Exercise 20.1 Page No: 20.7

Question 1: Find the curved surface area of a cone, if its slant height is 60 cm and the radius of its base is 21 cm.

Solution:
Slant height of cone (l) = 60 cm

Radius of the base of the cone (r) = 21 cm

Now,

Curved surface area of the right circular cone = $\pi rl = 22/7 \times 21 \times 60 = 3960\ cm^2$

Therefore the curved surface area of the right circular cone is $3960\ cm^2$

Question 2: The radius of a cone is 5cm and vertical height is 12cm. Find the area of the curved surface.

Solution:

Radius of cone (r) = 5 cm

Height of cone (h) = 12 cm

Find Slant Height of cone (l):
We know, $l^2 = \sqrt{r^2 + h^2}$

$l^2 = 5^2 + 12^2$

$l^2 = 25 + 144 = 169$

Or l = 13 cm

Now,

C.S.A = $\pi rl = 3.14 \times 5 \times 12 = 204.28$

Therefore, the curved surface area of the cone is $204.28\ cm^2$

Question 3 : The radius of a cone is 7 cm and area of curved surface is 176 cm^2 .Find the slant height.

Solution:
Radius of cone(r) = 7 cm

Curved surface area(C.S.A)= 176cm^2

We know, C.S.A. = πrl

=>πrl = 176

=> 22/7 x 7 x l = 176

or l = 8

Therefore, slant height of the cone is 8 cm.

Question 4: The height of a cone 21 cm. Find the area of the base if the slant height is 28 cm.

Solution:

Height of cone(h) = 21 cm

Slant height of cone (l) = 28 cm

We know that, $l^2 = r^2 + h^2$

$28^2=r^2+21^2$

$r^2=28^2-21^2$

or r= 7√7 cm

Now,
Area of the circular base = πr^2

= 22/7 x $(7\sqrt{7})^2$

=1078

Therefore, area of the base is 1078 cm^2.

Question 5: Find the total surface area of a right circular cone with radius 6 cm and height 8 cm.

Solution:
Radius of cone (r) = 6 cm

Height of cone (h) = 8 cm

Total Surface area of the cone (T.S.A)=?

Find slant height of cone:
We know, $l^2 = r^2 + h^2$

$=6^2+8^2$
= 36 + 64
= 100
or l = 10 cm
Now,
Total Surface area of the cone (T.S.A) = Curved surface area of cone + Area of circular base

$= \pi rl + \pi r^2$

= (22/7 x 6 x 10) + (22/7 x 6 x 6)

= 1320 + 7927

= 301.171

Therefore, area of the base is $301.71cm^2$.

Question 6: Find the curved surface area of a cone with base radius 5.25 cm and slant height 10 cm.

Solution:
Base radius of the cone(r) = 5.25 cm

Slant height of the cone(l) = 10 cm

Curved surface area (C.S.A) = πrl
=22/7 x 5.25 x 10

= 165

Therefore, curved surface area of the cone is $165cm^2$.

Question 7: Find the total surface area of a cone, if its slant height is 21 m and diameter of its base is 24 m.

Solution:

Diameter of the cone(d)=24 m

So, radius of the cone(r)= diameter/ 2 = 24/2 m = 12m

Slant height of the cone(l) = 21 m

T.S.A = Curved surface area of cone + Area of circular base

$= \pi rl + \pi r^2$

= (22/7 x 12 x 21) + (22/7 x 12 x 12)

= 1244.57

Therefore, total surface area of the cone is 1244.57 m^2.

Question 8: The area of the curved surface of a cone is 60 π cm^2. If the slant height of the cone be 8 cm, find the radius of the base.

Solution:

Curved surface area(C.S.A)= 60 π cm^2

Slant height of the cone(l) = 8 cm

Ee know, Curved surface area(C.S.A)=πrl

=> πrl = 60 π

=> r x 8 = 60

or r = 60/8 = 7.5

Therefore, radius of the base of the cone is 7.5 cm.

Question 9: The curved surface area of a cone is 4070 cm^2 and diameter is 70 cm .What is its slant height? (Use π =22/7)

Solution:

Diameter of the cone(d) = 70 cm
So, radius of the cone(r)= diameter/2 = 70/2 cm = 35 cm
Curved surface area = 4070 cm^2

Now,
We know, Curved surface area = πrl

So, πrl = 4070

By substituting the values, we get

22/7 x 35 x l = 4070

or l = 37

Therefore, slant height of cone is 37 cm.

Question 10: The radius and slant height of a cone are in the ratio 4:7. If its curved surface area is 792 cm^2, find its radius. (Use π =22/7)

Solution:
Curved surface area = 792 cm^2
The radius and slant height of a cone are in the ratio 4:7 (Given)
Let 4x be the radius and 7x be the height of cone.

Now,

Curved surface area (C.S.A.) = πrl
So, 22/7 x (4x) x (7x) = 792

or $x^2 = 9$

or x = 3

Therefore, Radius = 4x = 4(3) cm = 12 cm