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1. Diameter of the base of a cone is 10.5 cm and its slant height is 10 cm. Find its curved surface area (Assume π=22/7)

Solution:

Radius of the base of cone = diameter/ 2 = (10.5/2)cm = 5.25cm
Slant height of cone, say l = 10 cm
CSA of cone is = πrl
= (22/7)×5.25×10 = 165 cm^2
Therefore, the curved surface area of the cone is 165 cm^2.

2. Find the total surface area of a cone, if its slant height is 21 m and diameter of its base is 24 m. (Assume π = 22/7)

Solution:

Radius of cone, r = 24/2 m = 12m
Slant height, l = 21 m
Formula: Total Surface area of the cone = πr(l+r)
Total Surface area of the cone = (22/7)×12×(21+12) m^2
= 1244.57m^2

3. Curved surface area of a cone is 308 cm^2 and its slant height is 14 cm. Find (i) radius of the base and (ii) total surface area of the cone. (Assume π = 22/7)

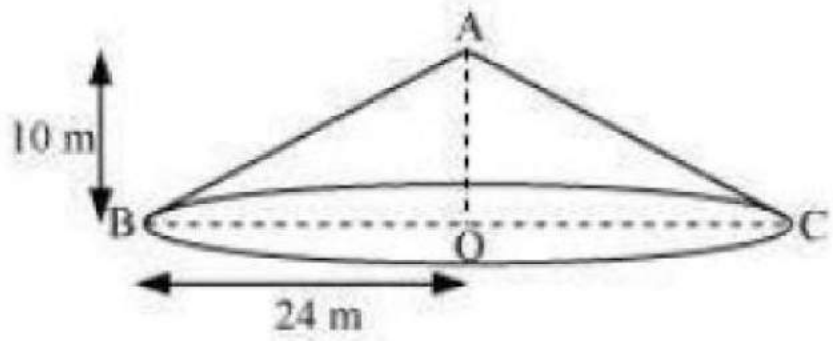
Solution:

Slant height of cone, l = 14 cm
Let the radius of the cone be r.
(i) We know, CSA of cone = πrl
Given: Curved surface area of a cone is 308 cm^2
(308) = (22/7)×r×14
308 = 44 r
r = 308/44 = 7 cm
Radius of a cone base is 7 cm.

(ii) Total surface area of cone = CSA of cone + Area of base (πr^2)
Total surface area of cone = 308+(22/7)×7^2 = 308+154 = 462 cm^2

Therefore, the total surface area of the cone is 462 cm^2.

4. A conical tent is 10 m high and the radius of its base is 24 m. Find
(i) slant height of the tent.
(ii)cost of the canvas required to make the tent, if the cost of 1 m^2 canvas is Rs 70.
(Assume π=22/7)
Solution:



Let ABC be a conical tent
Height of conical tent, h = 10 m
Radius of conical tent, r = 24m
Let the slant height of the tent be l.

(i) In right triangle ABO, we have

$AB^2 = AO^2+BO^2$(using Pythagoras theorem)
$l^2 = h^2+r^2$
$= (10)^2+(24)^2$
= 676
l = 26 m
Therefore, the slant height of the tent is 26 m.

(ii) CSA of tent = πrl
$= (22/7)\times24\times26\ m^2$
Cost of 1 m^2 canvas = Rs 70
Cost of (13728/7)m^2 canvas is equal to Rs (13728/7)×70 = Rs 137280

Therefore, the cost of the canvas required to make such a tent is Rs 137280.

5. What length of tarpaulin 3 m wide will be required to make conical tent of height 8 m and base radius 6m? Assume that the extra length of material that will be required for stitching margins and wastage in cutting is approximately 20 cm. [Use π=3.14]

Solution:

Height of conical tent, h = 8m
Radius of base of tent, r = 6m
Slant height of tent, $l^2 = (r^2+h^2)$
$l^2 = (6^2+8^2) = (36+64) = (100)$
or l = 10 m

Again, CSA of conical tent = πrl
$= (3.14\times6\times10)\ m^2$
$= 188.4m^2$

Let the length of tarpaulin sheet required be L
As 20 cm will be wasted, therefore,
Effective length will be (L-0.2m).
Breadth of tarpaulin = 3m (given)
Area of sheet = CSA of tent
[(L–0.2)×3] = 188.4
L-0.2 = 62.8
L = 63 m
Therefore, the length of the required tarpaulin sheet will be 63 m.

6. The slant height and base diameter of conical tomb are 25m and 14 m respectively. Find the cost of white-washing its curved surface at the rate of Rs. 210 per 100 m^2. (Assume π = 22/7)

Solution:

Slant height of conical tomb, l = 25m
Base radius, r = diameter/2 = 14/2 m = 7m
CSA of conical tomb = πrl
= (22/7)×7×25 = 550

CSA of conical tomb= $550m^2$
Cost of white-washing 550 m^2 area, which is Rs (210×550)/100
= Rs. 1155
Therefore, cost will be Rs. 1155 while white-washing tomb.

7. A joker's cap is in the form of right circular cone of base radius 7 cm and height 24cm. Find the area of the sheet required to make 10 such caps. (Assume π =22/7)

Solution:

Radius of conical cap, r = 7 cm
Height of conical cap, h = 24cm
Slant height, $l^2 = (r^2+h^2)$
$= (7^2+24^2)$
$= (49+576)$

= (625)
Or l = 25 cm
CSA of 1 conical cap = πrl
= (22/7)×7×25
= 550 cm^2
CSA of 10 caps = (10×550) cm^2 = 5500 cm^2
Therefore, the area of the sheet required to make 10 such caps is 5500 cm^2.

8. A bus stop is barricaded from the remaining part of the road, by using 50 hollow cones made of recycled cardboard. Each cone has a base diameter of 40 cm and height 1 m. If the outer side of each of the cones is to be painted and the cost of painting is Rs. 12 per m^2, what will be the cost of painting all these cones? (Use π = 3.14 and take √(1.04) =1.02)

Solution:
Given:
Radius of cone, r = diameter/2 = 40/2 cm = 20cm = 0.2 m
Height of cone, h = 1m
Slant height of cone is l, and $l^2 = (r^2+h^2)$
Using given values, $l^2 = (0.2^2+1^2)$
= (1.04)
Or l = 1.02 m
Slant height of the cone is 1.02 m

Now,
CSA of each cone = πrl
= (3.14×0.2×1.02)
= 0.64056 m^2

CSA of 50 such cones = (50×0.64056) = 32.028
CSA of 50 such cones = 32.028 m^2
Again,
Cost of painting 1 m^2 area = Rs 12 (given)
Cost of painting 32.028 m^2 area = Rs (32.028×12)
= Rs.384.336
= Rs.384.34 (approximately)
Therefore, the cost of painting all these cones is Rs. 384.34.