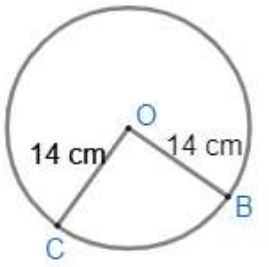
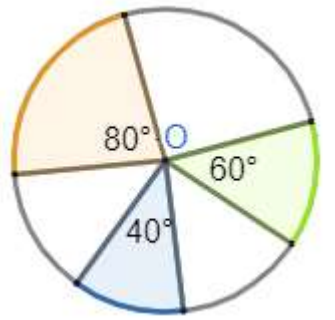
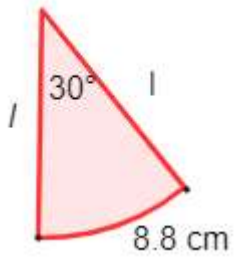
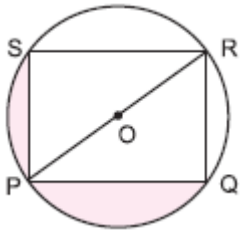
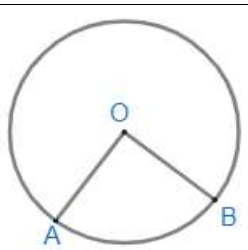
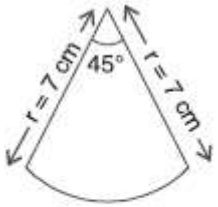
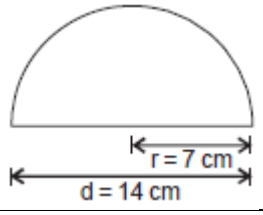
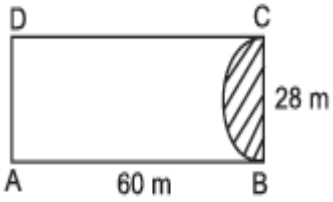
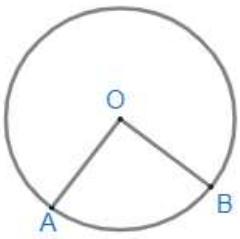
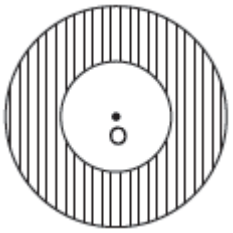
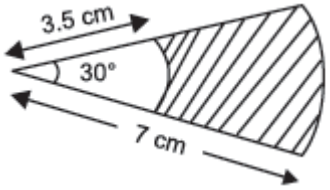
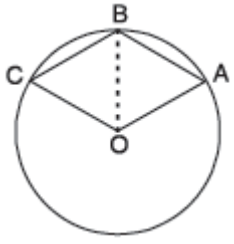
	AREA RELATED TO CIRCLES CLASS X 2025-26
1	A chord of a circle of radius 14 cm subtends a right angle at the centre. What is the area of the minor sector? $(use\ \pi = \frac{22}{7})$ A) $144\ cm^2$ B) $154\ cm^2$ C) $256\ cm^2$ D) $145\ cm^2$
	Area of the sector = $\frac{\pi r^2 \theta}{360} = \frac{1}{4} \times \frac{22}{7} \times 14 \times 14$ = 154 cm^2 
2	A bicycle wheel makes 5000 revolutions in moving 11 km. Find the diameter of the wheel $(use\ \pi = \frac{22}{7})$ A) $35\ cm$ B) $100\ cm$ C) $70\ cm$ D) $140cm$
	ANS: Distance covered in 5000 revolutions = 11 km Distance covered in 1 revolution = $\frac{11000}{5000}\ m = \frac{11}{5}\ m$ Distance covered in 1 revolution = circumference of the wheel $2\pi r = 2 \times \frac{22}{7} \times r = \frac{11}{5}$ $r = \frac{11}{5} \times 7 \times \frac{1}{2\times 22} = \frac{7}{20}\ m$ diameter of the wheel = $2r = 2 \times \frac{7}{20} \times 100\ cm$ = 70 cm
3	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 (in cm) is _____ A) 5 B) 7 C) 10 D) 14
	ANS: C) 10
4	The perimeter (in cm) of a square circumscribing a circle of radius a cm, is _____ A) 8 a B) 4 a C) 2 a D) 16 a
	ANS: A) Side of a square circumscribing a circle of radius a cm = diameter of circle = 2a cm ∴ Perimeter of the square = 4 × 2a = 8a cm
5	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) 2 units
	ANS: C) π $r^2 = 2\pi r \times 2 \Rightarrow r = 4 \Rightarrow 2r = 8$ units
6	If the circumference of a circle is 352 metres, then its area in square metres is____ A) 5986 B) 6589 C) 7952 D) 9856
	D) 9856
7	The diameter of a wheel is 1.26 m. The distance travelled in 500 revolutions is A) 2670 m B) 2880 m C) 1980 m D) 1596 m
	C) 1980 m
8	If the circumference of a circle and the perimeter of a square are equal, then (a) area of the circle = area of the square (b) area of the circle > area of the square (c) area of the circle < area of the square (d) nothing definite can be said about the relation between the areas of the circle and square.
	(b) area of the circle > area of the square

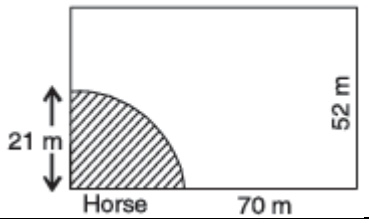
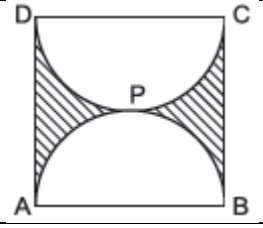
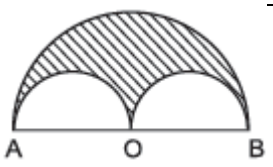
	(*b*) Let circumference of a circle = C $2\pi r = C$ $\Rightarrow \quad r = \frac{C}{2\pi}$ Perimeter of a square = C $\Rightarrow \quad 4a = C$ $\Rightarrow \quad a = \frac{C}{4}$ $\frac{\text{Area of the circle}}{\text{Area of the square}} = \frac{\pi r^2}{a^2} = \frac{\pi\left(\frac{C}{2\pi}\right)^2}{\left(\frac{C}{4}\right)^2}$ $= \frac{\pi \times C^2}{4\pi^2} \times \frac{16}{C^2} = \frac{4}{\pi} = \frac{28}{22} = \frac{14}{11}.$
9	In the given figure, three sectors of a circle of radius 7 cm, making angles of 60°, 80° and 40° at the centre are shaded. The area of the shaded region (in cm^2) is ____ A) 77 B) 154 C) 44 D) 22 
	ANS: A) Area of shaded region = area of sector with angle (60° + 80° + 40°) = $\frac{180}{360} \times \frac{22}{7} \times 7 \times 7 = 77\text{cm}^2$
10	If the difference between the circumference and the radius of of a circle is 37 cm, then using $\pi = \frac{22}{7}$ the circumference (in cm) of the circle is: A) 154 B) 44 C) 14 D) 7
	B) 44
11	If π is taken as $\frac{22}{7}$, the distance (in metres) covered by a wheel of diameter 35 cm, in one revolution, is A) 2.2 B) 1.1 C) 9.625 D) 96.25
	B) 1.1
12	If the circumferences of two circles are in the ratio 4 : 9, then the ratio in their area is __ A) 9 : 4 B) 4 : 9 C) 2 : 3 D) 16 : 81
	D) 16 : 81
13	A circular wire of radius 42 cm is cut and bent into the form of a rectangle whose sides are in the ratio of 6 : 5. The smaller side of the rectangle is _____ A) 30 cm B) 60 cm C) 70 cm D) 80 cm
	ANS: (b) Length of wire = 2 π r = 2 π × 42 = 2 × $\frac{22}{7}$ × 42 = 264 cm Let sides of rectangle are 6x and 5x ⇒ 2(6x + 5x) = 264 ⇒ 11x = 132 ⇒ x = 12 ∴ Smaller side = 12 × 5 = 60 cm

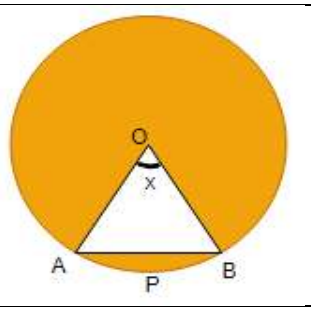
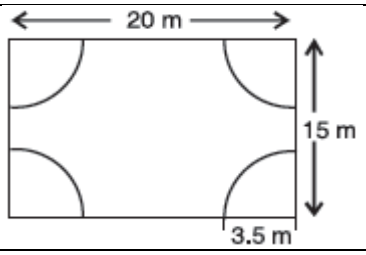
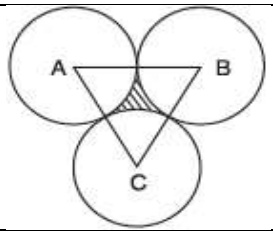
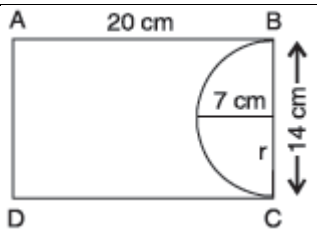
14	If the wheel of an engine of a train is $4\frac{2}{7}$ m in circumference makes seven revolutions in 4 seconds, then the speed of the train is _____ km/h. A) 30 km/h B) 27 km/h C) 50 km/h D) 20 km/h	
	ANS: 27 km/h Speed of the train = $7 \times \frac{30}{7} \times \frac{60}{4} \times \frac{60}{1000}$ = 27 km/h	
15	The area of the largest possible square inscribed in a circle of unit radius (in sq. units) is _____. A) 2 sq. units B) 3 sq. units C) $\sqrt{2}$ sq. units D) $\sqrt{3}$ units	
	Diameter of circle = 2 units ∴ Diagonal of the square = 2 units Side of the square = $\sqrt{2}$ units ∴ Area of the square = $(\sqrt{2})^2$ = 2 sq. units	
16	A pendulum swings through an angle of 30° and describes an arc 8.8 cm in length. Find the length of pendulum. ($use\ \pi = \frac{22}{7}$) A) 15.8 B) 8.8 C) 16 D) 16.8	
	ANS: Let length of the pendulum be *l* cm. Length of the arc = 8.8 cm $= \frac{2\pi r \theta}{360} = 8.8\ cm$ $= \frac{\pi r \times 30}{180} = 8.8\ cm$ $l = \frac{52.8 \times 7}{22} =$ 16.8	
17	In the figure, PQRS is a square and O is centre of the circle. If RS = $10\sqrt{2}$, then area of shaded region is___ A) 90 π – 90 B) 80π – 80 C) 50 π – 100 D) 100 π – 100	
	ANS: (c) Diagonal of square = $\sqrt{2} \times 10\sqrt{2} = 20$ units ∴ Diameter of circle = 20 units Area of circle = $\pi \times (10)^2 = 100\pi$ sq.units Area of square = $(10\sqrt{2})^2 = 200$ sq. units Area of circle not included in the square = (100 π – 200) sq.units ∴ Area of shaded portion = $\frac{1}{2}$ (100 π − 200g) = 50 π – 100.	
18	The area of a quadrant of a circle whose circumference is 44 cm is _____. A) 77 cm^2 B) $\frac{77}{2}\ cm^2$ C) 35 cm^2 D) 24cm^2	
	ANS: 38.5 cm^2 Hint: 2πr = 44 r = 7 cm Area of quadrant = $\frac{1}{4}\pi r^2 = \frac{1}{4} \times \frac{22}{7} \times 7 \times 7 = \frac{77}{2}$ cm^2	
19	An arc of a circle is of length 5π cm and the sector it bounds has an area of 20 π cm^2. Find the radius of the circle. A) 8 cm B) 16 cm C) 10 cm D) 12 cm	

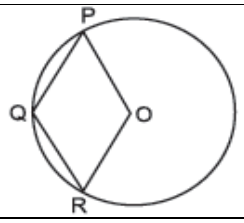
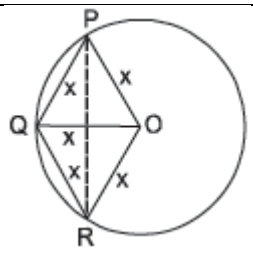
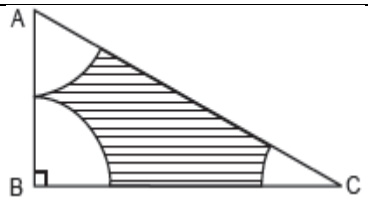
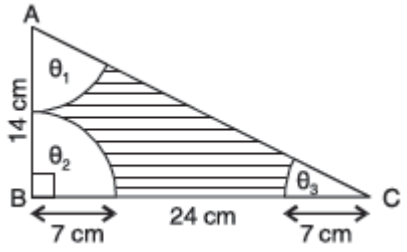
	ANS: Length of arc AB = 5π cm Let $\angle$ AOB = θ $l = \frac{2\pi r\,\theta}{360} = 5\pi$ $5\pi = \frac{\pi r\ \theta}{180} \Rightarrow \frac{900}{r} = \theta$ Area of the sector = $\frac{\pi r^2\theta}{360} = 20\pi$ $20\pi = \frac{\frac{900}{r}}{360} \times \pi r^2 \Rightarrow 20 = \frac{900}{360} r$ $r = 8\ cm$	
20	What is the perimeter of a sector of angle 45° of a circle with radius 7 cm. ($use\ \ \pi = \frac{22}{7}$) A) 39 cm B) 19.5 cm C) 20 cm D) 38 cm	
	ANS: $l = \frac{2\pi r\,\theta}{360} = \frac{\pi r\ \theta}{180}$ $= \frac{45}{180} \times \frac{22}{7} \times 7 = \frac{11}{2}$ $P = r + r + l = 7 + 7 + \frac{11}{2} = \frac{39}{2} = 19.5cm$	 Perimeter of the sector
21	If the diameter of a semicircular protractor is 14 cm, then find its perimeter. [Use $\pi = \frac{22}{7}$] A) 39 cm B) 36 cm C) 22 cm D) 14 cm	
	ANS: 36 cm d = 14 cm , r = 7 cm Perimeter = $\frac{1}{2}\pi r + d$ = (22 + 14) cm = 36 cm	
22	Find the area of a sector of angle P (in degrees) of a circle with radius R A) $\frac{\pi RP}{360}$ B) $\frac{\pi R^2P}{180}$ C) $\frac{\pi R^2P}{360}$ D) $\frac{\pi RP}{180}$	
	ANS: $\frac{\pi R^2P}{360}$	
23	Find the area of a sector of a circle with radius 6 cm if angle of sector is 60°. A) $\frac{132}{7}\ cm^2$ B) 132 cm^2 C) $\frac{142}{7}\ cm^2$ D) $\frac{152}{7}\ cm^2$	
	ANS : $\frac{132}{7}\ cm^2$ r = 6 cm, θ = angle of the sector = 60° Area of the sector = $\frac{60}{360} \times \frac{22}{7} \times 36 = \frac{22}{7} \times 6 = \frac{132}{7}\ cm^2$	
24	If the perimeter of a semicircular protractor is 66 cm, find the radius of the protractor A) $\frac{77}{3}\ cm$ B) 88 cm C) 77 cm D) $\frac{77}{6}\ cm$	
	ANS: $\frac{77}{6}\ cm$ $P = \frac{1}{2} \times 2\pi r + 2r$ $66 = \pi r + 2r$ $66 = \left(\frac{22}{7} + 2\right) r = \frac{22+14}{7}\ r = \frac{36}{7} r$ $r = \frac{77}{6}$	
25	What is the ratio of the areas of a circle and an equilateral triangle whose diameter and a side are	

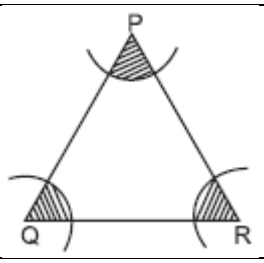
	respectively equal? A) $\frac{2\pi}{\sqrt{3}}$ B) $\frac{1}{\sqrt{3}}$ C) $\frac{\pi}{\sqrt{3}}$ D) $\frac{2}{\sqrt{3}}$
	ANS: Let radius of circle be r cm Its area = πr^2 sq units Side of an equilateral triangle = diameter of the circle = $2r$ Area of the equilateral triangle = $\frac{\sqrt{3}}{4} \times (2r)^2 = \frac{\sqrt{3}}{4} \times 4(r)^2$ $\frac{Area\ of\ the\ Circle}{Area\ of\ the\ Triangle} = \frac{\pi r^2}{\sqrt{3}\, r^2} = \frac{\pi}{\sqrt{3}}$
26	The minute hand of a clock is $\sqrt{21}$ cm long. Find the area described by the minute hand on the face of the clock between 7.00 and 7.05 am A) 5.5 cm^2 B) 11 cm^2 C) 5 cm^2 D) 12 cm^2
	ANS: 5.5 cm^2 Time taken by minute hand to make one circle = 60 minutes. Angle described in 60 minutes = 360° Angle described in 5 minutes [i.e., from 7.00 a.m. to 7.05 a.m.] = 30° Radius of circle = length of minute hand = $\sqrt{21}$ cm Area swept = $\frac{\pi r^2 \theta}{360} = \frac{30}{360} \times \frac{22}{7} \times \sqrt{21} \times \sqrt{21} = \frac{1}{12} \times \frac{22}{7} \times 21 = \frac{11}{2} = 5.5\ cm^2$
27	A plot is in the form of a rectangle ABCD having semicircle on BC as shown in the figure. The semicircle portion is grassy while the remaining plot is without grass. Find the area of the plot without grass where AB = 60 m and BC = 28 m. [Use $\pi = \frac{22}{7}$]  A) $1572m^2$ B) $1370m^2$ C) $1472m^2$ D) $1372m^2$
	ANS: $11372m^2$ Length of the rectangle = AB = 60 m Breadth of the rectangle = BC = 28 m Diameter of the shaded portion = 28 m Radius of the shaded portion = $\frac{28}{2}$ = 14 m Grass portion = shaded portion Area of the plot without grass = area of the rectangle ABCD – area of the shaded portion = $\left[60 \times 28 - \frac{1}{2} \times \frac{22}{7} \times 14^2\right] = 1680 - 308 = 1372m^2$
28	What is the angle subtended at the centre of a circle of radius 6 cm by an arc of length 6π cm A) 60° B) 90° C) 180° D) 45°
	ANS: $l = 6\pi$, $r = 6$ cm, θ = ? $l = \frac{2\pi r\, \theta}{360} = \frac{\pi r\ \theta}{180} \Rightarrow 6\pi = \frac{6\pi\theta}{180} \Rightarrow \theta = 180°$
29	If the circumference is numerically equal to 3 times the area of a circle, then find the radius of the circle. A) $\frac{3}{2}\ units$ B) $\frac{2}{3}\ units$ C) 3 $units$ D) 2 $units$
	ANS: $2\pi r = 3\pi r^2$ $\Rightarrow r = \frac{2}{3}$ units

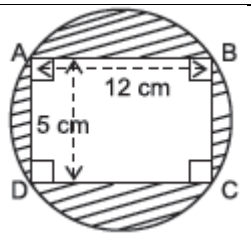
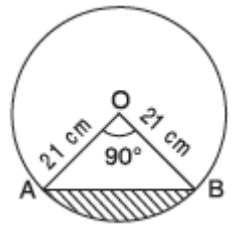
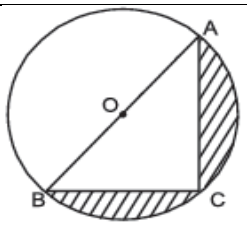
30	In the given figure, the shape of the top of a table is that a sector of a circle with centre O and ∠ AOB = 90°. If AO = OB = 42 cm, then find the perimeter of the top of the table . ($use\ \pi = \frac{22}{7}$) A) 198 cm B) 84 cm C) 284 cm D) 42 cm	
	ANS: : Perimeter = length of major arc + 2r = $\frac{270}{360} \times 2 \times \pi r + 2r = \frac{3}{2} \times \frac{22}{7} \times 42 + 2 \times 42$ ⇒ 198 + 84 = 284 cm	
31	In the given figure, the area of the shaded region between two concentric circles is 286 cm^2. If the difference of the radii of the two circles is 7 cm, find the sum of their radii . ($use\ \pi = \frac{22}{7}$) A) 12 cm B) 13 cm C) 10 cm D) 14 cm	
	ANS: Let radius of outer circle = R_1 and radius of Inner circle = R_2 A.T.Q. $\pi R_1^2 - \pi R_2^2 = 286$ ⇒ $\pi (R_1^2 - R_2^2) = 286$ ⇒ $\frac{22}{7} \times (R_1 - R_2)(R_1 + R_2) = 286$ ⇒ $\frac{22}{7} \times 7 \times (R_1 + R_2) = 286$ ⇒ $R_1 + R_2 = 13$ cm	
32	A wire is looped in the form of a circle of radius 28 cm. It is reverted into a square form. Determine the side of the square. A) 22 cm B) 30 cm C) 44 cm D) 176 cm	
	ANS: Radius of circle = 28 cm. Circumference of the circle = $2\pi r = 2 \times \frac{22}{7} \times 28 = 176$ Length of wire = 176 cm ⇒ Perimeter of square = 176 cm Side of square = $\frac{176}{4}$ = 44 cm	
33	In the given figure, sectors of two concentric circles of radii 7 cm and 3.5 cm are given. Find the area of the shaded region. A) $\frac{77}{8}\ cm^2$ B) $\frac{77}{16}\ cm^2$ C) $\frac{77}{2}\ cm^2$ D) $\frac{77}{4}\ cm^2$	
	ANS: $A = \frac{30}{360} \times \pi \times 7^2 - \frac{30}{360} \times \pi \times 3.5^2$ $A = \frac{30}{360} \times \pi \left[7^2 - \left(\frac{7}{2}\right)^2\right]$ $A = \frac{1}{12} \times \frac{22}{7} \times 49 \left(1 - \frac{1}{4}\right)$ $A = \frac{77}{8}\ cm^2$	
34	OABC is a rhombus whose three vertices A, B and C lie on a circle with centre O. If the radius of the circle is 10 cm, find the area of the rhombus. A) $50\sqrt{2}\ cm^2$ B) $50\ cm^2$ C) $25\sqrt{3}\ cm^2$ D) $50\sqrt{3}\ cm^2$	
	ANS: $50\sqrt{3}\ cm^2$ Join OB , Now OA = OB [Radii] Also OA = AB [Sides of rhombus] ∴ OAB is an equilateral triangle. Area of equilateral ΔOAB = $\frac{\sqrt{3}}{4} \times (side)^2 = \frac{\sqrt{3}}{4} \times 10^2$ = $25\sqrt{3}\ cm^2$	

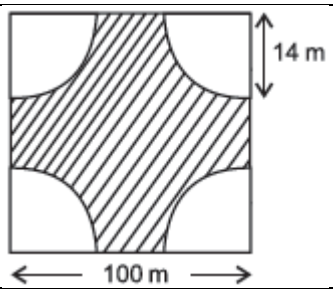
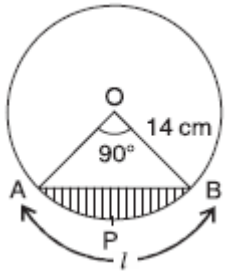
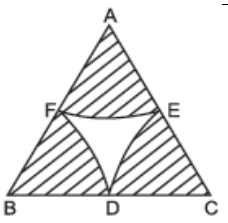
	∴ Area of rhombus = 2 × area of ΔOAB = 2 × 25 $\sqrt{3}\ cm^2$ = 50 $\sqrt{3}\ cm^2$	
35	A horse is placed for grazing inside a rectangular field 70 m by 52 m and is tethered to one corner by a rope 21 m long. On how much area can it graze? A) $356.5m^2$ B) $346.5m^2$ C) $300.5m^2$ D) $446.5m^2$	
	ANS: Area of the portion that horse can graze = area of the shaded portion. Shaded portion is a sector of radius 21 m = length of the rope Angle of this sector = angle of the corners of the rectangle = 90° Area of the shaded portion that horse can graze Area = $\frac{\pi r^2\theta}{360} = \frac{1}{4} \times \frac{22}{7} \times 21^2 = \frac{11}{2} \times\times 3 \times 21 = 346.5m^2$	
36	The diameter of a wheel of a bus is 90 cm which makes 315 revolutions per minute. Determine its speed in km/h. [Use $\pi = \frac{22}{7}$] A) 53.46 km/h B) 50.46 km/h C) 63.46 km/h D) 73.46 km/h	
	ANS: ANS: d = 90 cm, circumference = $\pi\ d$ = 90 π cm = Distance covered in 1 revolution Number of revolutions per minute = 315 ∴ Number of revolution per hour = 315 × 60 Distance covered in 1 hour = 90 π × 315 × 60 cm $90 \times \frac{22}{7} \times \frac{315\times60}{100000}\ km = \frac{9\times22\times45\times6}{1000} = 53.46\ km/h$ ∴ Speed of the bus = 53.46 km/h	
37	Circumferences of two circles are in the ratio 4:5. the ratio of their radius ____ A) 16: 25 B) 4: 5 C) 4: 7 D) 1: 2	
	ANS: B) 4: 5	
38	Find the perimeter of the shaded region in figure, if ABCD is a square of side 14 cm and APB and CPD are semicircles. [Use $\pi = \frac{22}{7}$] A) 70 cm B) 72cm C) 62cm D) 42cm	
	ANS: Perimeter = AD + BC + length of DPC + length of APB = $14 + 14 + \pi r + \pi r$ = $28 + 2 \times \frac{22}{7} \times \frac{14}{2} = 72cm$	
39	In given figure, a semicircle is drawn with O as centre and AB as diameter. Semicircles are drawn with AO and OB as diameters. If AB = 28 m, find the perimeter of the shaded region. [Use $\pi = \frac{22}{7}$] A) 88 m B) 77 m C) 66 m D) 80 m	
	ANS: Radius (r_1) = $\frac{28}{2} = 14\ m$ Diameter AO = 14 m Radius (r_2) = $\frac{14}{2}$ = 7 m radius (r_3) = 7 m Perimeter of the shaded region = $\pi\ r_1 + (\pi\ r_2 + \pi\ r_3) = \pi\ [r_1 + r_2 + r_3]$	

	$\frac{22}{7}[14+7+7] = \frac{22}{7} \times 28 = 88\,m$
40	In the figure, O is the centre of the circle. If the area of the sector OAPB is $\frac{5}{36}$ times the area of the circle, then the value of $x =$ _____ (A) 55° (B) 50 ° (C) 60° (D) 40 ° 
	ANS: (B) 50 °
41	A rectangular piece is 20 m long and 15 m wide. From its four corners, quadrants of radii 3.5 m have been cut. Find the area of the remaining part. A) 38.5 m^2 B) 261.5 m^2 C) 300 m^2 D) 251.5 m^2 
	ANS: Angle of each quadrant = 90° Radius of each quadrant = 3.5 m Area of each quadrant = $\frac{90}{360} \times \pi \times 3.5 \times 3.5$ $= \frac{1}{4}\pi \times 3.5 \times 3.5$ ∴ Area of the 4 quadrants $= 4 \times \frac{1}{4} \times \frac{22}{7} \times 3.5 \times 3.5 = 38.5\,m^2$ Area of the rectangle = 20 m × 15 m = 300 m^2 ∴ Area of the remaining portion = (300 – 38.5) m^2 = 261.5 m^2
42	Three circles are placed on a plane in such a way that each circle just touches the other two, each having a radius of 10 cm. Find the area of the region enclosed by them. A) 32 cm^2 B) 10 cm^2 C) 26 cm^2 D) 16 cm^2 
	ANS: ANS: AB = 10 + 10 = 20 cm, AC = 10 + 10 = 20 cm, BC = 10 + 10 = 20 cm. ∴ ABC is an equilateral triangle Area of region enclosed by them = area of ΔABC – area of 3 sectors $\frac{\sqrt{3}}{4} \times 20^2 - 3 \times \frac{60}{360} \times \frac{22}{7} \times 10^2 = 16\,cm^2$
43	A paper is in the form of a rectangle ABCD in which AB = 20 cm and BC = 14 cm. A semicircular portion with BC as diameter is cut off. Find the area of the remaining part. Use $\pi = \frac{22}{7}$ A) 103 cm^2 B) 200 cm^2 C) 303 cm^2 D) 203 cm^2 
	ANS: Length of the rectangle = 20 cm Breadth of the rectangle = 14 cm *d* of the semicircle = 14 cm *r* of the semicircle = 7 cm Area of the remaining portion = area of the rectangle ABCD – area of the semicircle

	$= AB \times BC - \frac{1}{2} \times \pi \times \left(\frac{BC}{2}\right)^2$ $= 20 \times 14 - \frac{1}{2} \times \frac{22}{7} \times \left(\frac{14}{2}\right)^2$ $\left(280 - \frac{11}{7} \times 49\right) = = 280 - 77 = 203\ cm^2$
44	In the given figure, OPQR is a rhombus, three of whose vertices lie on a circle with centre O. If the area of the rhombus is $32\sqrt{3}$ cm^2, find the radius of the circle A) 11 cm B) 8 cm C) 64 cm D) $8\sqrt{3}$ cm 
	 ANS: Side of the rhombus = radius of the circle OP = OQ = PQ = x = OR = QR ΔORQ and ΔOPQ are equilateral triangles Area of the equilateral triangle OPQ = $\frac{\sqrt{3}}{4} \times (side)^2 =$ Area of the equilateral ΔOPQ = $\frac{\sqrt{3}}{4} \times x^2$ Area of the rhombus = 2 ar (ΔOPQ) $= 2 \times \frac{\sqrt{3}}{4} \times x^2 = \frac{\sqrt{3}}{2} \times x^2 = 32\sqrt{3}$ $x^2 = 64$ cm^2 , $x = 8$ cm
45	The diameter of the wheel of a bus is 140 cm. How many revolutions per minute must the wheel make in order to keep a speed of 66 km/h?
	ANS: 250
46	The measure of the minor arc of a circle is 1/5 of the measure of the corresponding major arc. If the radius of the circle is 10.5 cm, find the area of the sector corresponding to the major arc. [Use $\pi = \frac{22}{7}$]
	ANS: 288.75 cm^2
47	In given figure, ABC is a triangle right-angled at B, with AB = 14 cm and BC = 24 cm. With the vertices A, B and C as centres, arcs are drawn each of radius 7 cm. Find the area of the shaded region. [Use $\pi = \frac{22}{7}$] 
	ANS : 91 cm^2 Area of shaded region = area of ΔABC – area of 3 sectors $= \frac{1}{2} \times 24 \times 14 - \frac{\pi r^2}{360^\circ} [\theta_1 + \theta_2 + \theta_3]$ $= 12 \times 14 - \frac{22}{7} \times \frac{7 \times 7}{360^\circ} \times 180^\circ$ = 168 – 77 = 91 cm^2 
48	The perimeter of a sector of a circle of radius 5.2 cm is 16.4 cm. Find the area of the sector.
	ANS: 15.6 cm^2
49	If the area of a circle is 154 cm^2 , then its perimeter is _____

	(A) 11 cm (B) 22 cm (C) 44 cm (D) 55 cm
50	A race track is in the form of a ring whose inner circumference is 352 m and the outer circumference is 396 m. Find the width of the track.
	ANS: Inner circumference = 352 m $2\pi r = 352 \Rightarrow r = \frac{352}{2\pi} = \frac{352\times7}{2\times22} = 56$ $\therefore$ r = = 56 m Outer circumference = 396 m $2\pi R = 396 \Rightarrow R = \frac{396}{2} \times \frac{7}{22} = 63$ R = = 63 m $\therefore$ Width of race track = 63 m – 56 m = 7 m.
51	A steel wire when bent in the form of a square encloses an area of 121 sq. cm. If the same wire is bent into the form of a circle, find the area of the circle
	ANS: Area of square = 121 sq. cm. Side of square = $\sqrt{121}$ = 11 cm Perimeter of square = 4 × side = 4 × 11 = 44 cm Length of wire = 44 cm. Now circumference of circle = 44 cm $2\pi r = 44$ $r = \frac{44\times7}{2\times22}$ = 7 cm Area of circle = π × $(7)^2 = \frac{22}{7} \times 7 \times 7$ cm^2 = 154 cm^2.
52	In figure arcs have been drawn with radii 14 cm each and with centres P, Q and R. Find the area of the shaded region 
	Area of sector on P = $\frac{\angle P}{360} \times \pi \times (14)^2$ Area of sector on Q = = $\frac{\angle Q}{360} \times \pi \times (14)^2$ Area of sector on R = = $\frac{\angle R}{360} \times \pi \times (14)^2$ Area of shaded region = adding area of all three sectors $= \frac{\angle P}{360} \times \pi \times (14)^2 + \frac{\angle Q}{360} \times \pi \times (14)^2 + \frac{\angle R}{360} \times \pi \times (14)^2$ $\pi \times (14)^2(\angle P + \angle Q + \angle R) = \pi \times \frac{196}{360} \times 180 = 308\ cm^2$
53	On a square cardboard sheet of area 784 cm^2, four congruent circular plates of maximum size are placed such that each circular plate touches the other two plates and each side of the square sheet is tangent to two circular plates. Find the area of the square sheet not covered by the circular plates.
	Let side of a square = a cm Area = 784 cm^2 A.T.Q. a^2 = 784 a = $\sqrt{784}$ = 28 cm  If two circles touch externally then centres of both circles and point of contact are in a same line. Sum of diameters of two circles = 28 cm diameter of one circle = 14 cm radius of one circle = 7 cm area of one circle = π $(7)^2 = \frac{22}{7} \times 7 \times 7$ = 154 cm^2

	Area of four circles = 4 × 154 = 616 cm^2 Area of square sheet not covered by the circular plates = 784 – 616 = 168 cm^2.	
54	In the given figure, find the area of the shaded region. [Use π = 3.14]	
	ANS: Diagonal BD = $\sqrt{DC^2 + BC^2}$ $= \sqrt{12^2 + 5^2}$ = 13 cm Diameter of circle = 13 cm Radius = $\frac{13}{2}$ cm = 6.5 cm Area of circle = πr^2 = 3.14 × $(6.5)^2$ = 3.14 × 42.25 = 132.665 cm^2 Area of rectangle ABCD = 5 × 12 = 60 cm^2 Area of shaded portion = 132.665 – 60 = 72.665 cm^2	
55	Find the area of the segment of a circle, if angle of the sector is 90° and the radius of the circle is 21 cm.	
	Area of the sector AOB = $\frac{\pi r^2 \theta}{360}$ $= \frac{1}{4} \times \frac{22}{7} \times 21 \times 21 = \frac{11 \times 3 \times 21}{2}$ = 346.5 cm^2 Area of the ΔAOB = $\frac{1}{2}$ × OA × OB = $\frac{1}{2}$ × 21 × 21 cm^2 = 220.5 cm^2 Area of the segment = area of the sector AOB – area of the ΔAOB = 346.5 – 220.5 cm^2 = 126 cm^2	
56	Find the area of the shaded region in figure, if AC = 24 cm, BC = 10 cm and O is the centre of the circle.	
	ANS: AB is diameter, AC = 24 cm, BC = 10 cm and ACB = 90° [Angle in semicircle] ∴ AB = $\sqrt{24^2 + 10^2} = \sqrt{576 + 100} = 26$ AB = 26 cm ∴ Area of shaded portion = area of semicircle – area of ΔACB. $\frac{1}{2} \pi 13^2 - \frac{1}{2} \times 24 \times 10 = \frac{1}{2} \times \frac{22}{7} \times 169 - 120$ = [265.57 – 120] cm^2 = 145.57 cm^2	

57	A square park has each side of 100 m. At each corner of the park, there is a flower bed in the form of a quadrant of radius 14 m as shown in the given figure. Find the area of the remaining part of the park. ($use\ \pi = \frac{22}{7}$)	
	ANS: Area of one quadrant = $\frac{1}{4}\ \pi\ r^2$ $\frac{1}{4} \times \frac{22}{7} \times 14 \times 14 = 154$ Area of remaining part of the park = area of square – area of four quadrants = $(100)^2 - 4 \times 154 = 10000 - 616 = 9384\ m^2$.	
58	The perimeter of a sector of a circle of radius 5.2 cm is 16.4 cm. Find the area of the sector.	
	ANS: 15.6 cm^2	
59	Find the area of the segment of a circle of radius 14 cm, if the length of the corresponding arc APB is 22 cm . Use $\pi = \frac{22}{7}$	
60	In figure, arcs are drawn by taking vertices A, B and C of an equilateral triangle of side 10 cm. To intersect the sides BC, CA and AB at their respective mid-points D, E and F. Find the area of the shaded region. [Use π = 3.14]. ANS: 39.25 cm^2	
	ANS: In equilateral triangle, each angle = 60° and radius of each sector $r = \frac{10}{2} = 5\ cm$ Area of shaded region = 3 × area of one sector $= 3\ \times \frac{\pi\ r^2\theta}{360} = 3 \times \frac{60}{360} \times \pi\ 5^2 = \frac{25\pi}{2}$ = 39.25 cm^2	

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