

Chapter 13

ASSIGNMENT

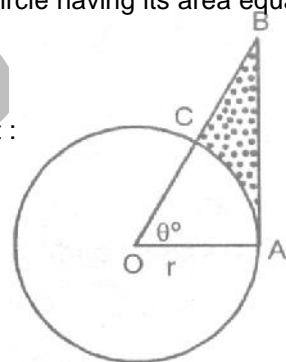
SUBJECTIVE EXERCISE - 13.3

- The area of a circle inscribed in an equilateral triangle is 154 cm^2 . Find the perimeter of the triangle.
- The radii of two circles are 8 cm and 6 cm respectively. Find the radius of the circle having its area equal to the sum of the areas of the two circles.

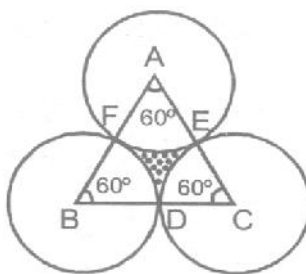
- Figure**, shows a sector of a circle, centre O, containing an angle θ° . Prove that :

(i) Perimeter of the shaded region is $r \left(\tan \theta + \sec \theta + \frac{\pi \theta}{180} - 1 \right)$

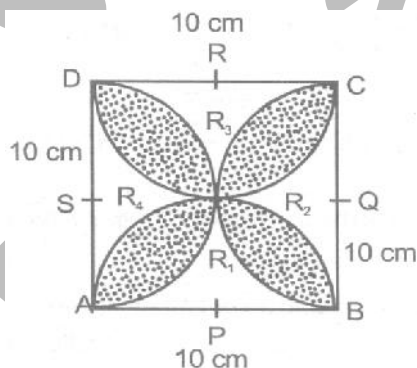
(ii) Area of the shaded region is $\frac{r^2}{2} \left(\tan \theta - \frac{\pi \theta}{180} \right)$



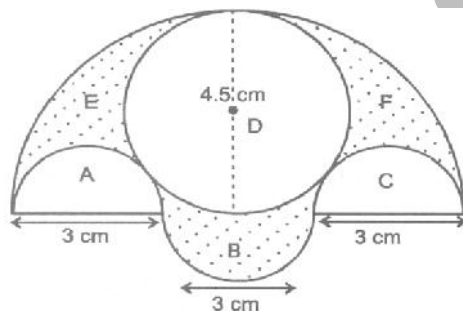
- The area of an equilateral triangle is $49\sqrt{3} \text{ cm}^2$. Taking each angular point as centre, a circle is described with radius equal to half the length of the side of the triangle as shown in **figure**. Find the area of the triangle not included in the circle.



- Find the area of the shaded region in **figure**, where ABCD is a square of side 10 cm. (use $\pi = 3.14$)



6. A hollow cone is cut by a plane parallel to the base and the upper portion is removed. If the curved surface of the remainder is $\frac{8}{9}$ of the curved surface of whole cone, find the ratio of the line - segment into which the cone's altitude is divided by the plane.
7. A right - angled triangle whose sides are 15 cm and 20 cm, is made to revolve about its hypotenuse. Find the volume and the surface area of the double cone so formed. [Take $\pi \cong 3.14$]
8. 50 persons took dip in a rectangular tank which is 80 m long and 50 m broad. What is the rise in the level of water in the tank, if the average displacement of water by a person is 0.04 m^3 ?
9. Water is flowing at the rate of 5 km per hour through a pipe of diameter 14 cm into a rectangular tank, which is 50 m long and 44 m wide. Find the time in which the level of water in the tank will rise by 7 cm.
10. A circus tent is cylindrical to a height of 3 m and conical above it. If its base radius is 52.5 m and slant height of the conical portion is 53 m, find the area of the canvas needed to make the tent.
11. The diameters external and internal surfaces of a hollow spherical shell are 10 cm and 6 cm respectively. If it is melted and recast into a solid cylinder of length of $2\frac{2}{3}$ cm, find the diameter of the cylinder.
12. A cylindrical container of radius 6 cm and height 15 cm is filled with ice-cream. The whole ice-cream has to be distributed to 10 children in equal cones with hemispherical tops. If the height of the conical portion is four times the radius of its base, find the radius of the ice-cream cone.
13. A hemi-spherical depression is cut out from one face of the cubical wooden block such that the diameter ℓ of the hemisphere is equal to the edge of the cube., Determine the surface area of the remaining solid.
14. In **figure** there are three semicircles, A,B and C having diameter 3 cm each, and another semicircle E having a circle D with diameter 4.5 cm are shown. Calculate.
 (i) the area of the shaded region
 (ii) the cost of painting the shaded region of the 25 paise per cm^2 , to the nearest rupee.



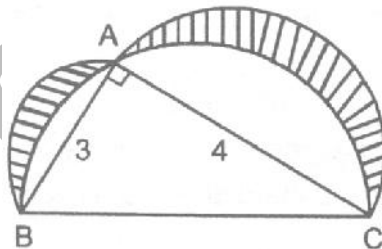
15. The height of a cone is 30 cm. A small cone is cut off at the top by a plane parallel to the base. If its volume be $\frac{1}{27}$ of the volume of the given cone, at what above the base is the section made ?
16. A solid cylinder of diameter 15 cm and height 15 cm is melted and recast into 12 toys in the shape of a right circular cone mounted on a hemisphere. Find the radius of the hemisphere and the total height of the toy if height of the conical part is 3 times its radius. [CBSE - 2005]
17. If the radius of the ends of bucket, 45 cm high are 28 cm and 7 cm, determine the capacity and total surface area of the bucket. [CBSE - 2006]

18. A tent is in the form of cylinder of diameter 4.2 m and height 4 m, surmounted by a cone of equal base and height 2.8 m. Find the capacity of the tent and the cost of canvas for making the tent at Rs. 100 per sq. m. ?
[CBSE - 2006]

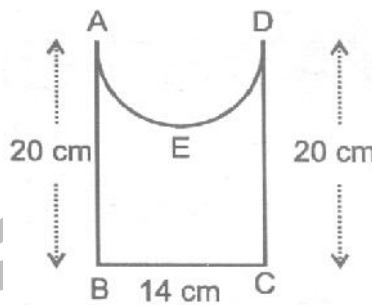
19. Water flows out through a circular pipe whose internal radius is 1 cm, at the rate of 80 cm/second into an empty cylindrical tank, the radius of whose base is 40 cm. By how much will the level of water rise in the tank in half an hour ?
[CBSE - 2007]

20. A hemispherical bowl of internal radius 36 cm is full of liquid. The liquid is to be filled into cylindrical shaped small bottles each of diameter 3 cm and height 6 cm. How many bottles are need to empty the bowl ?
[CBSE - 2007]

21. In figure ABC is a right - angled triangle right-angled at A. Semicircles are drawn on AB, AC and BC as diameters. Find the area of the shaded region.
[CBSE - 2008]



22. Find the perimetre of figure , where \widehat{AED} is a semi-circle and ABCD is a rectangle. [CBSE - 2008]



23. A tent consists of a frustum of a cone, surmounted by a cone. If the diameters of the upper and lower circular ends of the frustum be 14 m and 26 m respectively, the height of the frustum be 8 m and the slant height of the surmounted conical portion be 12 m, find the area of canvas required to make the tent. (Assume that the radii of the upper circular end of the frustum and the base of surmounted conical portion are equal)
[CBSE - 2008]