SUB: MATHEMATICS CLASS: X

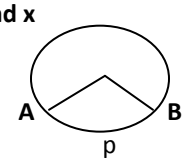
TOPIC: AREAS RELATED TO CIRCLES

1) A bicycle wheel makes 5000 revolution in moving 11 km. find the diameter of the wheel (d = 70 cm)

2) The radius of the wheel of a bus is 70cm, how many revolutions per minute must a wheel make in order to move at a speed of 66 km/h (250)

3) A wheel has diameter 84cm. Find how many complete revolutions must it make to cover 792 metres (300)

4) In the figure o is the centre of a circle. The area of sector OAPB is 5/18 of the area of the circle. Find x (100˚)



5) Area of a sector of a circle is 1/6 to the area of circle. Find the degree measure of its minor arc (60˚)

6) Area of a sector of a circle of radius 14cm is 154 cm^2 . Find the length of the corresponding arc of the sector (22 cm)

7) If the diameter of a semi circle protractor is 14 cm. Find its perimeter (36cm)

8) The circumference of a circle A is 132cm. It is equal to the sum of the circumference of two circles B & C, the radius of the circle B is 14cm. Find the radius of circle C. (r = 7 cm)

9) The area of quadrant is 154sq cm. Find its perimeter. (50 cm)

10) Two circles touch externally. The sum of their areas is 130π sq.cm and the distance between their centres is 14cm. Find the radii of the Circles (11cm ,3cm)

11) Find the area of a quadrant of a circle whose circumference is 44cm ($38.5cm^2$)

12) The perimeter of a sheet of paper in the shape of a quadrant of a circle is 75 cm. Find its area (346.5 sqcm)

13) If the perimeter of the protractor is 72cm, calculate its area ($308cm^2$)

14) A circular disc of 6cm radius is divided into 3 sectors with central angles 120˚, 150˚and 90˚.Find the ratio of the areas of 3 Sectors (4: 5: 3)

15) The difference between circumferences and diameter of a circle is 105 cm. Find the radius of the circle (24.5 cm)

16) Find the area of a major sector of a circle of diameter 42 cm and central angle is 60˚ ($1155cm^2$)

17) If the area and circumference of a circle are numerically equal, then find the radius of the circle (2cm)

18) The length of a rope by which a cow is tethered is increased from 16m to 23m. How much additional area can the cow graze? Now (π =22/7) ($2.38 Θm^2$)

19) What will be the increase in area of circle if its radius is increased by 40% (96%)

20) An arc of a circle is of length 5π cm and the sector it bounds has an area of 20π cm^2 . Find the radius of the circle (8cm)

21) The circumference of a circle exceeds the diameter by 16.8cm. Find the radius of circle (3.92cm)

22) The area enclosed between two concentric circles is 770 sq cm. If the radius of outer circle is 21cm. Find the radius of the inner circle. (14 cm)

23) The length of the minute hand of a clock is 7cm. How much area does it sweep in 20minutes ($154/3 cm^2$)

24) The perimeter of a sector of a circle of radius 5.2cm is 16.4cm.Find the area of sector ($15.6cm^2$)

25) Given a circle of radius 9cm, and the length of the chord AB of a circle is 9√3 cm, find the area of the sector formed by arc AB. ($84. 85 cm^2$)

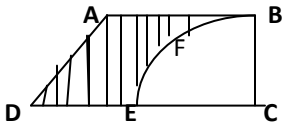
26) **Length of minor arc of a circle of radius 10 cm is 14cm. Find the area of minor sector of a circle. ($70cm^2$)**

27) A chord 10 cm long is drawn in a circle of radius V50 cm. Find the area of minor segment ($14. 285 cm^2$)

28) A chord AB of a circle of radius 14cm makes a right angle at the centre of the circle. Find the area of the minor segment. (π = 22/7) ($56 cm^2$)

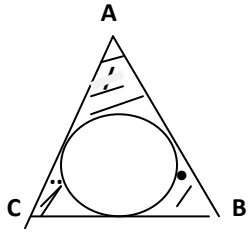
29) A chord of a circle of radius 14cm subtends an angle of 120˚ at the centre Find the area of the corresponding minor segment of The circle (π = 22/7, √3 = 1.73) ($120.56 cm^2$)

30) From a thin metallic piece, in the shape of a trapezium ABCD in which AB ll CD and ∟BCD = 90°, a quarter circle BFEC is removed. Given AB = BC = 3.5 cm and DE = 2cm, calculate the area of the remaining (shaded) part of the metal sheet (π = 22/7)



($6.125 cm^2$)

31) In fig , ABC is right triangle right angled at A. Find the area of the shaded region if AB = 6cm, BC = 10cm and 0 is the centre of the in Circle 0f ΔABC (Take π = 3.14)



($11.44\ cm^2$)

32) Find the perimeter of the shaded region in the given figure **(132 cm)**

33) If the area of a circle is numerically equal to twice its circumference, then the diameter of the circle is

a) 4 units **b) π units** **c) 8 units** **d) 2units**

34) The area of a circle to the sum of areas of two circles of radii 5 cm and 12 cm is equal to

a) 60 π **b) 15π** **c) 13π** **d) 169 π**

35) The perimeter of a quadrant of radius r is

a) πr/2 **b) 2πr** **c) 1/2r(π + 4)** **d) none of these**

36) The area of sector of angle p of a circle with radius 2r is

a) $\frac{p \times 2\pi r}{180}$ **b) $\frac{p \times \pi r^2}{90}$** **c) $\frac{p \times \pi r^2}{180}$** **d) none of these**

37) The area of the region enclosed between two concentric circles of radii 8 cm and 4 cm is

a) $48\ cm^2$ **b) $80\ cm^2$** **c) $48\pi\ cm^2$** **d) $80\pi\ cm^2$**

38) The radii of two circles are 4 cm and 3 cm respectively. The diameter of the circle having area equal to the sum of the areas of The two circles is

a)5 cm **b) 7 cm** **c) 10 cm** **d) 14 cm**

39) If an arc makes an angle of 72^o at the centre of a circle of radius 10 cm, then its length is :

a) 4 π cm **b) 6 π cm** **c) 7 π cm** **d) 8 π cm**

SUB: MATHEMATICS CLASS: X

TOPIC: SURFACE AREAS AND VOLUMES

1) A well of a diameter 3m is 14m deep dug the earth taken out of its spread evenly all around it to form an embankment of width 4m. Find the height of the embankment (1.125m)

2) The radius of the base and the height of a right circular cylinder are in the ratio 2: 3 and its volume is 1617 cu. Cm. Find the Curved surface area Of the cylinder ($\pi = 22/7$) ($462cm^2$)

3) A solid cylinder of diameter 12 cm and height 15 cm is melted and recast into toys with the shape of a right circular cone mounted on a hemisphere of radius 3cm, if the height of the toy is 12 cm, find the number of toys (12)

4) A farmer connects a pipe of internal diameter 20cm from a canal into a cylindrical tank in the field which is 10m in diameter and 2 meter deep? If water flows through the pipe at the rate of 6km per hour. In how much time the tank will be filled (5/6hrs)

5) A rocket in the form of a circular cylinder closed at the lower end. The diameter and height of the cylinder is 6m and 12m. The Cylindrical portion is Surmounted by a cone of the same radius that of cylinder, the slant height of the conical portion is 5cm. Find its total surface area and volume

6) A cylindrical pipe has inner diameter of 7cm. Water is flowing through it at 192.5 liters per minute. Find the speed of the flow of water in km/hr. ($301.44 cm^2$, $376/8cm^3$)

7) A solid is in the form of a cylinder with hemispherical ends. The total height of the solid is 19cm and the diameter of the Cylinder is 7 cm. Find the total surface area of a solid. ($418cm^2$)

8) A wooden article was made by scooping out a hemisphere of radius 7cm, from each end of a solid cylinder of height 10cm and diameter 14cm. Find The total surface area of the article (use ∏ = 22/7) ($1056cm^2$)

9) The sum of the radius of the base and height of a solid cylinder is 37cm. If the total surface area of the solid cylinder is 1628sqcm. Find the volume of the cylinder. ($4620cm^3$)

10) A cube and cuboids have the same volume, the dimension of the cuboid are in the ratio 1:2:4. If the difference between the Cost of polishing the cuboid and the cube at the rate of Rs 5 per sq m is Rs 80. Find their volumes

11) Three cubes of a metal whose edges are in the ratio 3: 4: 5 are melted and converted into a single cube whose diagonal is $12\sqrt{3}$. Find the edges of three cubes (6, 8, 10)

12) Three cubes of each side 5 cm are joined end to end. Find the surface area of the resulting cuboids ($350 cm^2$)

13) The surface area of a sphere is 616 cm^2. Find its radius (7 cm)

14 A path of 7m width runs around outside a circular park whose radius 18m. Find the area of path ($946cm^2$)

15) How many spherical lead shots each 4.2cm in diameter can be obtained from a rectangular solid of Lead with dimensions 66cm, 42cm and 21cm. (1500)

16) A solid right circular cone of diameter of 14cm and height 8 cm is melted to form a hollow sphere. If the external diameter of the sphere is 10cm. Find its internal diameter. (6cm)

17) A cone of base radius 20cm is divided into two parts by drawing a plane through the mid point of its Axis parallel to its base. Find the ratio of the Volume of the two parts. (1:7)

18) 21 Glass spheres each of radius 2cm are packed in a cuboidal box of internal dimensions 16cmx8cmx8cm and the box is filled with water. Find the volume of water filled in the box ($320cm^3$)

19) The radii of the internal and external surfaces of a metallic spherical shell are 3 cm and 5 cm reactively. It is melted and recast into a solid right circular cylinder of height 10 ⅔ cm. Find the diameter of the base of the cylinder (7cm)

20) A spherical copper shell, of external diameter 18cm, is melted and recast into a solid cone of base radius 14cm an Height 4 3/7cm Find the inner diameter of the shell (16cm)

21) A hollow sphere of internal and external diameters 4cm and 8cm respectively is melted to form a cone of base diameter 8cm. Find the height and the slant height of the cone (14cm, $2\sqrt{53}$cm)

22) The surface area of the sphere and cube are numerically equal. Prove that the volumes are in the ratio $\sqrt{6} : \sqrt{\pi}$

23) A bucket is in the form of a frustum of a cone with a capacity of 12308.8 cucm. The radii of the top and Bottom are 20cm and 12cm. Find the height of the bucket (15cm)

24) The radii of the circular ends of a bucket of height 15 cm are 14 cm and r cm(r <14 cm). If the volume of bucket is $5390cm^3$, then find the value r. (r = 7 cm)

25) The slant height of a frustum of a cone is 5 cm. If the difference between the radii of its two circular ends Is 4 cm, write the height of the frustum (3 cm)

26)The slant height of a frustum of a cone is 4 cm and the circumferences of its circular ends are 18cm and 6 cm. Find curved surface area of the Frustum. ($48cm^2$)

27) A bucket made up of a metal sheet is in the form of a frustum of a cone of high 16cm with diameter of its lower and upper end are 16cm and 40cm Find the volume of the bucket. ($10449.92cm^3$)

28) A tent is made in the form of a frustum of cone surmounted by another cone as shown in the figure. The diameters of the Frustum is 24m And 8m and the height of the frustum is 15m. If the total height of the tent is 18m, find the Quantity of Canvas required. Find the cost at Rs 7 per sqm (Rs 6423)

29) An open metal bucket is in the shape of a frustum of a cone of height 21 cm with radii of its lower and upper ends as 10 cm and 20 cm Respectively . Find the cost of milk which can completely fill the bucket at Rs 30 per litre (15.4 litre, Rs 462)

30) A cylinder and a cone are of same base radius and of same height. Find the ratio of the volume of cylinder to that of the cone (3:1)

31) The radii of the circular ends of a solid frustum of a cone are 18 cm and 12 cm and its height is 8 cm. Find its total Surface area

32) Total surface area of a cube is 216 cm^2, its volume is

a) 216 cm^3 b) 144 cm^3 c) 196 cm^3 d) 212 cm^3

33) 33) The ratio of the total surface area of a solid hemisphere to the square of its radius

a) 2π : 1 b) 3π : 1 c) 4π: 1 d) 1 : 4π

34) The radii of the circular ends of a bucket of height 40 cm are 24 cm and 25 cm. The slant height of the bucket

a) 51 cm b) 49 cm c) 43 cm d) 41 cm

35) Two cubes have their volume in the ratio 1 : 64. What is the ratio of their surface areas

a) 1 : 4 b) 1 : 16 c) 1 : 2 d) 4 : 1

36) The ratio of volume of a cone and a cylinder of equal diameter and equal height is

a) 3 : 1 b) 1 : 3 c) 1 : 2 d) 2 : 1

37) The perimeter of a square circumscribing a circle of radius a cm is

a) 8 a b) 4 a c) 2 a d) 16 a

38) The radius of the largest right circular cone that can be cut out from a cube of edge 4.2cm is

a) 4.2 cm b) 2.1 cm c) 8 .1 cm d) 1.05 cm