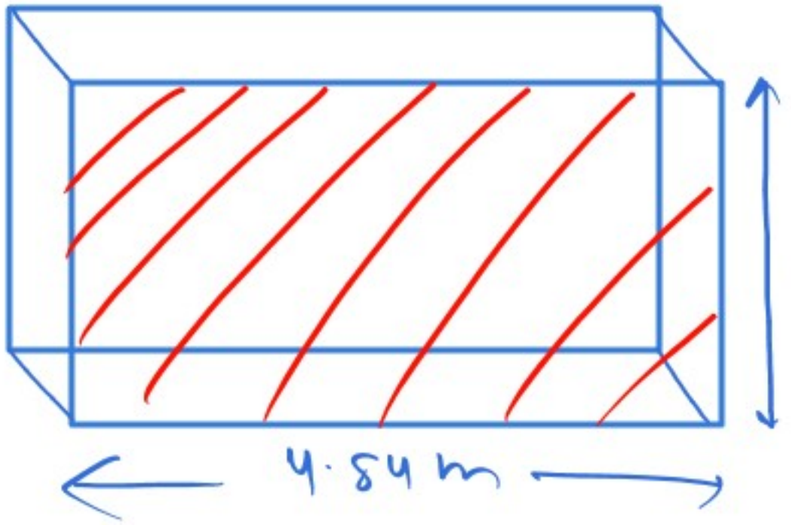
$69\ m^2 \longrightarrow$ More

$\frac{\text{More}}{\text{less}} \times \text{I.V}$

$\frac{69}{1} \times 11₹ = 759₹$

4. A wall 4.84 m long and 3.1 m high is to be covered both sides with rectangular tiles of size 22cm x 10cm . Find the total cost of the tiles at the rate of Rs 12 per tile?

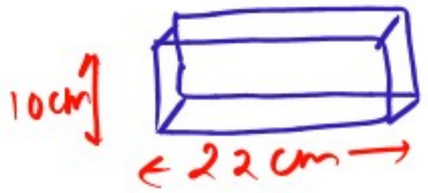
Sol)



Given Wall

$l = 4.84\ m$

$h = 3.1\ m$



Tile

$l = 22\ cm$

$h = 10\ cm$

Area of tile $= 22 \times 10\ cm^2$

Area of wall $= 2lh$

$= 2 \times 484 \times 310\ cm^2$

By using unitary method

$22 \times 10\ cm^2 \longrightarrow$ 1 tile

$2 \times 484 \times 310\ cm^2 \longrightarrow$ more

More $\propto$ I.V

less

$$\frac{2 \times \cancel{484}^{22} \times 31\cancel{0}}{\cancel{22} \times \cancel{10}} \times 1 \text{ tile}$$

44×31

$= 1364$ Tile

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By using unitary method

1 tile = 12₹

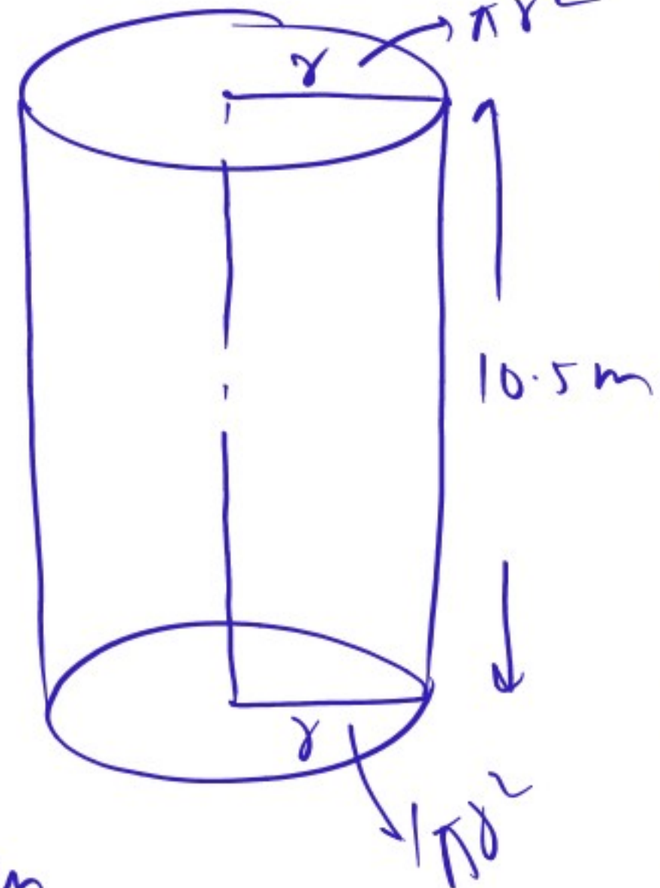
1364 tiles = more

More / less × I·V

$\frac{1364}{1} \times 12₹ = 16368₹$

5. The height of a right circular cylinder is 10.5 m . 3 times the sum of the areas of its 2 circular faces is twice the area of the curved surface . Find the volume of the cylinder.

Sol



Given

$h = 10.5\ m$

Three

Two

Acc to the question

$$3 \times (2\pi r^2) = 2 \times 2\pi r h$$

$$6\pi r^2 = 4\pi r \times 10.5$$

$$6r = 4 \times 10.5$$

$$r = \frac{4 \times 10.5}{6} = \frac{21}{6} = 7\ m$$

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Now $r = 7\,m$

$h = 10.5\,m$

$\therefore$ Volume of a cylinder $= \pi r^2 h$

$$= \frac{22}{7} \times 7 \times 7 \times 10.5 \ m^3$$

$$= 154 \times 10.5 \ m^3$$

$$= 1617 \ m^3$$

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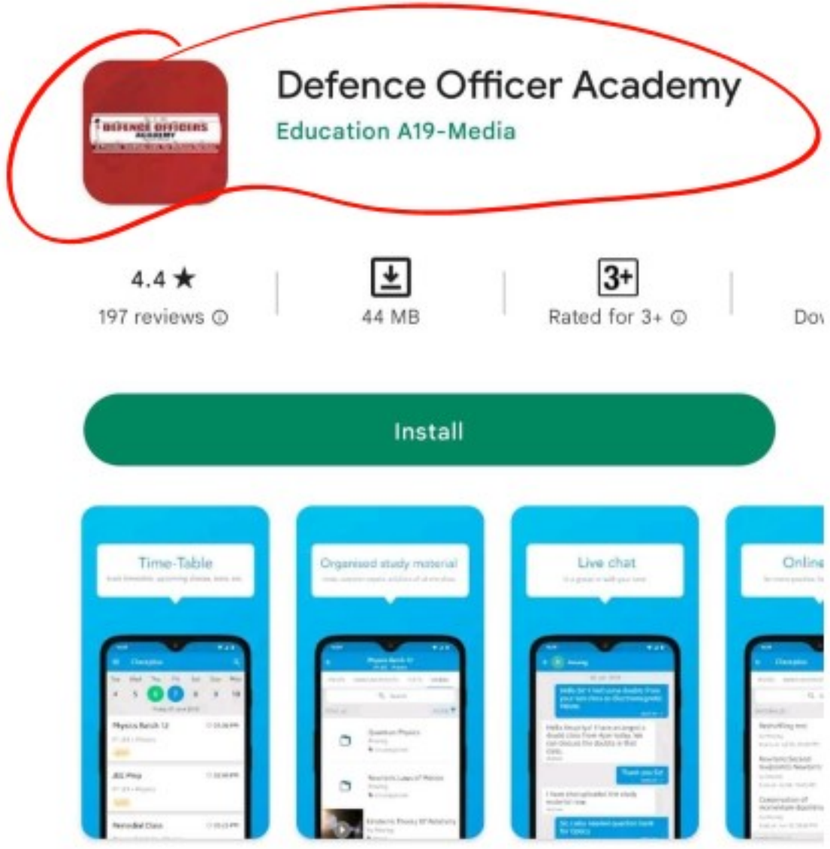

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