Ravi Maths Tuition
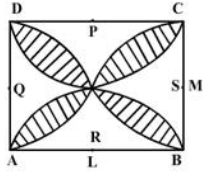
Areas Related to Circles

10th Standard

Maths

Multiple Choice Question   55 x 1 = 55

1) Tick the correct answer in the following:

   Area of a sector of angle P (in degrees) of a circle with radius R is

   (a) $\frac{P}{180^o} \times 2\pi R$ (b) $\frac{P}{180^o} \times \pi R^2$ (c) $\frac{P}{360^o} \times 2\pi R$ (d) $\frac{P}{720^o} \times 2\pi R^2$

2) If the perimeter and area of a circle are numerically equal, then the radius of the circle is

   (a) 2 units   (b) 7 units   (c) 4 units   (d) π units

3) If the area of a circle is equal to sum of the areas of two circles of diameters 10 cm and 24 cm, then the diameter of the larger circle (in cm) is

   (a) 34   (b) 17   (c) 26   (d) 14

4) The ratio of radii of two circles is in the ratio of 1:5. Calculate the ratio of their perimeters

   (a) 1:8   (b) 1:2   (c) 1:6   (d) 1:5

5) The area of a sector of a circle of radius 5 cm is 5 cm2. The angle contained by the sector will be

   (a) 90°   (b) 45°   (c) 72°   (d) 60°

6) The inner circumference of a circular track is 440m, and the track is 14m wide. The cost of levelling the track at 25 paise/m2 will be

   (a) Rs. 1250   (b) Rs. 1694   (c) Rs. 1684   (d) Rs. 1400

7) Find the circumference of the circle, whose area is 144 cm^2

   (a) 46 πcm   (b) 24 πcm   (c) 72 πcm   (d) 12 πcm

8) A pendulum swings through an angle of 300 and describes an arc 8.8cm in length. The length of the pendulum is

   (a) 17 cm   (b) 8.8 cm   (c) 15.8 cm   (d) 16.8 cm

9) From a circular sheet of paper with a radius 20 cm, four circles of radius 5 cm each are cut out. What is the ratio of the uncut to the cut portion?

   (a) 4:3   (b) 3:1   (c) 1:3   (d) 4:1

10) What is the area of a regular hexagon inscribed in a circle of radius r units?

    (a) $\frac{2}{\sqrt{3}}r^2$ sq. units   (b) $\frac{3\sqrt{3}}{2}r^2$ sq. units   (c) $2\sqrt{3}\ r^2$ sq. units   (d) $\frac{\sqrt{3}}{2}r^2$ sq. units

11) The sum of the diameters of two circles is 280 cm and the difference of their circumferences is 88 cm. Then the larger of the two radii is

    (a) 63 cm   (b) 44 cm   (c) 77 cm   (d) cannot be determined

12) ABCD is a square of side 10 cm. The area of the shaded region will be

    (a) 80 cm^2 (b) 57 cm^2 (c) 75 cm^2 (d) 60 cm^2

13) The radius of a circle if its perimeter and area are numerically equal is

    (a) 2 units   (b) 8 units   (c) 5 units   (d) 4 units

14) In the given figure, ABCPA is a quadrant of a circle of radius 14cm. With AC as diameter, a semi-circle is drawn. Then the area of the shaded region will be
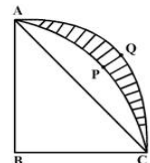
(a) 72 cm^2 (b) 98 cm^2 (c) 102 cm^2 (d) 35 cm^2

15) We have a circle with centre O and two radii OA and OB. If the perimeter of minor sector OAB is 55 cm, and the radius of the circle is 7cm, the value of ∠AOB is

(a) 450º (b) 45º (c) 180º (d) 110º

16) A wire is bent in the form of a circle of radius 28 cm. It is rebent to form a square. The length of the side of the square will be

(a) 30 cm (b) 88 cm (c) 44 cm (d) 40 cm

17) The area swept by the minute hand of a circular clock in 5 minutes forms a

(a) Circle (b) Segment (c) Cone (d) Sector

18) A garden roller has a circumference of 4 m. The number of revolutions it makes in moving 40 metres are:

(a) 10 (b) 12 (c) 8 (d) 16

19) What is the area of the square inscribed in a circle with a circumference of 18.84 cm?

(a) 20 cm^2 (b) 15 cm^2 (c) 16 cm^2 (d) 18 cm^2

20) The area of a quadrant of a circle whose circumference is 22 cm is:

(a) 71/8 cm^2 (b) 77/8 cm^2 (c) 75/8 cm^2 (d) 73/8 cm^2

21) A square ABCD is inscribed in a circle of 10 units. The area of the circle not included in the square is
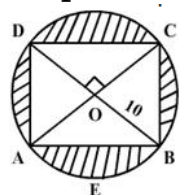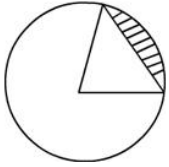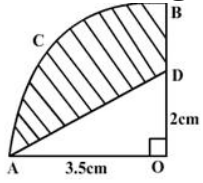

(a) 100 sq. units (b) 250 sq. units (c) 114 sq. units (d) 112 sq. units

22) The perimeter of the given figure is
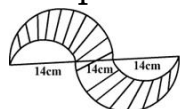

(a) 132 cm (b) 42 cm (c) 45 cm (d) 150 cm

23) The diameter of a circle whose area is equal to the sum of the areas of the two circles of radii 40 cm and 9 cm is:

(a) 62 cm (b) 49 cm (c) 41 cm (d) 82 cm

24) The area and circumference of a circle are numerically equal. What is the diameter of the circle?

(a) 4 units (b) 20 units (c) 2 units (d) 40 units

25) The diameter of a cycle wheel is 28 cm. The number of revolutions it makes in moving 13.2 km is

(a) 1500 (b) 15000 (c) 500 (d) 8000

26) A circular disc of radius 6 cm is divided into three sectors with central angles 90o, 120o and 150o. The ratio of the areas of the three sectors is

(a) 4: 5: 6 (b) 1: 5: 6 (c) 3: 4: 5 (d) 2: 3: 4

27) If the circumference of a circle increases from 2π to 4π then its area is

(a) Tripled (b) Doubled (c) Four times (d) Halved

28) A momento is made as shown in the figure. Its base shade is to be silver plated from the front at the rate of 20 per cm^2. what is the total coast of silver plating?
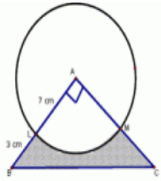
(a) 230   (b) 260   (c) 240   (d) 250

29) If C is the circumference of a circle of radius r, then perimeter of one of the quadrants will be

(a) $\frac{C}{2}$ (b) $\frac{C}{4} + r$ (c) $\frac{C}{4}$ (d) $\frac{C}{4} + 2r$

30) The perimeter (in cm) of a square circumscribing a circle of radius a cm, is

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

31) The angle of the major sector and the corresponding minor sector of a circle are

(a) supplementary angles   (b) complementary angles   (c) conjugate angles   (d) Reflex angles

32) The length of a minute hand of a wall clock is 7 cm. What is the area swept by it is 30 minutes?

(a) 2.308   (b) 3.608   (c) -3.208   (d) 3.208

33) The minute hand of a clock is 10 cm long. The area of the face of the clock described by the minute hand between 8 A.M and 8.25 A.M is

(a) 100 cm^2 (b) 125.5 cm^2 (c) 120 cm^2 (d) 130.95 cm^2

34) The shaded part of the circle in the given figure represents a

(a) Segment   (b) semi-circle   (c) Sector   (d) Chord

35) In the figure, OACB represents a Quadrant of a circle of radius 3.5 cm with centre O. The area of the shaded region is

(a) 9.625 sq. cm   (b) 8.675 sq. cm   (c) 5.5 sq. cm   (d) 6.125 sq. cm

36) If the difference between the circumference and the radius of a circle is 37 cm,If the difference between the circumference and the radius of a circle is 37 cm, then using $\pi = \frac{22}{7}$ the circumference (in cm) of the circle is:

(a) 44   (b) 154   (c) 14   (d) 7

37) If the sum of the areas of two circles with radii R1 and R2 is equal to the area of a circle of radius R, then

(a) $R_1^2 + R_2^2 = R^2$ (b) R$_1$ + R$_2$ < R   (c) R$_1$ + R$_2$ = R   (d) $R_1^2 + R_2^2 = < R^2$

38) The area of a circle with diameter 6 m exceeds the combined areas of circles with diameters 4m and 2 m by

(a) 0 m^2 (b) 4π m^2 (c) π m^2 (d) 5π m^2

39) The value of π is

(a) 4.13   (b) 11/7   (c) 33/6   (d) 3.14

40) To warn ships of underwater rocks, a light house spreads a red colored light over a sector of angle 80o to a distance of 16.5 km. The area of the sea over which the ships are warned is

(a) 135.7 km^2 (b) 200 km^2 (c) 180.5 km^2 (d) 190.14 km^2

41) In given figure, a circle of radius 7.5cm is inscribed in a square, the remaining area of the square is
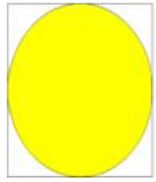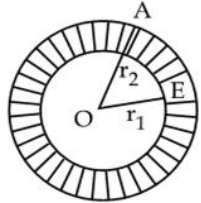

(a) 46 cm sq.   (b) 48.91 cm sq   (c) 52.32 cm sq   (d) 48.375 cm sq

42) The radii of two circles are 19 cm and 9 cm respectively. The radius of the circle which has its circumference equal to the sum of the circumferences of the two circles is:

(a) 30 cm   (b) 26 cm   (c) 32 cm   (d) 28 cm

43) In fig, area of shaded region is

(a) $\pi\left(r_1^2 + r_2^2\right)$ (b) $\pi\left(r_1 + r_2\right)$ (c) $\pi\left(r_1 - r_2\right)$ (d) $\pi\left(r_2^2 + r_1^2\right)$

44) If the side of an equilateral triangle and the radius of a circle are equal, find the ratio of their areas.

(a) $\pi : \sqrt{2}$ (b) $\sqrt{2} : \pi$ (c) $\sqrt{3} : 4\pi$ (d) $\sqrt{3\pi} : 4$

45) The area of a circular plot is 9856 sq. m. The cost of fencing the plot at the rate of Rs. 6 per meter will be

(a) Rs. 3456   (b) Rs. 2211   (c) Rs. 2112   (d) Rs. 2000

46) A wire in the shape of square of perimeter 88 cm is bent so as to form a circular ring. Find the radius of the ring.

(a) 28 cm   (b) 7 cm   (c) 14 cm   (d) 22 cm

47) The outer and inner diameters of a circular ring are 34 cm and 32 cm respectively. The area of the ring is:

(a) 33π cm² (b) 60π cm² (c) 66π cm² (d) 29π cm²

48) If the diameter of semicircular protractor is 14 cm, then its perimeter is:

(a) 30 cm   (b) 44 cm   (c) 36 cm   (d) 40 cm

49) If the ratio of the arc AB to the circumference of a circle is 1:3, then measure of the angle subtended by the arc at the centre is

(a) 120°   (b) 172°   (c) 72°   (d) 65°

50) If O is the centre of the circle, and OA and OB are two radii, find the ratio of the area of the sector AOB to the area of the circle, if $\angle$AOB = 60º

(a) 1:4   (b) 4:1   (c) 1:6   (d) 6:1

51) park is in the form of a rectangle 120m by 90 m. At the centre of the park there is a circular lawn as shown in the figure. If the area of the park excluding the lawn is 2950 m², then the radius of the circular lawn will be
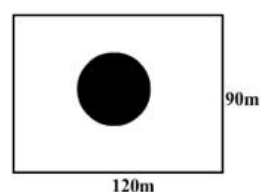
(a) 50 m   (b) 60 m   (c) 35 m   (d) 40 m

52) In the given figure, two concentric circles of radii 5 cm and 3 cm have their centre O. OAB is a sector of outer circle making an angle of 60° at the centre while OCD is the sector of smaller Circle. The area of the shaded region is
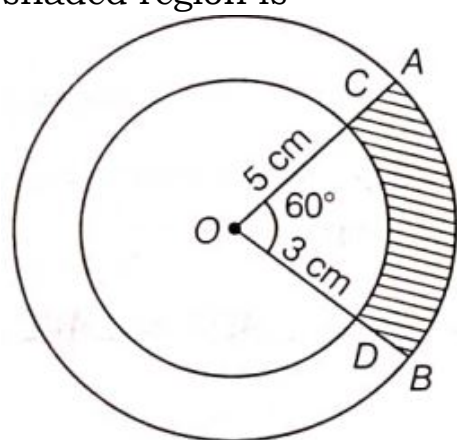
(a) $\frac{7\pi}{2}$ cm^2 (b) $\frac{8\pi}{3}$ cm^2 (c) $\frac{25\pi}{6}$ cm^2 (d) $\frac{3\pi}{2}$ cm^2

53) Perimeter of a sector of a circle whose central angle is 90° and radius 7 cm is

(a) 35 cm   (b) 11 cm   (c) 22 cm   (d) 25 cm

54) If the area of a sector of a circle is $\frac{7}{20}$ of the area of the circle, then the angle at the centre is equal to

(a) 110°   (b) 130°   (c) 100°   (d) 126°

55) Area of a quadrant of a circle of radius 7 cm is

(a) 154 cm^2 (b) 77 cm^2 (c) $\frac{77}{2}$ cm^2 (d) $\frac{77}{4}$ cm^2

Fill up / 1 Marks   10 x 1 = 10

56) The perimeter of a sector of angle 90° of a circle with radius 14 cm is ....

57) Area of the ring of external radius R and internal radius r is ....

58) The boundary of a circle is called its ....

59) Angle described by the minute hand in one minute is ....

60) Circumference of a circle bears a constant ratio with its ....

61) If the radius of a circle is $\frac{7}{\sqrt{\pi}}$ cm, then area of circle is ....

62) The area of a circle is 2464 m^2, then diameter is given by ....

63) Diameter of a circle is 28 cm, the circumference of the circle is given by ....

64) Area of sector with angle q° and radius r is ....

65) A wheel has 42 cm diameter, the number of complete revolutions made to cover 792 m is ....

True or False   15 x 1 = 15

66) Area of a circle is the portion enclosed under perimeter.

(a) False   (b) True

67) Perimeter of a semicircle of radius r is equal to πr .

(a) True   (b) False

68) If circumferences of two circles are equal, then their areas must be equal.

(a) False   (b) True

69) The perimeter of a semicircle is $\pi r + 2r$.

(a) False   (b) True

70) The area of a sector is always greater than the area of the corresponding segment.

(a) True   (b) False

71) Area of circle has greater value than the circumference of circle.

(a) True   (b) False

72) If circumference of a circle and perimeter of square are equal than area of circle is equal to area of sqaure.

(a) True   (b) False

73) If sum of the areas of two circles with radii r_1 and r_2 is equal to the area of circle of radius R, then $r_1 + r_2$ = R

(a) True   (b) False

74) The diameter of a circle whose area is equal to the sum of the areas of the two circles of radill 24 cm and 7 cm is 31 cm.

(a) True   (b) False

75) The circumference of a circle exceeds its diameter by 180 m, then radius is 42 m.

(a) False   (b) True

76) Area of a circle is 154 cm^2 . Its diameter is 7 cm.

(a) True   (b) False

77) Ratio of radii of two circles A and B is 3 : 7. Then, the ratio of their circumferences is 7 : 3

(a) True   (b) False

78) OAB is a quadrant of a circle. Then, perimeter of OAB is 25 cm

(a) False   (b) True

79) A circular region is divided into equal sectors by 6 diameters. The angle of each sector is 60° .

(a) True   (b) False

80) Area of a major segment is always more than area of minor segment.

(a) False   (b) True

Match the following   9 x 1 = 9

81) Perimeter of a sector of a circle of radius 'r' and length of the arc 'l'.   (1) $\frac{5}{4}$

82) Angle describes by minute hand between 3 : 00 p.m. and 3 : 25 p.m.   (2) $\pi R^2 - \pi r^2$

83) Perimeter of a semicircle of radius 'r'.   (3) 1256 cm^2

84) Perimeter of Santro's wheel whose diameter is 35 cm.   (4) rC = 2a

85) Area of the ring with outer and inner radii R, r.   (5) $\pi \left(R^2 - r^2 \right)$

86) If 'a' represents area of circle of radius 'r' and C is circumference, then relation is given by   (6) 150°   [∵ Total time = 25 minutes; angle subtended = 25 x 6° = 150°]

87) If r is radius of a circle, where r = 20 cm, area of circle is given by (use $\pi = 3.14$) area of circle is given by (use $\pi = 3.14$)   110 cm [∵ $2\pi r$ = Perimeter $\Rightarrow 2 \times \frac{22}{7} \times \frac{35}{2}$ = Perimeter as d = 2r $\Rightarrow r = \frac{35}{2}$

(7) $\Rightarrow$ Perimeter = 110 cm]

88) If ratio of areas of two circles is 25 : 16, ratio of their circumference is   (8) $2r + \pi r$

89) If r is radius of inner circle and R is radius of outer circle. Area (a) enclosed between them is given by   (9) 2r + 1

2 Marks   355 x 2 = 710

90) Find the area of a sector of a circle with radius 6 cm, if angle of the sector is 60°

91) The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand in 5 minutes.

92) A chord of a circle of radius 10 cm subtends a right angle at the centre. Find area of the corresponding

(i) minor segment

(ii) major sector $(Take,   \pi = 3.14$)

93) An umbrella has 8 ribs which are equally spaced (see the figure). Assuming umbrella to be a flat circle of radius 45 cm, find the area between the two consecutive ribs of the umbrella.

94) A car has two wipers which do not overlap. Each wiper has a blade of length 25 cm sweeping through an angle of 115°. Find the total area cleaned at each sweep of the blades.

95) To warn ships for underwater rocks, a lighthouse spreads a red coloured light over a sector of angle 80° to a distance of 16.5 km. Find the area of the sea over which the ships are warned. $(Use\ \pi = 3.14)$

96) Find the area of a quadrant of a circle whose circumference is 22cm.

97) Tick the correct answer in the following: Area of a sector of angle θ (in degree) of a circle with radius R is

(a) $\frac{\theta}{180^o} \times 2\pi R$

(b) $\frac{\theta}{180^o} \times \pi R^2$

(c) $\frac{\theta}{360^o} \times 2\pi R$

(d) $\frac{\theta}{720^o} \times 2\pi R^2$

98) In the fig., O is the centre of a circle. The area of sector OAPB is $\frac{5}{18}$ of the area of the circle. Find x.
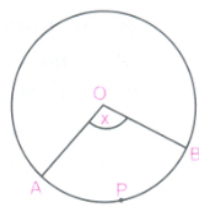
99) A chord of a circle of radius 14 cm subtends a right angle at the centre. What is the area of the mirror sector? $\left[\pi = \frac{22}{7}\right]$

100) A bicycle wheel makes 5000 revolutions in moving 11 km. Find the diameter of the wheel. (use $\pi = \frac{22}{7}$)

101) A pendulum swings through an angle of 30° and describes an arc 8.8 cm in length. Find the length of pendulum. (use $\pi = \frac{22}{7}$)

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

103) In the given figure, the shape of the top of a table is that a sector of a circle with centre O and $< AOB = 90^o$. If AO=OB = 42 cm, then find the perimeter of the top of the table. $\left[Use\ \pi = \frac{22}{7}\right]$
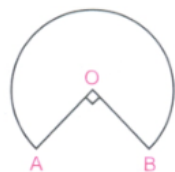
104) In the given figure, the area of the shaded region between two concentric circle is $286cm^2$. If the difference of the radii of the two circles is 7 cm, find the sum of their radii. [Use $\pi = \frac{22}{7}$]
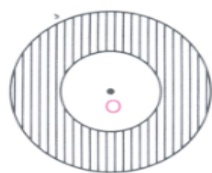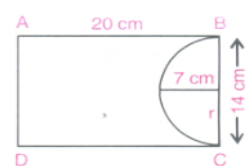
105) The minute hand of a clock is $\sqrt{21}$ cm long. Find the area described by the minute hand on the face of the clock between 7.00 am and 7.05 am. $\left[Use\ \pi = \frac{22}{7}\right]$

106) 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. $\left[Use\ \pi = \frac{22}{7}\right]$

107) A wire is looped in the form of a circle of a circle of radius 28 cm. It is reverted into a square form. Determine the side of the square. $\left[\,Use\ \pi = \frac{22}{7}\right]$

108) 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.

109) A horse is placed for grazing inside are 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?

110) The diameter of a wheel of a bus is 90 cm which makes 315 revolutions per minute. Determine its speed in km/h. $\left[Use\ \pi = \frac{22}{7}\right]$

111) Find the area of the segment of a circle of radius 14 cm, if the length of the corresponding arc APB is 22 cm. $\left[\,Use\ \pi = \frac{22}{7}\right]$

112) In fig., the shape of the top of a table in restaurant is that of sector of a circle with centre O and (, if BO=OD=60 cm find:
(i) the area of the top of the table
(ii) the perimeter of the table top. [Take π = 3.14]
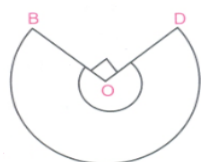
113) A steel wire when bent in the form of a square encloses an area of 121 sq. cm. If the same wire is bent into the form of a circle, find the area of the circle. $[\pi = 22/7]$

114) The short and long hands of a clock are 4 cm and 6 cm long respectively. Find the sum of the distances travelled by their tips in two days. $[\pi = 22/7]$

115) The circumference of a circular plot is 220 m. A 15 m wide concrete track runs round outside the plot. Find the area of the track. $[\,Use\ \pi = 22/7]$

116) What is the perimeter of a sector of angle 45° of a circle with radius 7 cm? $\left[\pi = \frac{22}{7}\right]$

117) If the diameter of a semicircular protractor is 14 cm, then find its perimeter. $\left[\pi = \frac{22}{7}\right]$

118) Find the area of a sector of angle P (in degrees) of a circle with radius R.

119) Find the area of sector of a circle with radius 6 cm if angle of sector is 60°

120) If the perimeter of a semicircular protractor is 66 cm., find the radius of the protactor.

121) What is the ratio of the areas of a circle and an equilateral triangle whose diameter and a side are respectively equal?

122) What is the angle subtended at the centre of a circle of radius 6 cm by an arc of length 6π cm.

123) If the circumference is numerically equal to 3 times the area of a circle, then find the radius of the circle.

124) 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 curr off. Find the area of the remaining part. $[Usee\ \pi = 22/7]$

125) The length of minute hand of a clock is 14 cm. Find the area swept by the minute hand in three minutes. $[Use\ \pi = 22/7]$

126) In the given figure. OPQR is a rhombus, there 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.
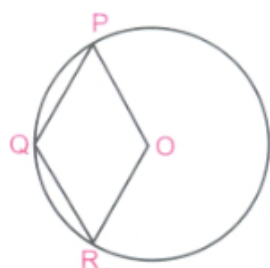

127) A circular grassy plot of land 42 m in diameter has a path 3.5 m wide running round it on the outside. Find the cost of gravelling the path at the rate of Rs. 4 per square metre.

128) 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?

129) The perimeter of a sector of a circle of radius 5.2 cm is 16.4 cm. Find the area of the sector.

130) 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 area of the sector corresponding to the major arc. $\left[\pi = 22/7\right]$

131) The diameter of a circular pond is 17.5 m. It is surrounded by a path of width 3.5 m. Find the area of the path.

132) 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.

133) Find upto three places of decimals where the radius of the circle whose area is sum of the areas of two triangles whose sides are 35, 53, 66 and 33, 56, 65 measured in centimetres.

134) The sum of the radii of two circles is 140 cm and the difference of their circumferences is 88 cm. Find the diameters of the circles.

135) A field is in the form of a circle. A fence is to be erected around the field. The cost of fencing would be Rs. 2640 at the rate of Rs. 12 per metre. Then the field is to be thoroughly ploughed at the cost of Rs. 0.50 per m^2. What is the amount required to plough the field?

136) All the vertices of a rhombus lie on a circle. Find the area of the rhombus, if area of the circle is 1256 cm^2 (Use π = 3.14).

137) Find the number of revolutions made by a circular wheel of area 1.54 m^2 in rolling a distance of 176 m.

138) The ratio of the outer and inner perimeters of a circular path is 23 : 22. If the path is 5m wide, then find the diameter of the inner circle.

139) Find the area of the largest triangle that can be inscribed in a semicircle of radius 7 cm.

140) The cost of planting grass in a circular park at the rate of $Rs.\ 4.90/m^2$ is $Rs.\ 24,640$ path at the rate of $Rs.\ 3696$ .Find the cost of fencing the path on both sides at the rate of $Rs.\ 2.10/m$.

141) An archery target has three regions formed by three concentric circles as shown in Fig. If the diameters of the concentric circles are in the ratio 1 : 2 : 3, then find the ratio of the areas of three regions.
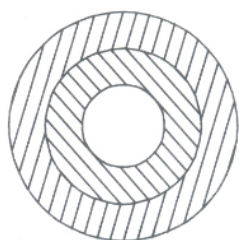
142) AB is one of the direct common tangent of two circles of radii 12 cm and 4 cm respectively touching each other. Find the area of the region enclosed by the circles and the tangent.

143) Find the area of the shaded region in the given figure, if radii of the two concentric with centre O are 7 cm and 14 cm respectively and
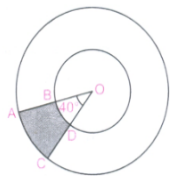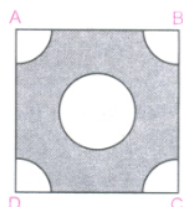

144) Find the area of the shaded region in the given figure, if ABCD is a square of side 14 cm and APD and BPC are semicircles.
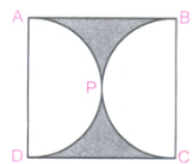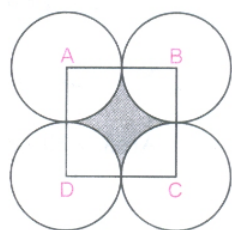

145) Find the area of the shaded region in the figure, where a circular arc of radius 6 cm has been drawn with vertex O of an equilateral triangle OAB of side 12 cm as centre.
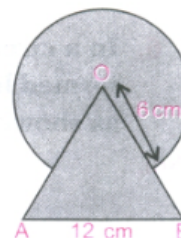

146) From each corner of a square of side 4 cm a quadrant of a circle of radius 1 cm is cut and also a circle of diameter 2 cm is cut as shown in the figure. Find the area of the remaining portion of the square.

147) In the figure, ABCD is a square of side 14 cm. With centres A, B, C and D, four circles aer drawn such that each circle touch externally two of the remaining three circles. Find the area of the shaded region.

148) In the figure, OACB is a quadrant of a circle with centre O and radius 3.5 cm. If OD = 2 cm, find the area of the (i) quadrant OACB, (ii) shaded region.
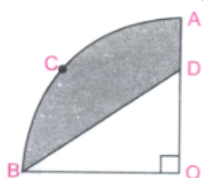
149) In the figure, a square OABC is inscribed in a quadrant OPBQ. If OA = 20 cm, find the area of the shaded region. (Use π = 3.14)
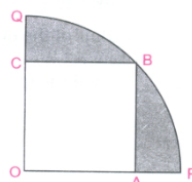
150) AB and CD are respectively arcs of two concentric circles of radii 21 cm and 7 cm and center O (see figure). If find the area of the shaded region.
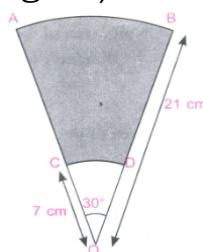
151) In figure APB and CQD are semicircles of diameter 7 cm each, while ARC and BSD are semicircles of diameter 14 cm each. Find the perimeter of the shaded region. $\left[Use\ \pi = \frac{22}{7}\right]$
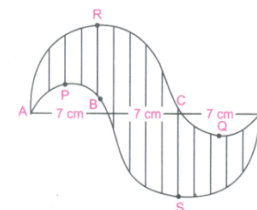
152) Find the perimeter of the shaded region in figure, if ABCD is a square of side 14 cm and APB and CPD are semicircles. $\left[Use\ \pi = \frac{22}{7}\right]$
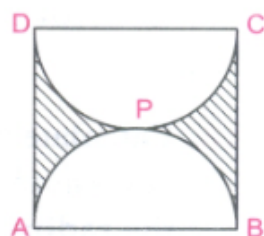
153) In given figure, a semicircle is drawn with O as centre and AB as diameter. Semicircles are drawn with AO and OB as diameters. If AB = 28 m, find the perimeter of the shaded region. $\left[Use\ \pi = \frac{22}{7}\right]$

154) A playground is in the form of a rectangle having semicircles on the shorter sides. Find its area when the length of the rectangular portion is 80 m and the breadth is 42 m.
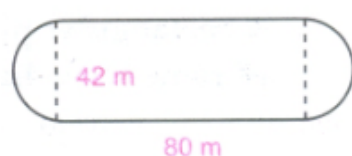
155) In the given figure, find the area of the shaded region. $\left[Use\ \pi = 3.14\right]$
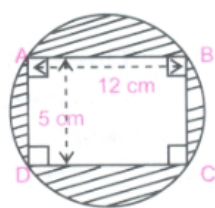
156) PQRS is a dimeter of a circle of radius 6 cm. The lengths PQ, QR are equal. Semicircles are drawn on PQ and QS as diameters. Find the perimeter of the shaded region.
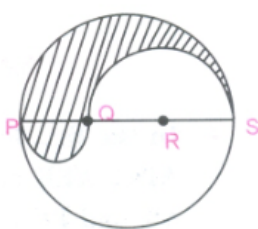
157) A rectangular piece is 20 m long and 15 m wide. From its four corners, quadrants of radii 3.5 m have been cut. Find the area of the remaining part.
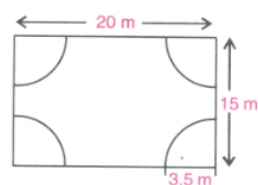
158) Three circles are placed on a plane in such a way that each circle just touches the other two, each having a radius of 10 cm. Find the area of the region enclosed by them.

159) 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 $\pi = \frac{22}{7}$]
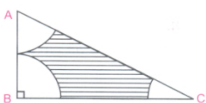
160) Two circular pieces of equal radii and maximum area, touching each other are cut out from a rectangular cardboard of dimensions $14cm \times 7cm$ Find the area of the remaining cardboard. $\left[Use\ \pi = \frac{22}{7}\right]$

161) Find the area of the shaded region in the given figure.
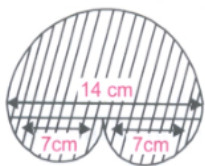
162) Four cows are tethered at four corners of a square plot of side 50 m, so that they just can reach one another. What area will be left ungrazed?

163) OABC is a quadrant of a circle of radius 7 cm. If OD=4 cm, find the area of the shaded region.
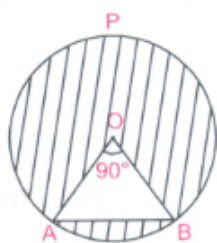$\left[Use \ \pi = \frac{22}{7}\right]$
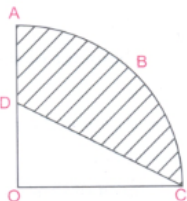
**164)** Find the area of the segment of a circle, if angle of the sector is 90° and the radius of the circle is 21 cm.

165) Find the area of the shaded region in figure, if AC = 24 cm, BC = 10 cm and O is the centre of the circle.
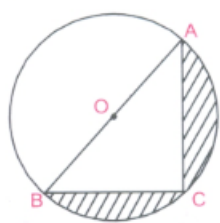
166) Find the area of the major segment APB, in figure of a circle of radius 35 cm and $\angle AOB = 90°$
$\left[Use \ \pi = \frac{22}{7}\right]$

167) 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.
$[Take \ \pi = 22/7]$
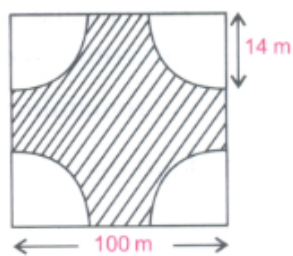
168) In an equilateral triangle of side 24 cm, a circle is inscribed touching its sides. Find the area of the remaining portion of the triangle.

169) A rectangular park is 100 m by 50 m. It is surrounded by semicircular flower beds all round. Find the cost of levelling the semicircular flower beds at 60 paised per m^2 .

170) Find the area of the shaded field shown in figure.
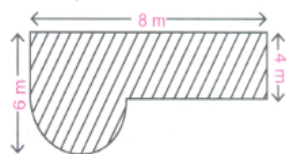
171) Find the area of the shaded region in figure.
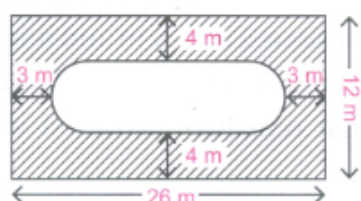
172) In figure, arcs are drawn by taking vertices, A, B and C of an equilateral triangle of side 10 cm. To intersect the sides BC, CA and AB at their respective mid-points D, E and F. Find the area of the shaded region $[Use\ \pi = 3.14]$.
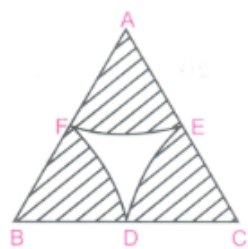

173) In figure arcs have been drawn with radii 14 cm each and with centres P, Q and R. Find the area of the shaded region.
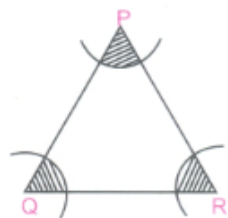

174) In figure arcs have been drawn of radius 21 cm each with vertices A, B, C and D of quadrilateral ABCD as centres. Find the area of the shaded region.
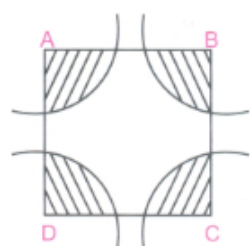
175) In the given figure, AB and CD are two diameters of a circle perpendicular to each other and OD is the diameter of the smaller circle. If OA=7 cm, find the area of the shaded region.
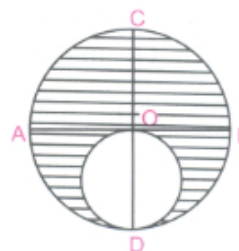
176) In the given figure, three circles of radius 2 cm touch one another externally. These circles are circumscribed by a circle of radius R cm. Find the value of R and the area of the shaded region.
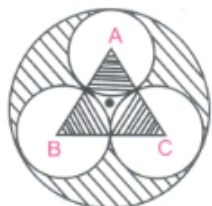
177) Floor of a room is of dimensions $5 \times 4m$ and it is covered with circular tiles of diameters 50 cm each as shown in Fig. Find the area of floor that remains uncovered with tiles. $(Use\ \pi = 3.14)$
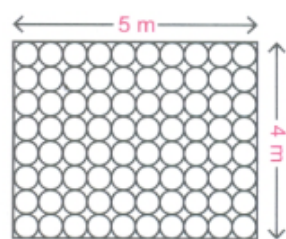
178) On a square cardboard sheet of area $784\ cm^2$, four congruent circular plates of maximum size are placed such that each circular plate touches the other two plates and each side of the square sheet is tangent to two circular plates. Find the area of the square sheet not covered by the circular plates.

179) In given figure, PQRS is a square of side 14 cm. Region A is a semicircle on PS as diameter. Region B and C are quadrants of a circle with centres Q and R respectively each having radius 7 cm. Find area of the shaded part. $[Use\ \pi = \frac{22}{7}]$
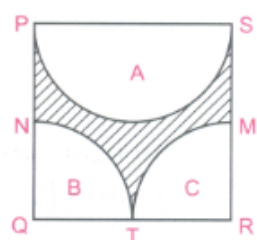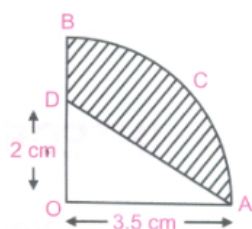
180) In figure, O is the centre of the circle and AB is the diameter. Find the area of shaded region [*Use* $\pi = 3.14$]
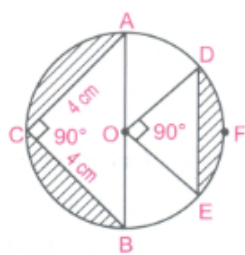

181) The radii of two circles are 4 cm and 3 cm respectively. Find the diameter of the circle having area equal to the sum of the areas of these two circles.

182) The area of circle is numerically equal to twice its circumference. Find the diameter of the circle.

183) In the given figure three sectors of a circle of radius measuring 7 cm, make angles of $60^o, 80^o$ and 40° at the centre of circle as shown. Find the area of the shaded region. [*use* $\pi = \frac{22}{7}$]
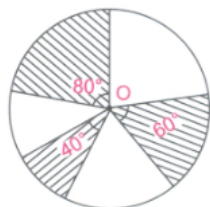
184) If difference between the circumference and the radius of a circle is 37 cm, find the circumference of the circle. [*use* $\pi = \frac{22}{7}$]

185) The circumference of two circles area in the ration 4 : 9. Find the ratio of their area.

186) The area of two concentric circles forming a ring are $154 \ cm^2$ and $616 \ cm^2$. Find the breadth of the ring.

187) The circumference of the wheel of an engine of a train is $4\frac{2}{7}m$. If it makes seven revolutions in 4 seconds then find the speed of the train. [*use* $\pi = \frac{22}{7}$]

188) A toothed wheel of diameter 50 cm is attached to a smaller wheel of diameter 30 cm. How many revolutions will the smaller wheel make when the larger one makes 15 revolutions?

189) The radius of a circle is 50cm. If the radius is decreased by 50% then find the percentage decrease in its area.

190) Radius of a circle is 1m. If diameter is increased by 100% then find percentage increase in its area.

191) If the circumference of a circle is increased by 50% then find percentage increases in its area.

192) Find the ratio of the area of the incircle and circumcircle of a square.

193) A circular wire of radius 42 cm is cut and bent into the form of a rectangle whose sides are in the ratio 6 : 5. Find the smaller side of the rectangle.

194) In the given fig., AOBCA represents a quadrant of area $9.625 \ cm^2$. Calculate the area of the shaded portion.


195) ABCDEF is any hexagon with different vertices A, B, C, D, E and F as the centres of circles with same radius r are drawn. Find the area of the shaded portion.
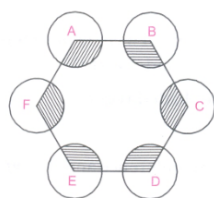
196) In the figure, PQRS is a square, O is centre of the circle. If $RS = 10\sqrt{2}$, then find the area of shaded region.
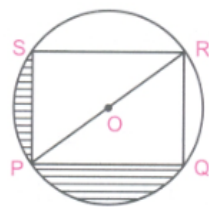

197) Find the area of a right-angled triangle if the radius of its circumcircle is 2.5 cm and the altitude drawn to the hypotenuse is 2 cm long.

198) The perimeter of a sector of a circle of radius 5.2 cm is 16.4 cm. Find the area of the sector.

199) The minute hand of a clock is 10 cm long. Find the area of the face of the clock described by the minute hand between 8 a.m. and 8.25 a.m.

200) All the four vertices of a rhombus are on a circle. Find the area of the rhombus if the area of the circle is 1256 cm^2 . ($\pi = 3.14$)

201) A circular park is surrounded by a road 21 m wide. If the radius of the park is 105 m, find the area of the road.

202) If the areas of two circles are in the ratio 81 : 100, then determine the ratio of their circumferences.

203) In a circle of diameter 42 cm, if an arc subtends an angle of 60º at the centre, find the length of the arc.

204) In the given figure, a semicircle of radius 7 cm is inscribed in a rectangle. Find the area of the shaded region. $\left(Use\ \pi = \frac{22}{7}\right)$
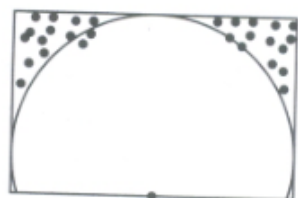
205) A human chain in the form of a circle of radius 56 m is formed at India Gate to protest against the rising prices of petrol. If each person is given metres of space to stand find how many persons can be accommodated in the chain.

206) A Japanese fan can be made by sliding open its 7 small sections (or leaves), each of which is in the form of sector of a circle having central angle of 15º. If the radius of this fan is 24 cm, find out the length of the lace that is required to cover its entire boundary (see figure). $\left(Use\ \pi = \frac{22}{7}\right)$
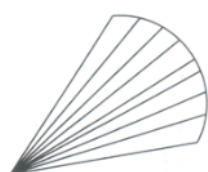

207) You are required to create a model of a circular wall clock and paste the numbers from 1 to 12 on its dial. What is the angle made at the centre between 3 and 7 ? Find the area of this region, if the length of the minute hand of the clock is 21 cm.

**208)** Find the area of the shaded region in the figure.
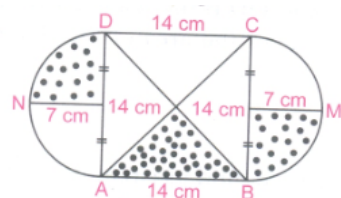
209) In the given figure, O is the centre and AOC is a diameter of the circle. Find :
(i) The sum of the areas of the two shaded segments made by the chords AB and BC.
(ii) The area of the shaded segment made by the chorod PQ. $\left(Use\ \pi = \frac{22}{7}\right)$
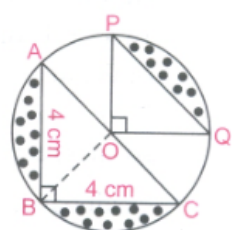
210) A lawn is in the shape of a semicircle of diameter 7 metre. It is surrounded by a flower bed of width 0.7 m all around. Find the area of the flower bed in m^2.
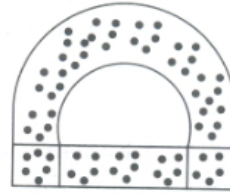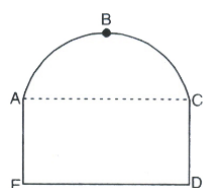
211) Find the area of a circle whose circumference is 22 cm.

212) If the circumference of a circle exceeds the diameter by π units, then find the diameter of the circle.

213) Find the number of revolutions taken by a wheel of diameter 84 cm to cover 792 m. $\left[\pi = \frac{22}{7}\right]$

214) The area of a circle is 220 cm^2 . Find the area of a square inscribed in it.

215) If area of a circle is 38.5 square cm, find its circumference.

216) Find the area of the sector of a circle with radius cm and of angle 30^0.

217) Find the perimeter of the sector of a circle of radius 10.5 cm, if angle of the sector is 60^0.

218) The circumference of a circular field and perimeter of a square field are equal.If the area of the square field is 484m^2, then find the length of the diameter of the circular field.

219) The length and breadth of a rectangular piece of a paper are 28cm and 14cm respectively. A semicircular portion is cut off from the breadth's side and a semicircular portion is added on length's side, as shown in figure. Find the area of the shaded region.
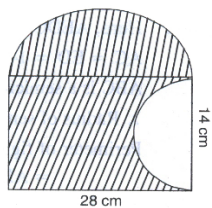
220) Find the circumference of a circle, if its area is 154cm^2.

221) If π taken as $\frac{22}{7}$,then find the distance (in metres) covered by a wheel of diameter 35cm, in one revolution.

222) OAQB is a quadrant of a circle with centre O.(see figure) C is mid-point on OB.CD=CO=7cm.Find the area of the shaded region.
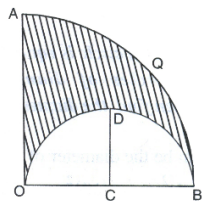
223) If the circumference of a circle is 22cm. Find the area of its quadrant (in cm^2).

224) Find the perimeter of a quadrant of a circle of radius 'r'.

225) If the area and circumference of a circle are numerically equal, then find diameter of the circle.

226) Find the area of the sector of central angle 'x^0 ' of a circle with radius '4r'

227) If the area of a circle is equal to sum of the areas of two circles of diameters10 cm and 24 cm, then find the diameter of the larger circle(in cm)

228) Find the diameter of a circle whose area is equal to the sum of the two circles of radii 40cm and 9cm.

229) In the given figure, AEDC is a rectangle with ED=14cm, CD=10cm and ABC is a semicircle drawn on AC as diameter.Find the perimeter of the figure ABCDE.

230) The outer and inner diameters of a circular ring are 34cm and 32cm respectively, then find the area of the ring.

231) A garden roller has a circumference of 4m. Find the number of revolution it makes in moving 40 meters.

232) The circumference of a circle is 44cm, find the area of the circle.

233) If the perimeter of a semicircular protractor is 36cm, then find its diameter.

234) Two parallel lines touch the circle at points A and B respectively.If area of the circle is $25\pi\,cm^2$.Then find the length of AB.

235) If area of circle is 301.84 cm^2, then find the radius of circle.

236) Find the area of the circle that can be inscribed in a square of side 6 cm.

237) If the perimeter of a sector of a circle of radius 5.7 cm is 27.2 cm, then find the area of the corresponding sector.

238) In the given figure, the radius of the circle with centre O is 7cm, $\angle$ POQ=60º,$\angle$ AOB=40º and $\angle$ COD=80º.Find the area of the shaded region.
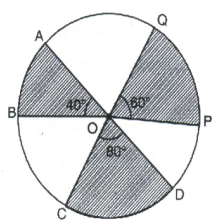
239) The radius of a circle is 100 cm.If the radius is decreased by 50%, then find the percent decrease in area.

240) In figure, find the area of shaded region.
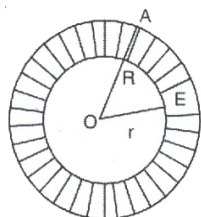
241) In figure, if radius of each circle is unity and ABC is an equilateral triangle, then find the area of the shaded region.
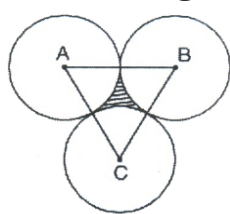
242) In figure, if radius of circle is 7cm and $\angle AOB = 90^0$,   then find the area of the shaded region.
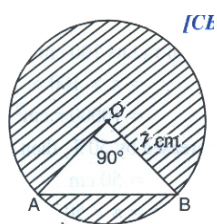
243) The length of the minute hand of a clock is 14cm.Find the area swept b the minute hand in 5minutes.

244) The diameter of a cycle wheel is 21cm.How many revolutions will it make to travel 1.98km?

245) How many times will the wheel of a car rotate in a journey of 2002m, if the radius of the wheel is 49cm?

246) A wheel has diameter 84cm.Find how many complete revolutions must it make to cover 792m.

247) If the perimeter of a semicircular protractor is 66cm, find the radius of the protractor.

248) If the diameter of a semicircular protractor is 14cm, then find its perimeter.

249) The radii of two circles are 19cm and 9cm respectively.Find the radius of the circle which has circumference equal to the sum of the circumference of the two circles.

250) The difference between circumference and diameter of a circle is 135cm.Find the radius of the circle. [Take $\pi = \frac{22}{7}$]

251) Two concentric circles are of radii 7cm and 5cm.Find the area of the portion between two circles.

252) The radii of two circles are 8cm and 6cm respectively.Find the radius of the circle having area equal to the sum of the area of the two circles.

253) The length of the minute hand of the clock is 14cm.Find the area swept by the minute hand from 9:00 to 9:35.

254) 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?

255) The area of circle is 2464 cm^2. Find the diameter of circle.

256) Find the area of the largest triangle that can be inscribed in a semicircle of radius 4 cm.

257) If a wire is bent into the shape of square whose area is 81 cm^2. When the same wire bent into a semicircular shape, then find the area of the semicircle.

258) If the area of a circle increases from 9π to 16π , then find the ratio of the circumference of the first circle to the second circle.

259) Length of minute hand of a wall clock in a home is 7 cm. Find the area swept by it in 30 minutes.

260) The circumference of a circle is 528 cm, find its radius.

261) The circumference of a circle is $\frac{30}{\pi}$, find the radius of circle.

262) The radii of two circles are 6 cm and 8 cm, then find the radius of the circle having its area equal to the sum of areas of two circles.

263) The radii of two concentric circles are 19 cm and 16 cm, find the area of the ring enclosed between them.

264) A chord of a circle of radius 28 cm subtends an angle 45° at centre of the circle, find the area of the minor segment.

265) The perimeter of a sector of circle with central angle 90° is 25 cm, find the area of the minor segment.

266) A chord PQ makes an angle 60° at centre of circle with radius 5.25 cm, find the area of major segment.

267) A rectangle whose side is 4 cm by 3 cm inscribed in a circle, then find the area enclosed between circle and rectangle.

268) The radius of bigger circle is 20 cm, three concentric circles are drawn inside it such that it is divided into four parts equal area, find the area of largest concentric circle.

269) Find the area of shaded region, where ABCD is a square of side 28 cm.
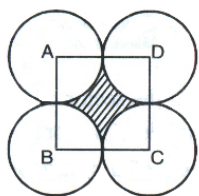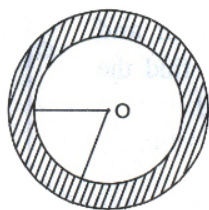

270) Find the area of shaded portion.
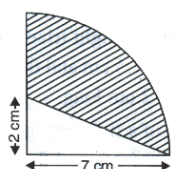
271) Find the area of shaded region in the given figure.
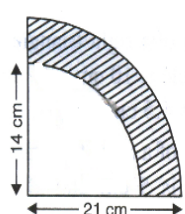
272) Area enclosed between two circumferences of two concentric circles is 346.5 cm² , if circumference of inner circle is 88 cm, find the radius of outer circle.

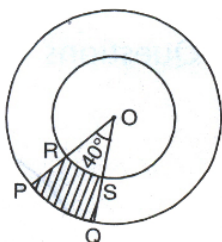**273)** Find the area of shaded region in the figure
OR = 7 cm
OP = 14 cm
$\angle ROS = 40°$

274) A lighthouse throws a light forming sector of radius 16.5 cm with central angle 80°, find the area covered by it.

275) If the diameter of a protractor is 7 cm, then find its perimeter.

276) Find the number of rounds that a wheel of diameter $\frac{7}{11}$ m will make in going 4 km.

277) Find the diameter of a circle whose area is equal to sum of areas of two circles of diameter 16 cm and 12 cm.

278) If a wire is bent into the shape of a square, then the area enclosed by the square is 81 cm² . When the same wire is bent into a semicircular shape, then find the area enclosed by the semicircle.

279) Find the radius of a circle whose circumference is equal to the sum of the circumferences of two circles of diameters 36 cm and 20 cm.

280) Find the area of a square inscribed in a circle of radius 8 cm.

281) A wire is in the shape of a circle of radius 21 cm. It is bent to form a square. Find the side of the square. $\left[\pi = \frac{22}{7} \right]$

282) Find the perimeter of a quadrant of a circle of radius $\frac{7}{2}$ cm.

283) The circumference of a circle is 100 cm. Find the side of the square inscribed in the circle.

284) If the circumference of a circle increases from 2π to 4π , then find the change in its area.

285) The minute hand of a clock is 21 cm long. Find the distance moved by the tip of the minute hand in 1 hour.

286) If the circumference of a circle of radius 'r' and the perimeter of a square of side 'a' are equal, then find the ratio of area of the circle to that of the square.

287) Find the degree measure of the angle through which the minute hand of the clock moves from 8 to 8 : 35.

288) The figure shows the quadrant of a circle of radiius 4.2 cm. Find the perimeter of the quadrant.
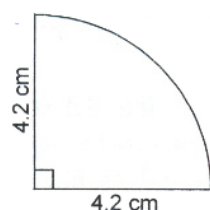
289) A steel wire when bent in the form of a square encloses an area of 121 cm² . If the same wire is bent in the form of a circle, find the area of the circle.

290) A horse is placed for grazing inside a rectangular field 40 m by 36 m and is tethered to one corner by a rope 14 m long. Over how much area can it graze?

291) The circumference of a circle exceeds the diameter by 16.8 cm. Find the circumference of the circle.

292) Two circles touch externally. The sum of their areas is $130\pi cm^2$ and the distance between their centres is 14 cm, Find the radii of the circles.

293) A sector is cut off from a circle of radius 21 cm. The angle of the sector is 120 °. Find the length of its arc and the area.

294) Find the area of the sector of a circle when the angle of sector is 63 ° and the diameter of the circle is 20 m.

295) Find the area of the sector of a circle whose radius is 14 cm and angle of sector is 45 °.

296) Find the area of the quadrant of a circle whose diameter is 22.4 cm.

297) Find the area of a right triangle, the radius of whose circumcircle is 3 cm and the length of the altitude drawn from the opposite vertex to the hypotenuse is 2 cm.

298) Find the area of a right triangle, if the diameter of its circumcircle is 10 cm and altitude drawn to the hypotenuse is 4.5 cm long.

299) Find the area of a right triangle, if the radius of its circumcircle is 5 cm and altitude drawn to the hypotenuse is 4 cm.

300) A horse is tethered to one corner of a rectangular grass field 40 m by 24 m, by a rope 14 m long. Over how much area of the field can it graze?

301) ABCD is a flower bed. If OB = 21 m and OD = 14 m, find the area of the bed. [Take $\pi = \frac{22}{7}$]
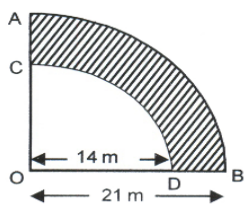
302) Find the area of the sector of a circle with radius6cm, if angle of the sector is 60^0.

303) area of the sector of a circle with radius 10cm and of central angle 60^0.Also, find the area of the corresponding major sector

304) Find the area of Δ PQR such that $\angle$ =90^0, PR=10cm and $\angle$ PRQ=30^0.[Take $\sqrt{3} = 1.73$]

305) Three cows are tethered with 10 m long rope at the three corners of a triangular field having sides 42 m, 20 m and 34 m. Find the area of the plot which can be grazed by the cows, also, find the area of the remaining field (ungrazed).

306) The given figure consists of two semicircles and two quarter circles. If OA = OB = OC = OD = 14 cm.

Find the length of the boundary and area of the shaded region.
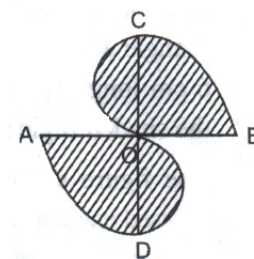
307) The given figure, consists of four small semicircles of equal radii and two big semicircles of equal radii (each = 42 cm). Find the area and the perimeter of the shaded region.
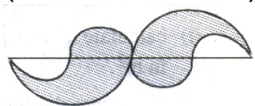

308) Find the area of the shaded design in the given figure, where ABCD is a square of side 10 cm and semicircles are drawn with each side of the square as diameter. $[Use \ \pi = 3.14]$
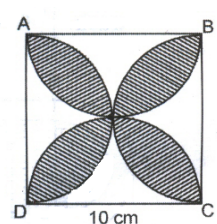

**309)** If the perimeter of a circle is equal of a square, then the ratio of their areas.

310) If the sum of two circles with radii R_1 and R_2 is equal to the area of a circle of radius R, then write the relation among their radii.

311) If the sum of the circumference of two circles with radii R_1 and R_2 is equal to the circumference of a circle of radius R, then write the relation among their radii.

312) It is proposed to build a single circular park equal in area to the sum of areas of two circular parks of diameters 16m and 12m in a locality. Find the radius of new park.

313) Find the area of a square that can be inscribed in a circle of radius 8cm.

314) Find the diameter of a circle whose area is equal to the sum of the areas of the two circles of radii 24cm and 7cm.

315) Find the area of the largest triangle that can be inscribed in a semicircle of radius r.

316) A round table cover has six equal designs as shown in figure on the side (shaded one). If the radius of the cover is 28 cm, find the cost of making the design at the rate of Rs, 0.85 per cm^2 . $[Use \ \sqrt{3} = 1.7]$.
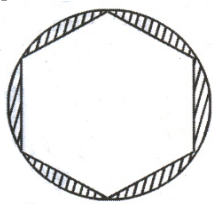
317) Two circles touch each other externally and the sum of their areas is $52\pi cm^2$. If the distance between the centres of two circles is 10 cm, find the radii of the two circles.

318) In the given figure, from each corner of a square ABCD, of side 4 cm, quadrant of a circle of radius 1 cm each is cut and a circle of radius 1 cm is cut from the centre. Find the area of the shaded region.
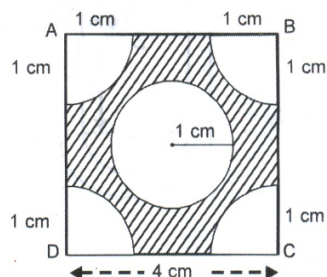
319) Find the area of the shaded region which contains two semicircles and a rectangle of breadth 1 cm.
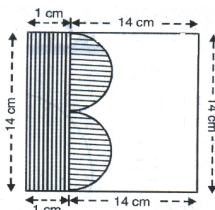
320) In the adjoining figure, O is the centre of the bigger circle and AC is its diameter. Another circle with AB as diameter is drawn. If AC = 54 cm and BC = 10 cm; find the area of the shaded region.
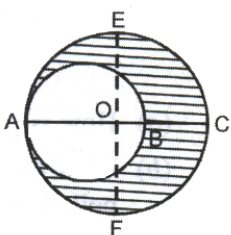
321) In the adjoining figure, PQR is an equilateral triangle inscribed in a circle of radius 7 cm. Find the area of the shaded region.
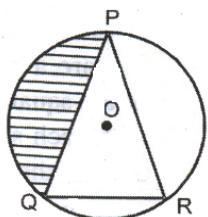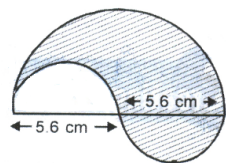

322) The diagram shows the inner boundary of a running track consisting of a rectangle with semicircular ends. The semicircular ends have a diameter of 63.7 m. Calculate the area covered by the track.
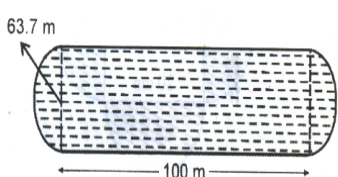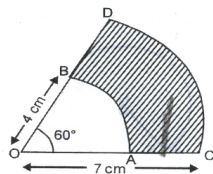
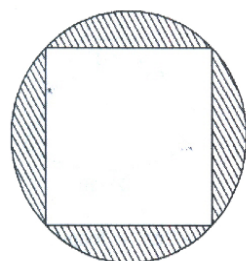**323)** Find the area of the shaded region with adjoining figure.
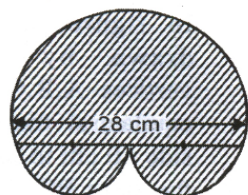
324) Calculate the area of the shaded portion of the figure alongside.

325) Find the area of the shaded region of the figure along side.

326) In the given figure, a square of diagonal 8cm is inscribed in a circle. Find the area of the shaded region.

327) The wheel of a motorcycle is of radius 35cm. How many revolution per minute must the wheel make o as to keep a speed of 66 km/h?

328) A cow is tied with a rope of length 14m at the corner of a rectangular field of dimensions 20m x 16m. Find the area of the field in which the cow can graze.

329) A piece of wire 20cm long is bent into the form of an arc of a circle subtending an angle of 60^0 at its centre. Find the radius of the circle.

330) Find the area of the sector of a circle of radius 5cm, if the corresponding are length is 3.5cm.

331) A circular is of diameter 1.5m. It is surrounded by a 2m wide path. Find the cost of constructing the path at the rate of Rs.25 per m^2 .

332) Find the difference of the areas of a sector of angle 120^0 and its corresponding major sector of a circle of radius 21cm.

333) Find the area of the minor segment of a circle of radius 14 cm, when the angle of the corresponding sector is 60°.
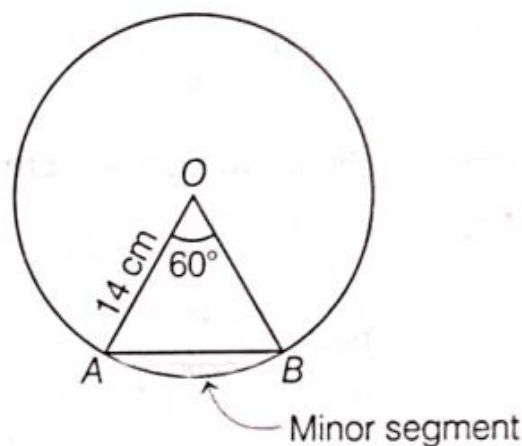
334) Sides of a triangular field are 15m, 16m and 17m. With the three corners of the field a cow, a buffalo and a horse are tied separately with ropes of length 7m each to graze in the field. Find the area of the field which cannot be grazed by the three animals.

335) Find the area of the flower bed (with semicircular ends) as shown in the given figure.
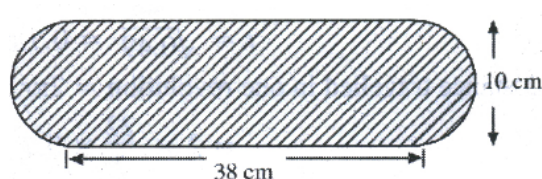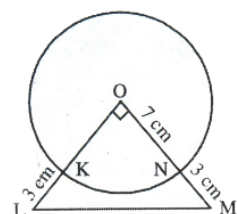
336) The figure given shows a kite, in which BCD is in the shape of a quadrant of a circle of radius 42 cm. ABCD is a square and $\triangle CEF$ is an isosceles right-angled triangle whose equal sides are 6 cm long. Find the area of the shaded region.
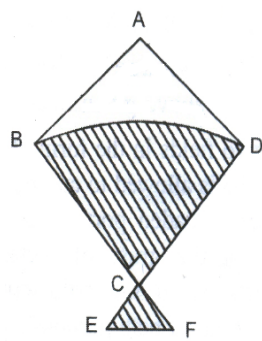

337) Four cows are tethered at the four corner of a squares plot of size 50 m. So that they just cannot reach one another. What area will be left ungrazed?

338) Three identical memento is made by a school to award three students for three values: Hard work, Knowledge and Tolerance. If each memento is made as shown in the figure and its base KLMN is silver plated from the front side at the rate of Rs. 25 per cm^2.
(i) Find the total cost of the silver plating.
(ii) Shakespeare had remarked that there are 3 ways to attain success.
(a) Know more than the others.
(b) Work more than the others.
(c) Expect less than the others.
Associate 'Knowledge', 'Hardwork' and 'Tolerance' with above-given lines.

339) Farmer has two fields in the form of triangle and rectangle. Neha is allowed to cut the grass of the triangular field (shaded portion) and Deepak is allowed to cut the grass of rectangular field (shaded portion) in the following manner. Calculate the areas of both portions? Which values is depicted?
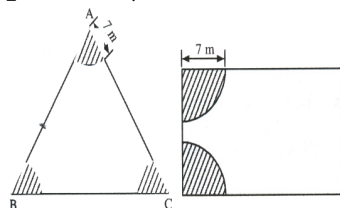
340) A survey was conducted by the students of class X in a particular area to find the most polluted region and it was found that the shaded region is the most polluted. If the radius of the circular part that was surveyed is 14 m and the angle formed between the two radii is 60°, find the area of polluted region. $[Take\ \pi = 3.14\ and\sqrt{3} = 1.732]$
(a) How is pollution harmful?
(b) Write the steps that you would take to reduce pollution in a particular region.
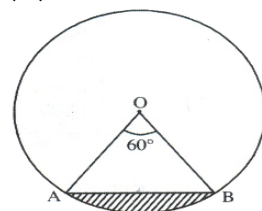

341) On a square sheet of paper 'Purvi' a student of class X made a design as shown in the figure to prepare a poster on "Save Energy". If each side of the square is 20 cm, and semi-circles are drawn with each side of the square as diameter, find the area of the shaded region. $[Use\ \pi = 3.14]$
(a) Write the two ways you can save energy?
(b) Why do we need to save energy?
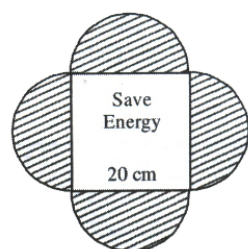
342) In figure, arcs are drawn by taking vertices A, B, C of an equilatetal triangle of side 10 cm to intersect the sides BC, CA and AB at their respective mid-points D, E and F. Find the area of the honesty. [$Use \ \pi = 3.14$] Write the four qualities of a student.
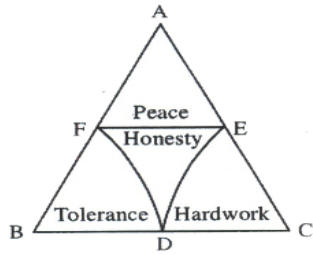

343) The inside perimeter of a running track as shown in Fig. given below is 340 m. The length of each straight portion is 60 m where the three hoardings "SAVE WATER", "SAVE TREES" and "SAVE ENVIRONMENT" are put on the trees along the track. The curved portion are semicircle. If the track is 7 m wide, find the area of the track. Also, find the outer perimeter of the track.
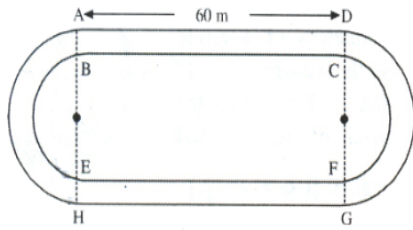
(a) Which mathematical concepts have been covered in the above question?
(b) Why hoardings are put on the trees?

344) In a school assembly, a placard was shown as in the figure given, in which, ABC is a quadrant of a circle and a semicircle is drawn with BC as diameter. Each section of the placard has depicted virtues like (i) Hard work (ii) Honesty and (iii) Punctuality written on it boldly. How much area on this has been given to honesty? What is the importance of honesty? What area has been allotted to hard work?
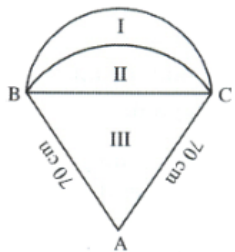
345) In the given figure, ABC is a right-angled triangle, right-angled at B, AB=14cm and BC=24cm.With vertices A, B and C as centres arcs are drawn each of radius 7cm.Find the area and perimeter of the shaded region.
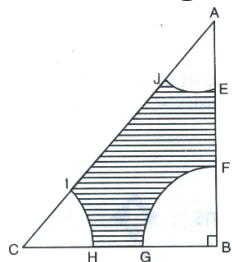

346) The minute hand of a clock is 12cm long.Find the area of the face of the clock described by minute hand between 9 a.m. and 9.35 a.m.

347) In the given figure, three semicircles A, B and C having diameter 3cm each, another semicircle E having diameter 9cm and a circle D of diameter 4.5cm.Find the area of the shaded region.[Use π =3.14]
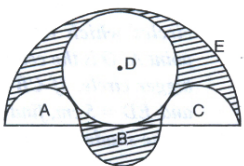

348) A drain cover is made from a rectangular metal plate having dimensions 50cm by 30cm and 32 holes of diameter 4cm each drilled in it.Find the area of the remaining plate.
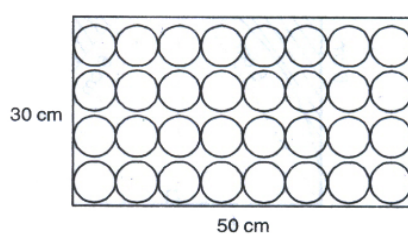
349) In the adjoining figure, ABCD is a square of side 6cm.Find the area of the shaded region.
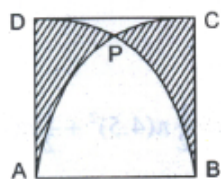

350) In the figure alongside, crescent is formed by two circles which touch at the point A, O is the centre of the point A, O is the centre of the bigger circle.If CB=9cm and ED=5cm, find the area of the shaded region.[Take π =3.14]
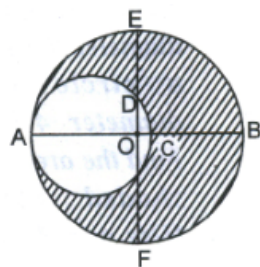

351) ABCD is a field in the shape of a trapezium.AB||DC and $\angle$ ABC=60^0,$\angle$ DAB=90^0.Four sector are formed with centres A, B, C and D.THe radius of each sector is 17.5m.Find:
(i)the total area of the four sectors
(ii)the area of remaining portion, given that AB=75m and CD=50m.
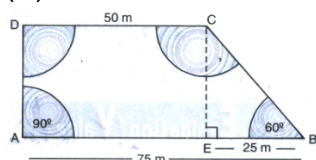
352) (i) Find the area of the unshaded region given in figure.
(ii) _____ is the best policy.
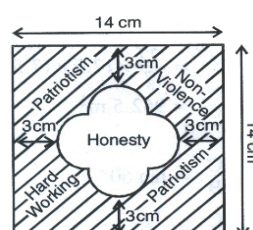
353) In a health Mela, a dart game was arranged and children who could make their aim to the unshaded area received some prizes. Find the area of the shaded region, where radii of two concentric circles with centre O are 14 cm and 21 cm respectively and $\angle XOY = 30°$ (see figure). Why are health Melas important?
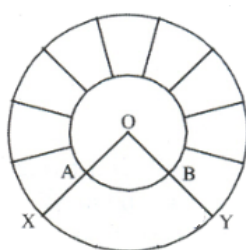
354) A square OABC is inscribed in a quadrant OPBQ as shown in fig. If OA = 14 cm, find the area of the shaded region.
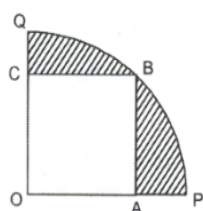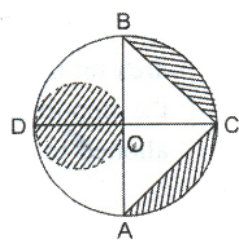

355) In fig., ABCD is a quadrant of a circle of radius 14 cm and a semicircle BED is drawn with BD as diameter. Find the area of the shaded region.
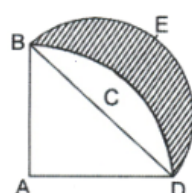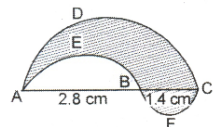
356) In the figure, AB and CD are two diameters of a circle (with centre O) perpendicular to each other and OD is the diameter of the smaller circle. If OA = 14 cm, find the area of the shaded region.


357) In fig., find the perimeter of shaded region where ADC, AEB and BFC are semicircles on diameter AC, AB and BC respectively.

358) The rainwater collected on the roof of a building of dimensions 22 m x 20 m, is drained into a cylindrical vessel having base diameter 2 m and height 3.5 m. If the vessel is full up to the brim, find the height of rainwater on the roof. $\left[Use \; \pi = \frac{22}{7}\right]$

359) A rectangle of sides 8 cm and 6 cm is inscribed inside the circle. Find the remaining area of the circle.

360) The cost of fencing a circular field at the rate of Rs. 30 per metre is Rs. 6600. The field is to be ploughed at the rate of Rs. 1.50 per square metre. Find the cost of ploughing the field.

361) A car wiper has two blades each of length 56 cm. How much area will they both sweep if each makes an angle of 135° while it moves. $\left[Use \; \pi = \frac{22}{7}\right]$

362) Find the area of the flower-bed having semicircular ends as shown in the figure. $\left[Use \; \pi = \frac{22}{7}\right]$
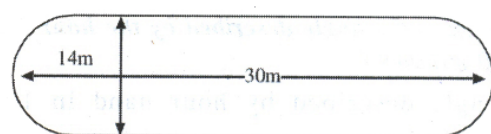

363) In the given figure, PQ, PR and AB are tangents at points Q, R and S respectively of a circle. If PQ = 8 cm, find the perimeter of $\triangle APB$
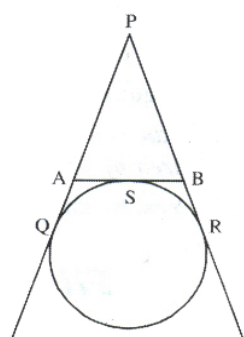
364) Find the circumference of a circle of radius 2.1 cm

365) What is the area of a circle in terms of its diameter?

366) What is the angle subtended by the minute hand in five minutes?

367) What is the perimeter of a semicircular protractor whose radius is 7 cm?

368) Circumferences of two circles are equal. Is it necessary that their areas be equal ? Why?

369) What is the angle described by the hour hand in 10 minutes ?

370) How do we denote the ratio of the circumference of a circle with its diameter?

371) Can you find the area of a semicircle using the area of sector ? If yes, how?

372) What is the perimeter of a semicircular protractor whose radius is 14 cm?

373) What is the perimeter of a sector of a circle of radius r and central angle θ?

374) What is the perimeter of a segment with radius 'r', central angle θ and chord length 'x' units?

375) Find the perimeter of the quadrant of a circle of radius 4.2 cm.

376) The length of the minute hand of a clock is 14cm. Find the area swept b the minute hand in 15minutes.

377) What is the area of a semicircle ?

378) What will be the length of an arc of a sector of a circle with radius r and angle theta?

379) What will be the area of a sector of a circle with radius r and angle theta?

380) If the ratio of the circumferences of two circles is 3 : 1, then find the ratio of their areas.

381) The ratio of the areas of two circles is 4 : 9. Then, find the ratio of their radii.

382) The length of the minute hand of a clock is 14 cm. Find the area swept out by the minute hand in 1h.

383) For a race of 1540 m, find the number of rounds one have to take on a circular track of radius 3.5 m.

384) A pendulum swings through an angle of 60° and describes an arc 8 . 8 cm in length. Find the length of pendulum.

385) Find the area of sector of a circle of radius 28 cm and central angle 45° .

386) What will be the perimeter of a quadrant of a circle of radius r?

387) Find the area of sector of central angle x° of a circle with radius 4r.

388) Find the diameter of a circle whose area is equal to the sum of the areas of two circles of radii 40 cm and 9 cm.

389) The sum of circumference and the radius of a circle is 51 cm. Find the radius of circle.

390) The circumference of a circle is 44 cm. Find the area of circle.

391) The circumference of a two circles are in the ratio 2 : 3. Find the ratio of their areas.

392) If the length of an arc of a circle of radius r is equal to that of an arc of a circle of radius 2r, then the angle of the corresponding sector of the first circle is double the angle of the corresponding sector of the other circle. Is this statement false? Why?

393) An athlete runs on a circular track of radius 49 m and covers a distance of 3080 m along its boundary. How many rounds has he taken to cover this distance? [Take, $\pi = \frac{22}{7}$]

394) Radii of two concentric circles are 7 cm and 5 cm. Find the area of the portion between two circles.

395) Find the radius of a circle whose circumference is equal to the sum of the circumference of two circles of radii 15cm and 18 cm.

396) A horse is tied to a peg at one corner of a square shaded grass field of side 25 m by means of a 14m long rope. Find the area of the part of the field in which the horse can graze. [Take $\pi = 22/7$].

397) The circumference of a circle is 11 cm. Find the area of its quadrant.

398) Difference between the circumference and the radius of a circle is 74 cm. Find the area of circle.

399) If area of the circle is 301.84 cm^2 , then find radius of circle.

400) The area of a circle is 2464 cm ^{2} . Find the diameter of circle.

401) Find the area of a quadrant of a circle, whose circumference is 44 cm.

402) The difference between the circumference and the radius of a circle is 37 cm. Find the area of the circle

403) If the circumference of two concentric circles forming a ring are 88 cm and 66 cm, then find the width of the ring.

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

405) Find the area of a quadrant of a circle, whose circumference is 22 cm.

406) Find the area of shaded region.

407) Find the area of shaded region.

408) If the perimeter of a protractor is 72 cm, then calculate its area.

409) If the area of a sector of a circle is $\frac{5}{18}$ th of the area of that circle, then find the central angle of the sector.

410) The radii of two circles are 4 cm and 3 cm. Find the radius of the circle whose area is equal to the sum of the areas of the two circles. Also, find the circumference of this circle.

411) The area of a circular palyground is 22176 m^2. Find the cost of fencing this ground at the rate of Rs. 50 per m.

412) Find the area of the largest circle that can be drawn inside the given rectangle of length 'a' cm and breadth 'b' cm (a > b).

413) In the given 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.
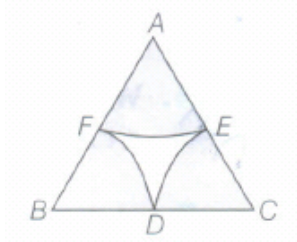
414) What is the perimeter of the sector with radius 10.5 ern and sector angle 60˚ ?

415) If the circumferences of two concentric circles forming a ring are 88 cm and 66 cm respectively. Find the width of the ring.

416) Two coins of diameter 2 cm and 4 cm respectively are kept one over the other as shown in the figure, find the area of the shaded ring shaped region in square cm.

417) The diameters of two circles with centre A and B are 16 cm and 30 cm respectively. If area of a circle with centre C is equal to the sum of areas of the other two circles, then find the circumference of the circle with centre C.

418) The diameter of a wheel is 1.26 m. What the distance covered in 500 revolutions?

419) What is the area of the largest square that can be inscribed in a circle of radius 12 cm?

420) What is the name of a line which intersects a circle at two distinct points?

421) What is the perimeter of a sector of a circle whose central angle is 90° and radius is 7 cm ?

422) In the given figure, AB is the diameter where AP = 12 cm and PB = 16 cm. Taking the value of π as 3, find the perimeter of the shaded region.

423) Find the area of circle that can be inscribed in a square of side 10 cm.

424) A thin wire is in the shape of a circle of radius 77 cm. It is bent into a square. Find the side of the square $\left(Taking, \pi = \frac{22}{7}\right)$

425) What is the diameter of a circle whose area is equal to the sum of the areas of two circles of radii 40 cm and 9 cm ?

426) Find the area (in cm^2) of the circle that can be inscribed in a square of side 8 cm.

427) If the radius of a circle is doubled, what about its area?

428) If the perimeter and the area of the circle are numerically equal, then find the radius of the circle.

429) If circumference of a circle is 44 cm, then what will be the area of the circle?

430) A steel wire when bent in the form of a square encloses an area of 121 cm^2. If the same wire is bent in the form of a circle, then find the circumference of the circle.

431) If the circumference of a circle increases from 4π to 8π, then what about its area?

432) Find the area of the square that can be inscribed in a circle of radius 8 cm.

433) If the radius of the circle is 6 cm and the length of an arc is 12 cm. Find the area of the sector.

434) If the perimeter of a semi-circular protractor is 36 cm, find its diameter. $\left(\pi = \frac{22}{7}\right)$

435) If the perimeter of a protractor is 72 cm, calculate its area. $\left(Use\, \pi = \frac{22}{7}\right)$

436) Find the areas of circle whose circumference is as follows
(i) 22 cm
(ii) 3.5 cm
(iii) $\frac{21}{2}$ cm
(iv) 112m

437) The radii of two circles are 12 cm and 5 cm respectively. Find the radius of the circle having area equal to the sum of area of the two circles.

438) Two circles touch each other externally. The sum of their areas is $130\,\pi\,crn^2$ and the distance between their centres is 14cm. Find the radii of the circles.

439) The diameter of the driving wheel of a bus is 140 cm. How many revolution per minute must the wheel make in order to keep a speed of 66 km/h?

440) The short and long hands of a clock are 8 cm and 12 cm long, respectively. Find the sum of the distances travelled by their tips in two days, i.e. in 48 h $\left[\text{take},\, \pi = \frac{22}{7}\right]$

441) Find the area of the sector of a circle with the following radius and angles, given below. Also find the area of the corresponding major sector.

S. No.	Radius	Angles
(i)	4 cm	30°
(ii)	7 cm	45°
(iii)	16 cm	60°
(iv)	15 cm	135°
(v)	21 cm	90°

442) In a circle of diameter 28 cm, if an arc subtends an angle of 60° at the centre where $\pi = \frac{22}{7}$, then what will be the length of arc?

443) A circle has radius 5 cm. Three chords of lengths 6 cm, 8 cm and 10 cm are drawn. Which chord subtends the largest angle on its minor arc?

444) The radius of a circle is 17.5 cm. Find the area of the sector of the circle enclosed by two radii and an arc 44 cm in length.

3 Marks   153 x 3 = 459

445) A brooch is made with silver wire in the form of a circle with diameter 35 mm. The wire is also used in making 5 diameters which divide the circle into 10 equal sectors as shown in figure.
Find:
(i) the total length of the silver wire required.
(ii) the area of each sector of the brooch.
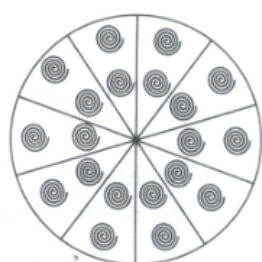
446) In the fig., find the perimeter of shaded region where ADC, AEB and BFC are semicircles on diameters AC, AB and BC respectively.
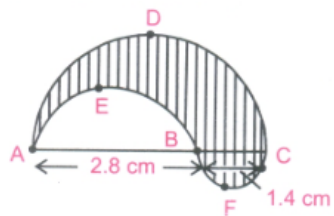
447) Find the area of the shaded region in the fig., where ABCD is a square of side 14 cm.
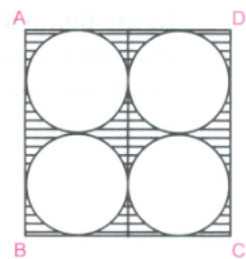

448) In fig., ABC is a right-angled triangle, right-angled at A. Semicircles are drawn on Ab, Ac and BC as diameters. Find the area of the shaded region.
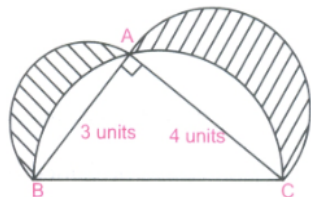
449) In the fig., ABC is a quadrant of a circle of radius 14 cm and a semicircle is drawn with BC as diameter. Find the area of the shaded region.
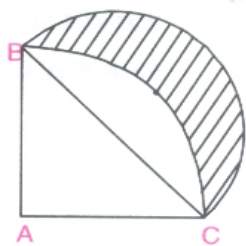
450) Find the area of the shaded region (in fig.) if PR = 24 cm, PQ = 7 cm and O is the centre of the circle.
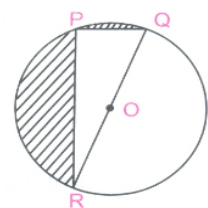
451) The area of an equilateral triangle in $49\sqrt{3}\ cm^2$. Taking each angular point as centre, circles are drawn with radius equal to half the length of the side of the triangle. Find the area of triangle not included in the circles.$[Take\ \sqrt{3} = 1.73]$

452) In figure, the boundary of shaded region consists of four semicircular arcs, two smallest being equal. If diameter of the largest is 14 cm and that of the smallest is 3.5 cm, calculate the area of the shaded region. $[Use\ \pi = \frac{22}{7}]$
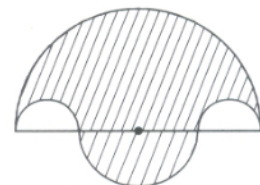
453) Find the area of the shared region in figure, where a circular arc of radius 7 cm has been drawn with vertex O of an equilateral triangle OAB of side 12 cm, as centre.

454) In the given figure, O is the centre of the circle with AC = 24 cm, AB = 7 cm and find the area of the shaded region. $[Use\ \pi = 3.14]$
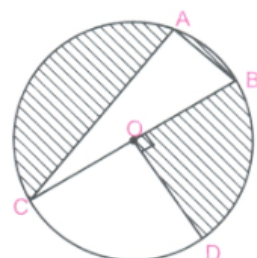
455) ABC is a right triangle, right angled at A. Find the area of shaded region if AB = 6cm, BC = 10 cm and O is the centre of the incircle of $\triangle ABC$. $[Take \ \pi = 3.14]$
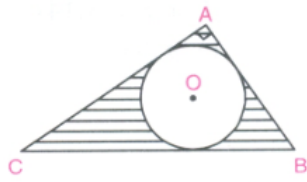
456) In the given figure, three circles each of radius 3.5 cm are drawn in such a way that each of them touches the other two. Find the area of shaded region enclosed between these three circles. $\left[Us\pi = \frac{22}{7}\right]$
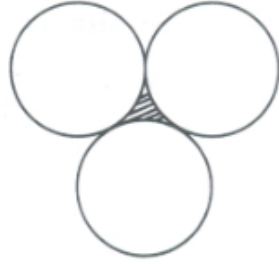
457) In given figure, an equilateral triangle has been inscribed in a circle of radius 6 cm. Find the area of the shaded region. $[Use \ \pi = 3.14]$
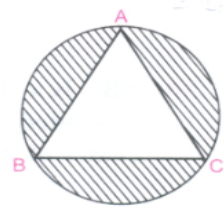
458) From a thin metallic piece, in the shape of a trapezium ABCD in which AB || CD and , a quarter circle BFEC is removed (See figure). Given AB = BC = 3.5 cm and DE = 2 cm, calculate the area of the remaining (shaded) part of the metal sheet. $\left[Use \ \pi = \frac{22}{7}\right]$
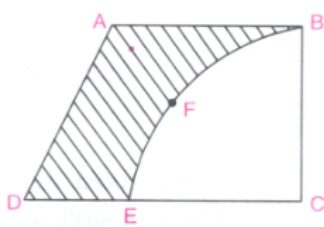
459) The inner perimeter of a racetrack is 400 m and the outer perimeter is 488 m. The length of each straight portion is 90 m. Find the cost of developing the track at the rate of $Rs. \ 12.50/m^2$

460) ABCD is a rectangle in which AB = 20 cm and BC = 10 cm. A semicircle is drawn with centre at O and radius $10\sqrt{2}$ cm. It passes through A and B as shown in figure. Find the area of shaded region. $[\pi = 3.14]$
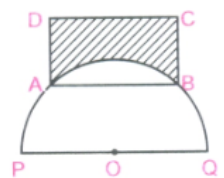
461) In figure, ABCD is a trapezium with AB || DC, AB = 18 cm, DC = 32 cm and distance between AB and DC = 14 cm. If arcs of equal radii 7 cm with centres A, B, C and D have been drawn, then find the area of the shaded region.
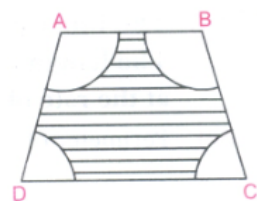
462) Find the area of the shaded region given in Fig.
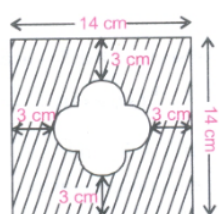
463) In fig., PSR, RTQ and PAQ are three semicircles of diameters 10 cm, 3 cm and 7 cm respectively. Find the perimeter of the shaded region. [Use π = 3.14]
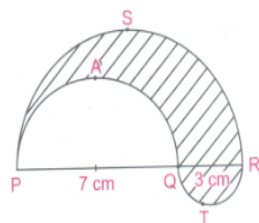

464) In fig., ABCD is a trapezium of area 24.5 sq. cm. In it, AD || BC, $\angle DAB = 90^o$, AD = 10 cm and BC = 4 cm. If ABE is a quadrant of a circle, find the area of the shaded region. [Use π =22 / 7]
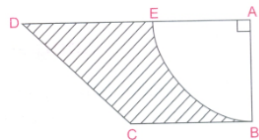
465) In fig., from a rectangular region ABCD with AB=20 cm, a right triangle AED with AE=9 cm and DE = 12 cm, is cut off. ON the other end, taking BC as diameter; a semicircle is added on outside the region. Find the area of the shaded region. [Use π =3.14]
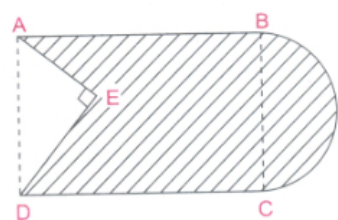
466) In fig., APB and AQO are semicircle, and AO = OB. If the perimeter of the figure is 40 cm, find the area of the shaded region. [Use π = 22 / 7]
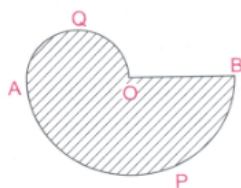
467) AB is chorod of circle of radius 10 cm. The chorod subtends a right angle at the centre of the circle. Find the area of the minor segment. [Take π = 3.14]

468) The area of circle inscribed in an equilateral triangle is 154 cm^2 . Find the perimeter of the triangle.

469) In fig., ABCD is a square of side 14 cm. Semicircles are drawn with each side of square as diameter. Find the area of the shaded region (use π = 22 / 7)
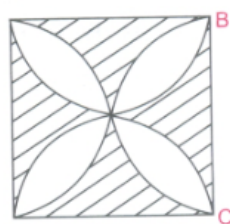
470) In fig., find the area of the shaded region, enclosed between two concentric circles of radii 7 cm and 14 cm where $\angle AOC = 40^o$. $(Use \quad \pi = \frac{22}{7})$
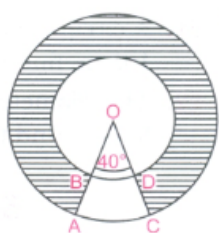
471) in fig., two arcs PAQ and PBQ are shown. Arc PAQ is a part of circle with centre O and radius OP while arc PBQ is a semicircle drawn on PQ as diameter with centre M. If OP = PQ = 10 cm show that area of shaded region is $25 \left(\sqrt{3} - \frac{\pi}{6} \right)$
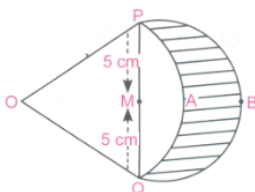

472) How long will Onkar take to run $12\frac{1}{2}$ rounds at the rate of 3.3km/h, around a circular track of area 5544m^2?

473) From a rectangular sheet of paper ABCD with AB=40cm and AD=28cm, a semicircular portion with BC as diameter is cut off.Find the area of the remaining paper.[Use $\pi = \frac{22}{7}$]
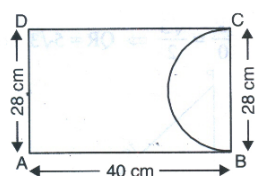

474) A chord of a circle of radius 12cm subtends an angle of 120^0 at the centre.Find the area of the corresponding segment of the circle.[Use $\pi = 3.14 \ and \ \sqrt{3} = 1.73$]

**475)** Calculate the area of the shaded region in the figure common between two quadrants of circle of radius 8cm each.
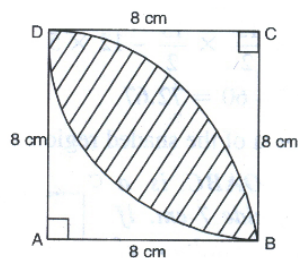
476) Find the area of the shaded region.[Use π =3.14]

477) In fig., OABC is a square of side 7cm,.If OAPC is a quadrant of a circle with centre O, then find the area of the shaded region.
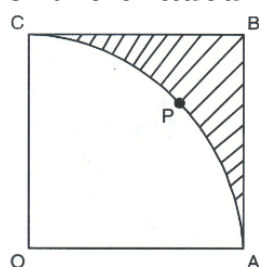
478) If the hypotenuse of an isosceles right triangle is $7\sqrt{2}cm$, find the area of the circle inscribed in it.

479) In fig., O is the centre of a circle such that diameter AB=13cm and AC=12cm.BC is joined.Find the area of the shaded region.[Take π =3.14]
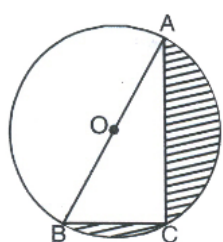
480) In fig., Pq and AB respectively the arcs of two concentric circles of radii 7cm and 3.5cm and centre O.If $\angle POQ = 30^0,$ then find the area of the shaded region.[Use $\pi = \frac{22}{7}$]
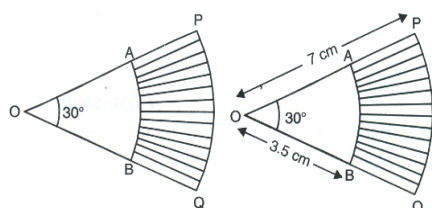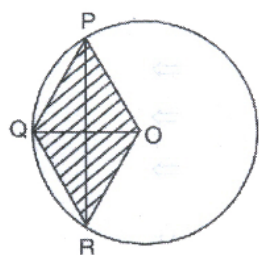

481) In figure, AC=24cm, BC=10cm and O is the centre of the circle.Find the area of the shaded region.[Use π =3.14]
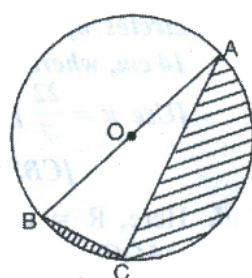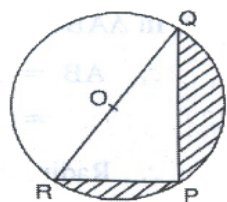
482) In fig., OACBO represents a quadrant of a circle of radius 7cm with centre at O.If OD=5cm, find the area of the shaded region.
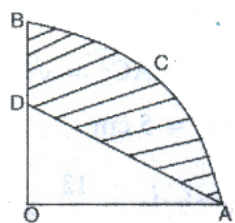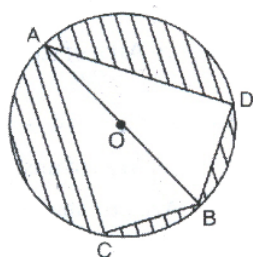

483) In figure, OPQR is a rhombus whose three vertices P, Q, R lie on a circle of radius 8cm.Find the area of the shaded region.
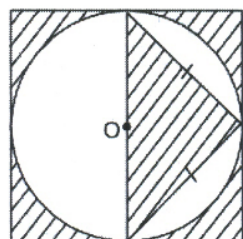

484) Find the area of shaded region in figure, if PQ=16cm, PR=12cm and O is the centre of the circle.[π =3.14]

485) Find the area of the shaded region in figure, if BC=BD=8cm, AC=AD=15cm and O is the centre of the circle.[Take π =3.14]

**486)** In figure, a circle of radius 7cm is inscribed in a square.Find the area of the shaded region.

487) Nandhini made a design on a square chart paper ABCD, made of square, semicircular arcs and arcs of quadrant of circles (see igure).Calculate the total shaded area in given figure.

488) In figure, two circular flower beds have been shown on to sides of a square lawn ABCD of side 56m.If the centre of each circular flower bed is the point of intersection O of the diagonals, of the square lawn, find the sum of the area of the lawn and flower beds.
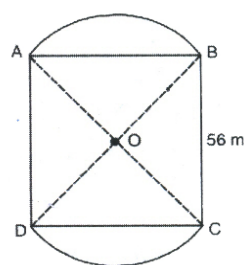
489) In figure, ABCD is a square of side 4cm.A quadrant of a circle of radius 1cm is drawn at each vertex of the square and a circle of diameter 2cm is also drawn.Find the area of the shaded region.[Use π=3.14]
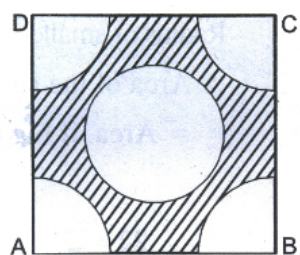

490) Find the area of the shaded portion from the given figure.
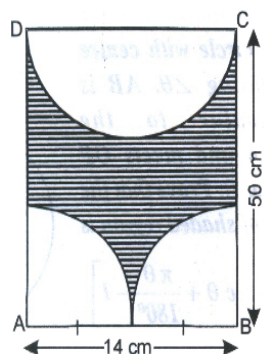
491) In the adjoining figure, B and CD are two diameters of a circle (with centre O) perpendicular to each other and OD is the diameter of the smaller circle.If OA=7cm, find the area of shaded region.
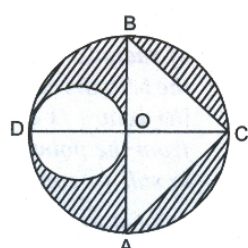

492) The radii of two circles are 13 cm and 6 cm, respectively. Find the radius of the circle which has circumference equal to the sum of the circumferences of the two circles.

493) A bicycle's wheel makes 5000 revolutions in moving 11 km. Find the diameter of the wheel.

494) The cost of fencing a circular field at the rate of Rs.24 per m is Rs.5280. The field is to be ploughed at the rate of Rs.0.50 per m². Find the cost of ploughing the field.

495) Circular footpath of width 2 m is constructed at Rs. 20 per m² around a circular park of radius 1500 m. Find the total cost of construction of the footpath.

496) If the difference between the circumference and the radius of a circle is 37 crn, then using $\pi = \frac{22}{7}$

497) What will be the perimeter of a quadrant of a circle of radius r?

498) The shaded area, in the figure between the circumference of two concentric circles is 346.5 cm² . The circumference of the inner circle is 88 cm. Calculate the radius of the outer circle.
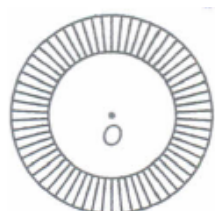

499) The short and long hands of a clock are 4 cm and 6 cm long, respectively. Find the sum of the distances travelled by their tips in two days.

500) The area and circumference of a circle are numerically equal. What is the radius of the circle?

501) Two circles touch internally. The sum of their areas is 116π cm^2 and distance between their centers is 6 cm. Find the radii of the circles.

502) The cost of ploughing a circular field at the rate of Rs.0.25 per m² is Rs.3850. Find the cost of fencing the field at Rs.15 per metre.

503) The ratio of the outer and inner circumference of a circular path is 23:22. If the path is 5m wide, then find the diameter of the inner circle.

504) The diameter of a cycle wheel is 21 cm. How many revolutions will it make to travel 1.98 km?

505) A wire when bent in the form of a square enclose an area 121 sq cm. If the wire was bent in the form of a circle, then find the area enclosed by the circle.

506) If the circumference of a circle and the perimeter of a square are equal, then check whether it is correct that Area of circle > Area of the square.

507) In the given figure, O is the centre of a circle. If the area of the sector OAPB is 5/36 times the area of the circle, then find the value of x.
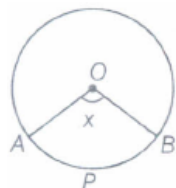
**508)** Area of a sector of a circle of radius 36 cm is $54\pi \; cm^2$. Find the length of the corresponding arc of sector.

509) The minute hand of a clock is 12 cm long. Find the area of the face of the clock described by the minute hand between 9 am and 9:35 am

510) A chord 10 cm long is drawn in a circle whose radius is $\sqrt{50}$ cm.Find the area of the segment.

511) A chord of a circle of radius 30 cm subtends an angle of 60° at the centre. Find the area of the corresponding minor and major segments of the circle.

512) In the given figure, O is the centre of the circle with radius equal to 14 cm. The length of the arc AB=13.2 cm. Find the area of the shaded sector of the circle.
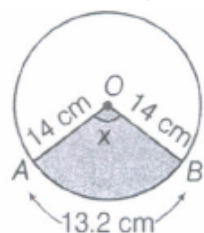

513) A square OABC is inscribed in a quadrant OPBQ of a circle as shown in figure. If OA=14 cm, then find the area of shaded region.

514) Find the area of the shaded region in figure, if ABCD is a square of side 14 cm and APD and BPC are semi-circles.
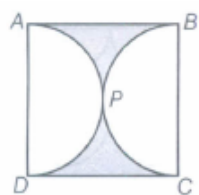
515) Find the area of the shaded region in figure, where a circular arc of radius 6 cm has been drawn with vertex O of an equilateral triangle OAB of side 12 cm as center.
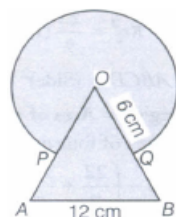

516) In given figure, AB and CD are two diameters of a circle (with centre o) perpendicular to each other and OD is the diameter of the smaller circle.If OA = 7 cm, then find the area of the shaded region.
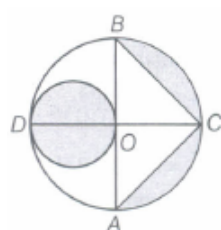

517) The areas of the two circles are in the ratio of 4 : 9. Find the ratio between their circumferences.

518) A wire in a shape of a square of side 88 cm is bent, so as to form a circular ring. Find the area of the circle.

519) A wire when bent in the form of a square enclosed an area 121 sq cm. If the wire was bent in the form of a circle, then find the area enclosed by the circle. [Take, $\pi = \frac{22}{7}$].

520) A bicycle wheel makes 75 revolutions per minute to maintain at a speed of 8.91 km/h. Find the diameter of the wheel.

521) Find the area of the largest triangle that can be inscribed in a semi-circle of radius r units.

522) It is proposed to build a single circular park equal in area to the sum of areas of two circular parks of diameters 16 m and 12 m in a locality. Find the radius of the new park.

523) Find the diameter of a circle whose circumference is equal to the sum of the circumference of the two circles of diameters 36 cm and 20 cm.

524) 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 adjoining figure. Find the area of the remaining part of the park.
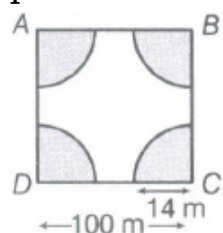

525) In the given figure, ABCD is a square of side 7 cm and A, B, C, D are centres of equal circles which touch externally in pairs. Find the area of the shaded region.
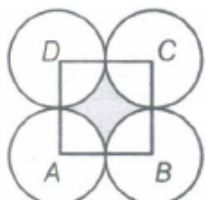

526) In the given figure, diameter AB is 12 cm long. AB is trisected at points P and Q. Find the area of the shaded region.
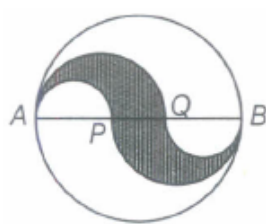
527) There are three semi-circles, A, B and C having diameter 3 cm each and another semi-circle E having a circle D with diameter 45 cm as shown in the figure given below. Find the area of the shaded region.
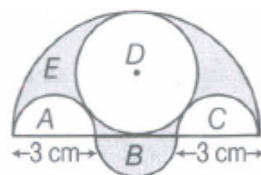

528) Pankaj has a piece of land in the form of sector OPBQ adjoining to a temple. He donates a part of it to the temple such that a square plot OABC is left with him. If OA=20 m. Then,
(i) find the area of the shaded region (donated to the temple).
(ii) which mathematical concept is used in above problem?
(iii) by donating land to a temple by Pankaj, which value is depicted?
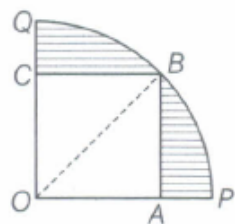
529) In the given figure, O is the centre and AOC is a diameter of the circle. Find
(i) the sum of the areas of the two shaded segments made by the chords AB and BC.
(ii) the area of the shaded segment made by the chord PQ.
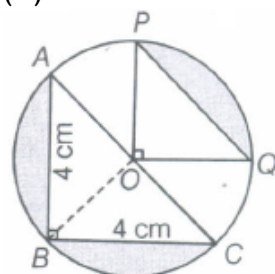
530) Two circular flower beds are made on a pair of opposite sides of a square lawn ABCD of side 56 m as shown in the figure. If centre of each circular flower bed is the point of intersection 0 of the diagonals AC and BD, then find the cost of preparing the flower beds at the rate of Rs.25per m^2 . What value is depicted from the above action?
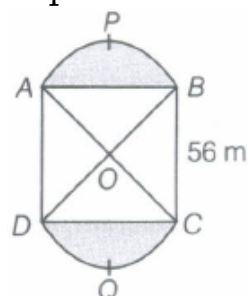

531) There is a circular park in front of Delhi Public School whose radius is 10 m.Around the park, one circular line is drawn, which is having radius 11 m.
(i) A person takes four rounds of a circular park. What distance does he cover? '.
(ii) Suppose, two persons A and Bare standing on the opposite sides of a circular line. What is the maximum distance between them?
(iii) Which of the person is closer to the centre of the circular line?
(iv) How can a park be useful? Discuss its importance.

532) A farmer has a field in the form of circle.He wants to fencing the field. The field is to be ploughed at the rate of Rs.0.50 per m2.If the cost of fencing of a circular field at the rate of Rs.24 per m is Rs.5280, then
(i) find the length of fencing the circular field.
(ii) find the cost of ploughing the field.
(iii) Which value is depicted by the farmer in fencing the field?

533) Find the difference of the area of a sector of angle 120˚ and its corresponding major sector of a circle of radius 21 cm.

534) The central angles of two sectors of circles of radii 7 cm and 21 cm are respectively 120° and 40°. Find the area of the two sectors as well as the lengths of the corresponding arcs. What do you observe?

535) In the given figure, OABC is a square of side 7 cm. If OAPC is a quadrant of a circle with centre O, then find the area of the shaded region. [Take, $\pi = \frac{22}{7}$].

536) PQRS is a rectangle in which length is two times the breadth and L is the mid - point of PQ. With P and Q as centres, draw two quadrants, as shown in figure, Find the ratio of the area of rectangle PQRS to the shaded portion.

537) A flower bed is laid in a square park of side 10 m as shown (shaded in the figure. Find the area of flower bed, if the portion left out are the quadrants of a circle of same radius. The diameter of the circle is equal to the side of square.

538) Area of a sector of central angle 200º of a circle is 770 cm^2 . Find the length of the corresponding arc of this sector.

539) In the given figure, AC = 24 cm, BC = 10 cm and O is the centre of the circle. Find the area of the shaded region. [Take, $\pi = 3.14$].

540) If the given figure, OACBO represents a quadrant of a circle of radius 7 cm with centre O. If OD = 5 cm, then find the area of the shaded region.

541) Find the area of the shaded region in the given figure, if PR = 24 cm, PQ = 7 cm and O is the centre of the circle. [Take, $\pi = 22/7$].

542) A circular pond is 17.5 m is of diameter. It is surrounded by a 2 m wide path. Find the cost of constructing the path at the rate of Rs. 25 per m^2 .

543) Nitika has a circular plot of radius 105 m. He donates a 7 m wide track along its boundary for community - track.
(i) Find the area of the track. [Take, $\pi = \frac{22}{7}$]
(ii) Which mathematical concept is used in the above problem?
(iii) By donating a community - track, which value is depicted by Nitika?

544) In the given figure, ABC is a quadrant of a circle of radius 10 cm and a semi - circle is drawn with BC as diameter. Find the area of shaded region.

545) If three circles of two sectors of circles of radius a each, are drawn such that each touches the other two, then prove that each touches the other two, then prove that area included between them is equal to 4/25 a^2 .

546) Find the area of the shaded region in the given figure, if BC = BD = 8 cm, AC = AD = 15 cm and O is the centre of the circle. [Take, $\pi = 3.14$].

547) Find the area of the shaded portion with given measurements.

548) In a circle with centre O and radius 5 cm, AB is a chord of length $5\sqrt{3}$ cm. Find the area of sector AOB.

549) If the area of a semi-circular field is 30800 sq m, then find the perimeter of the field.

550) The radius of the wheel of a bus is 25 cm. If the speed of the bus is 33 km/h, then how many revolutions will the wheel make in 1 min?

551) The short and long hands of a clock are 6 cm and 8 cm long, respectively. find the sum of the distance travelled by their tips in 1 day. [Take, $\pi = \frac{22}{7}$]

552) The length of minute hand of a clock is 14 cm. Find the area swept by the minute hand in one minute. [Take, $\pi = \frac{22}{7}$]

553) The minute hand of a clock is 20 cm long find the area on the face of the clock described by the minute hand between 8 am and 8 : 45 am.

554) In a circle of radius 28 cm, an arc subtends an angle of 45° at the centre. Find the length of the arc and using it, find the area of the sector.

555) Find the area of the shaded region in figure as shown below where ABCD is a square of side 12 cm.
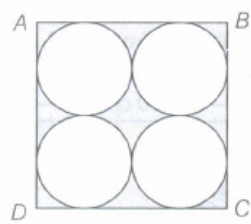

556) Find the area of shaded design in the given figure, where ABCD is a square of side 10 cm and semi-circles are drawn with each of the sides as diameter. [Take, π = 3.14]
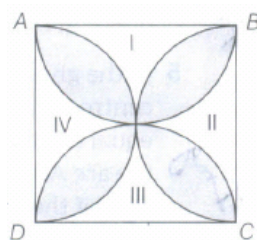

557) Find the area of the shaded region in figure, if AC = 20 cm, AB = 15 cm and O is the centre.
$\left[Take,\ \pi = \frac{22}{7}\right]$
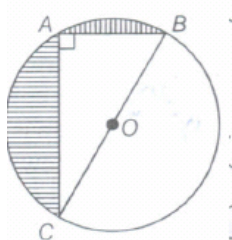
558) In the adjoining figure, OACBO represents a quadrant of a circle of radius 4.5 cm with centre O. Calculate the area of shaded portion. [Take, $\pi = 22/7$]
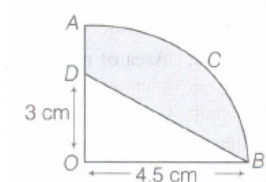

559) The given figure consists of four small semi -circles of equal radii and two big semi-circles of equal radii (each 42 crn). Find the area and perimeter of the shaded region.
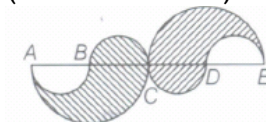

560) A tool is prepared out of a circular metallic disc of radius 14 cm, by taking out two semi-circular parts of radius 7 cm each from the two sides as shown in the figure. Find the area of the metal used in making 50 such tools. $\left[Take, \pi = \frac{22}{7}\right]$
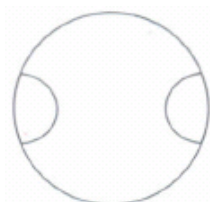
561) In the given figure, O is the centre of the concentric circles. Radius of the inner circle is half the radius of the outer circle. If $\angle$ DOE = 135° and OD = 14 cm, then calculate the area of the shaded region. [Leave your answer in terms of π]
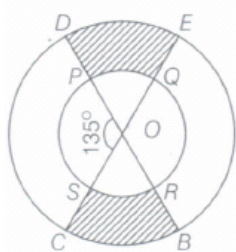
562) A ceiling fan has three wings as shown in the figure. Find the length of arc described between two consecutive wings, where the length of each wing is 0.98 m.
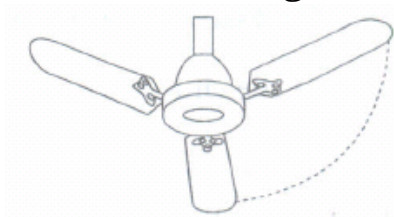

563) In the given figure, AOB is a sector of angle 60° of a circle with centre a and radius 17 cm. If AP $\perp$ OB and AP = 15 cm, find the area of the shaded region.

564) Find the area of shaded region shown in the given figure where a circular arc of radius 6 cm has been drawn with vertex O of an equilateral triangle OAB of side 12 cm as centre.

565) In the given figure, a chord AB of the circle with centre 0 and radius 10 cm, that sub tends a right angle at the centre of the circle. Find the area of the minor segment AQBP. Hence find the area of major segment A$\angle$ BQA. (Use π = 3.14)

566) In the given figure, find the area of the shaded region, enclosed between two concentric circles of radii 7 cm and 14cm where $\angle$ AOC = 40°.
Use $\left(\pi = \frac{22}{7}\right)$

567) In the given figure, O is the centre of circle such that diameter AB = 13 cm and AC = 12 cm. BCis joined. Find the area of the shaded region. (π = 3.14)

568) Find the area of minor segment of a circle of radius 14 cm, when its centre angle is 60°. Also find the area of corresponding major segment. $\left[Use \; \pi = \frac{22}{7}\right]$

569) A momento is made as shown in the figure. Its base PBCR is silver plated from the front side. Find the area which is silver plated. (Use $\pi = \frac{22}{7}$)

570) The circumference of a circle exceeds the diameter by 16.8 cm. Find the radius of the circle. $\left(Use \pi = \frac{22}{7}\right)$

571) Find the area of the corresponding major sector of a circle of radius 28 cm and the central angle 45°.

572) In fig., find the area of the shaded region [Use π = 3.14]

573) In Figure two concentric circles with centre O, have radii 21 cm and 42 cm. If $\angle$ AOB = 60°, find the area of the shaded region. [Use $\pi = \frac{22}{7}$]

574) In figure ABCD is a trapezium of area 24.5 sq. cm. In it, AD II BC, $\angle$ DAB = 90°, AD = 10 cm and BC = 4 cm. If ABE is a quadrant of a circle, find the area of the shaded region. [Take $\pi = \frac{22}{7}$]

575) In the fig., PSR, RTQ and PAQ are three semi-circles of diameters 10 cm, 3 cm and 7 cm respectively. Find the perimeter of shaded region. [use $\pi = \frac{22}{7}$]

576) In the figure, Δ ABC is in the semi-circle, find the area of the shaded region given that AB = BC = 4 cm.

577) In the figure, Δ ACB is in the semi-circle. Find the area of shaded region given that AB = 42 cm.

578) Find the area of the adjoining diagram.

579) In the given figure, AB is the diameter of the larger semi-circle. AB = 21 cm, AM = MN = NB. Semi-circles are drawn with AM, MN and NB as shown. Using $\pi = \frac{22}{7}$, calculate the area of the shaded region.

580) In the given figure, Δ PQR is an equilateral triangle of side 8 cm and D, E, F are centres of circular arcs, each of radius 4 cm. Find the area of shaded region. (Use π = 3.14 and·$\sqrt{3}$ = 1.732)

581) Find the area of shaded region in given figure, where radii of the two concentric circles with centre O are 7 cm and 14 cm respectively and angle AOB = 40°.

582) In fig., sectors of two concentric circles of radii 7 cm and 3.5 cm are given. Find the area of shaded region. $\left[Use \ \pi = \frac{22}{7}\right]$

583) Find the perimeter of the shaded region if ABCD is a square of side 21 cm and APB and CPD are semicircles. (Use $\pi = \frac{2}{7}$)

584) In the figure OABC is a quadrant of a circle of radius 7 cm, If OD = 4 cm, find the area of shaded region.

585) Four equal circles are described about the four corners of a square so that each touches two of the others as shown in figure. Find the area of the shaded region, each side of the square measuring 14 cm.

586) The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand from 9 a.m. to 9.35 a.m.

587) Figure shows two arcs PAQ and PBQ. Are PAQ is a part of circle with centre O and radius OP while arc PBQ is a semi-circle drawn on PQ as diameter with centre M. If OP = PQ = 10 cm show that area of shaded region is $25\left(\sqrt{3} - \frac{\pi}{6}\right) cm^2$

588) In Fig. ABCD is a square of side 14 cm. Semi-circles are drawn with each side of square as diameter. Find the area of the shaded region. $\left(Use \quad \pi = \frac{22}{7}\right)$

589) The long and short hands of a clock are 6 cm and 4 cm long respectively. Find the sum of distances travelled by their tips in 24 hours. (Use π = 3.14)

590) ABCD is a quadrant of a circle of radius 28 cm and a semi-circle BEC is drawn with BC as diameter. Find the area of the shaded region. $\left[Use \ \pi = \frac{22}{7}\right]$

591) ABCDEF is a regular hexagon. With vertices A, B, C, D, E and F as the centres of circles with same radius r are drawn. Find the area of the shaded portion shown in the given figure.
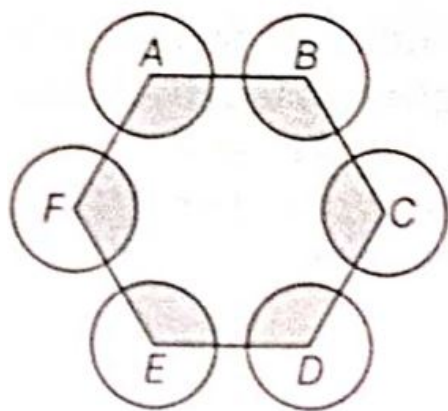

592) In the given figure, AB is a chord of a circle of radius 7 cm and centred at O. Find the area of the shaded region if $\angle$ AOB= 90°. Also, find length of minor arc AB.
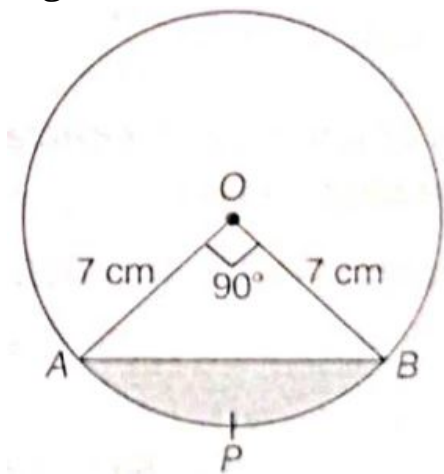
593) Find the area of the shaded region in figure where arcs drawn with centres A, B, C and D intersect in pairs at mid-points P, Q, R and S of the sides AB, BC, CD and DA, respectively of a square ABCD of side 12 cm. [use π = 3.14]
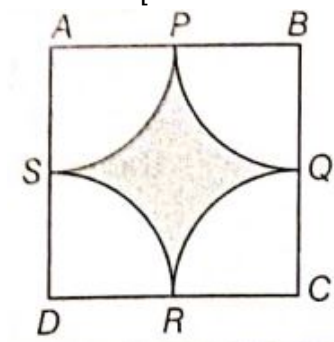
594) In the given figure, three sectors of a circle of radius 7 cm, making angles of 60°, 80° and 40° at the centre are shaded. Find the area of the shaded region.
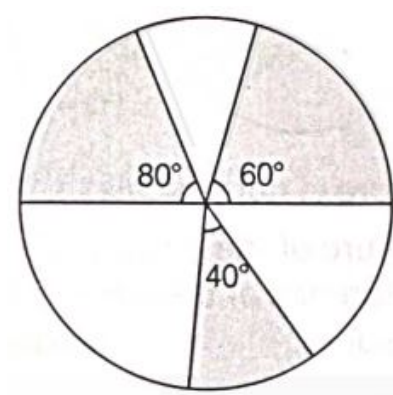
595) The figure below is a part of a circle with centre O. Its area is $\left(\frac{1250\pi}{9}\right)$ cm^2 and the 10 sectors are identical.

[Note: The figure is not to scale]

Find the value of β, in degrees. Show your steps.
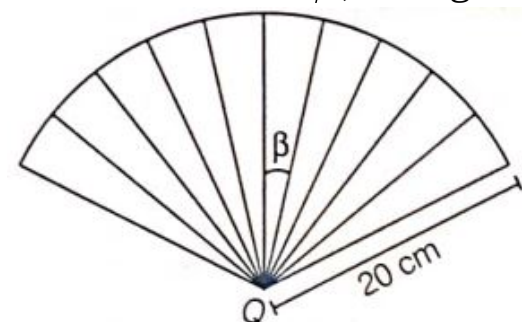
596) A car has two wipers which do not overlap. Each wipes has a blade of length 30 cm sweeping through an angle of 105°. Find the total area cleaned at each Sweep of the blades.

597) The perimeter of the sector of a circle of radius 14 cm and central angle 45° is
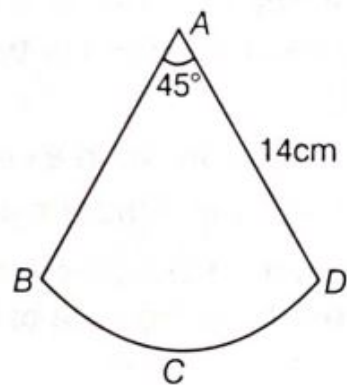
Case Study Questions   22 x 4 = 88

598) Principle of a school decided to give badges to students who are chosen for the post of Head boy, Head girl, Prefect and Vice Prefect. Badges are circular in shape with two colour area, red and silver, as shown in figure. The diameter of the region representing red colour is 22 cm and silver colour is filled in 10.5 ern wide ring. Based on the above information, answer the following questions.
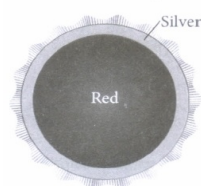
(i) The radius of circle representing the red region is

(a) 9 cm   (b) 10 cm   (c) 11 cm   (d) 12 cm

(ii) Find the area of the red region.

(a) 380.28 cm^2 (b) 382.28 cm^2 (c) 384.28 cm^2 (d) 378.28 cm^2

(iii) Find the radius of the circle formed by combining the red and silver region.

(a) 20.5 cm   (b) 21.5 cm   (c) 22.5 cm   (d) 23.5 cm

(iv) Find the area of the silver region.

(a) 172.50 cm^2 (b) 1062.50 cm^2 (c) 1172.50 cm^2 (d) 1072.50 cm^2

(v) Area of the circular path formed by two concentric circles of radii r_1 and r_2 ($r_1 > r_2$) =

(a) $\pi (r_1^2 + r_2^2)$ sq. units   (b) $\pi (r_1^2 - r_2^2)$ sq. units

(c) $2 \pi (r_1^2 + r_2^2)$ sq. units   (d) $2 \pi (r_1^2 - r_2^2)$ sq. units

599) While doing dusting a maid found a button whose upper face is of black colour, as shown in the figure. The diameter of each of the smaller identical circles is 1/4 of the diameter of the larger circle whose radius is 16 cm.

Based on the above information, answer the following questions.

(i) The area of each of the smaller circle is

(a) 40.28 cm^2 (b) 46.39 cm^2 (c) 50.28 cm^2 (d) 52.3 cm^2

(ii) The area of the larger circle is

(a) 804.57 cm^2 (b) 704.57 cm^2 (c) 855.57 cm^2 (d) 990.57 cm^2

(iii) The area of the black colour region is

(a) 600.45 cm^2 (b) 603.45 cm^2 (c) 610.45 cm^2 (d) 623.45 cm^2

(iv) The area of quadrant of a smaller circle is

(a) 11.57 cm^2 (b) 13.68 cm^2 (c) 12 cm^2 (d) 12.57 cm^2

(v) If two concentric circles are of radii 2 cm and 5 cm, then the area between them is

(a) 60 cm^2 (b) 63 cm^2 (c) 66 cm^2 (d) 68 cm^2

600) Mr Ramanand purchased a plot QRUT to build his house. He leave space of two congruent semicircles for gardening and a rectangular area of breadth 3 em for car parking.
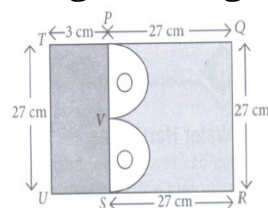
Based on the above information, answer the following questions.

(i) Area of square PQRS is

(a) 700 cm^2 (b) 729 cm^2 (c) 732 cm^2 (d) 735 cm^2

(ii) Area of rectangle left for car parking is

(a) 64 cm^2 (b) 76 cm^2 (c) 81 cm^2 (d) 100 cm^2

(iii) Radius of semi-circle is

(a) 6.75 cm   (b) 7 cm   (c) 7.75 cm   (d) 8.75 cm

(iv) Area of a semi-circle is

(a) 61.59 cm^2 (b) 66.29 cm^2 (c) 70.36 cm^2 (d) 71.59 cm^2

(v) Find the area of the shaded region

(a) 660.82 cm^2 (b) 666.82 cm^2 (c) 669.89 cm^2 (d) 700 cm^2

601) Makar Sankranti is a fun and delightful occasion. Like many other festivals, the kite flying competition also has a historical and cultural significance attached to it. The following figure shows a kite in which BCD is the shape of quadrant of a circle of radius 42 cm, ABCD is a square and Δ CEF is an isosceles right angled triangle whose equal sides are 7 cm long.
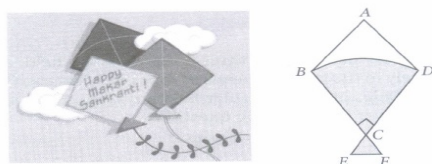
Based on the above information, answer the following questions.

(i) Find the area of the square

(a) 1700 cm² (b) 1764 cm² (c) 1800 cm² (d) 1864 cm²

(ii) Area of quadrant BCD is

(a) 1290 cm² (b) 1380 cm² (c) 1386 cm² (d) 1390 cm²

(iii) Find the area of Δ CEF.

(a) 24.5 cm² (b) 25 cm² (c) 25.5 cm² (d) 26 cm²

(iv) Area of the shaded portion is

(a) 1377 cm² (b) 1390 cm² (c) 1400 cm² (d) 1410.5 cm²

(v) Area of the unshaded portion is

(a) 370 cm² (b) 378 cm² (c) 380 cm² (d) 384 cm²

602) A farmer has a rectangular field oflength 30 m and breadth 15 m. By the farmer a pit of diameter 7 m is dug 12 m deep for rain water harvesting. The earth taken out is spread in the field.
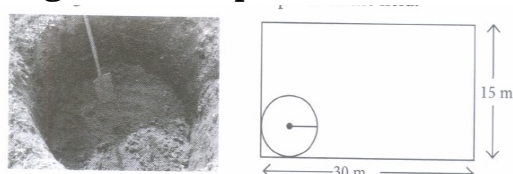
Based on the above information, answer the following questions.

(I) Find the volume of the earth taken out.

(a) 460 m³ (b) 462 m³ (c) 465 m³ (d) 468 m³

(ii) The area of the rectangular field is

(a) 420 m² (b) 430 m² (c) 440 m² (d) 450m²

(iii) Find'the area of the top of the pit.

(a) 38.5 m² (b) 40.5 m² (c) 41.5 m² (d) None of these

(iv) The area of the remaining field is

(a) 402.3 m² (b) 405 m² (c) 410 m² (d) 411.5 m²

(v) Find the level rise in the field

(a) 0.5 m (b) 3 m (c) 1.12 m (d) 2.12 m

603) Gayatri have a triangular shaped grass field. At the three corners of the field, a cow, a buffalo and a horse are tied separately to the pegs by means of ropes of 3.5 m each to graze in the field, as shown in the figure. Sides of the triangular field are 25 m, 24 m and 7 m. Based on the above information, answer the following questions.
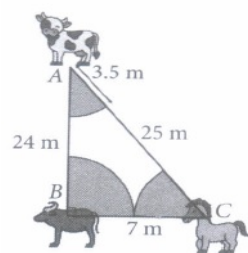
(i) Area of triangular field is

(a) 82 m² (b) 84 m² (c) 86 m² (d) 88 m²

(ii) Area of the region grazed by the cow is

$(a)\dfrac{\angle A}{360°} \times \pi \times (3.5)^2$ $(b)\dfrac{\angle B}{360°} \times \pi \times (24)^2$ $(c)\dfrac{\angle C}{360°} \times \pi \times (3.5)^2$

(d) None of these

(iii) Area of region grazed by the buffalo and the horse is

$(a)\dfrac{(\angle A+\angle C)}{360°} \times \pi \times (5.5)^2$ $(b)\dfrac{(\angle B+\angle C)}{360°} \times \pi \times (5.6)^2$

$(c)\dfrac{(\angle A+\angle C)}{360°} \times \pi \times (3.5)^2$ $(d)\dfrac{(\angle B+\angle C)}{360°} \times \pi \times (3.5)^2$

(iv) Total area grazed by the cow, the buffalo and the horse is

(a) 16.25 m²   **(b) 17.3 m²**   **(c) 18.25 m²**   **(d) 19.25 m²**

(v) Find the area of the field that cannot be grazed.

(a) 60.75 m²   **(b) 64.75 m²**   **(c) 68 m²**   **(d) 69.75 m²**

604) Shweta wants to change the design of the floor of her living room which is of dimensions 6 m x 4 m and it is covered with circular tiles of diameters 50 em each, as shown in the figure .
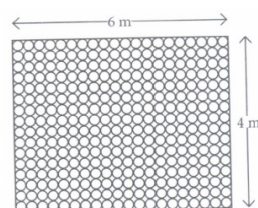
Based on the above information, answer the following questions.

(i) Number of circular tiles along length of room is

(a) 11   **(b) 12**   **(c) 13**   **(d) 14**

(ii) Total number of circular tiles equals to

(a) 90   **(b) 92**   **(c) 94**   **(d) 96**

(iii) Area covered by each circular tile is

(a) 1954.28 cm²   **(b) 1960.08 cm²**   **(c) 1964.28 cm²**   **(d) 1980 cm²**

(iv) Area of rectangular floor is

(a) 240000 cm²   **(b) 204000 cm²**   **(c) 420000 cm²**   **(d) None of these**

(v) Find the area of the floor that remains uncovered with tiles.

(a) 3.6 cm²   **(b) 4.6 cm²**   **(c) 5 cm²**   **(d) 5.142 cm²**

605) To find the polluted region in different areas of Dwarka (a part of Delhi represented by the circle given below) a survey was conducted by the students of class X. It was found that the shaded region is the polluted region, where O is the centre of the circle.
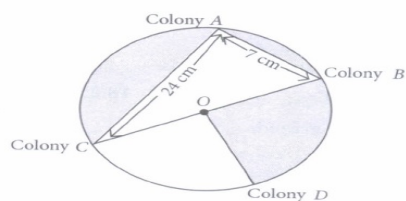
Based on the above information, answer the following questions.

(i) Find the radius of the circle
(a) 12.5 cm   (b) 13.5 cm   (c) 15 cm   (d) 16.5 cm

(ii) Find the area of the circle.
(a) 481.7 cm² (b) 490 cm² (c) 491.07 cm² (d) 495.6 cm²

(Hi) If D lies at the middle of arc BC, then area of region COD is
(a) 121 cm² (b) 122.76 cm² (c) 126 cm² (d) 129.8 cm²

(iv) Area of the Δ BAC is
(a) 77 cm² (b) 79 cm² (c) 81 cm² (d) 84 cm²

(v) Find .the area of the polluted region.
(a) 280.31 cm² (b) 284.31 cm² (c) 285.31 cm² (d) 240.31 cm²

606) A builder of residential project have a vacant square land of side 21 m. He wants to make a temple in the shape of semi-circle and a park in the shape of two quadrants of a circle as shown in the figure.
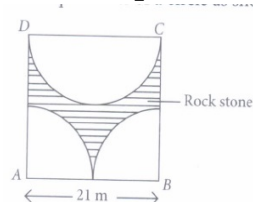
Based on the above information, answer the following questions.

(i) Find the area of square.
(a) 436 m²   (b) 438 m²   (c) 441 m²   (d) 444 m²

(ii) Area of two quadrants, shown in figure, is
(a) 170.25 m² (b) 173.25 m² (c) 175 m² (d) 178.25 m²

(iii) Find the area of semi-circular temple.
(a) 163.25 m²   (b) 168.25 m²   (c) 173.25 m²   (d) 178.25 m²

(iv) Find the area of unshaded region
(a) 340.5 m² (b) 346.5 m² (c) 350.5 m² (d) 355.65 m²

(v) Find the area of shaded region
(a) 88.5 m²   (b) 90.5 m²   (c) 92.5 m²   (d) 94.5 m²

607) There is a race competition between all students of a sports academy, so that the sports committee can choose better students for a marathon. The race track in the academy is in the form of a ring whose inner most circumference is 264 m and the outer most circumference is 308 m.

Based on the above information, answer the following questions.

(i) Find the radius of the outer most circle.

(a) 48 m (b) 49 m (c) 50 m (d) 51 m

(ii) Find the radius of the inner most circle.

(a) 38 m (b) 40 m (c) 42 m (d) 44 m

(iii) Find the width of the track

(a) 7 m (b) 8 m (c) 9 m (d) 10 m

(iv) Find the area of the race track

(a) 2010 m^2 (b) 2006 m^2 (c) 2000 m^2 (d) 2002 m^2

(v) If the cost of painting on the race track is Rs 6 per m^2, then find the total cost for painting the whole race track.

(a) Rs 12000 (b) Rs 12012 (c) Rs 12550 (d) Rs 12850

608) Kartik has his home located at A and his college located at E. Kartik drives his motorbike three days in a week and rides his bicycle in the remaining 3 days, to go to his college and back to home. AOB is a sector of a circle with centre O, central angle 60° and radius 4.2 km. Path AOB is the route for driving by motorbike and path ACB is for bicycle only.
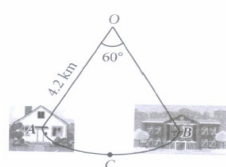
(i) Find the total distance travelled by Kartik through the motorbike in a week to go to college.

(a) 50.4 km (b) 55 km (c) 56.4 km (d) 58 km

(ii) Find the total distance travelled by Kartik through the bicycle in a week to go to college.

(a) 24.4 km (b) 26.4 km (c) 28 km (d) 29.4 km

(iii) Find the area of sector AOB.

(a) 7.88 km^2 (b) 8.24 km^2 (c) 9.24 km^2 (d) 10.14 km^2

(iv) If the cost of fuel for the motorbike is Rs 20 per km, then find the total cost of fuel used in a week in going college.

(a) Rs 1008 (b) Rs 1120 (c) Rs 1200 (d) Rs 1240

(v) If the angle of sector changed from 60° to 90°, then find the total length of the available paths.

(a) 12 km (b) 13 km (c) 14 km (d) 15 km

609) Director of a company select a round glass trophy for awarding their employees on annual function. Design of each trophy is made as shown in the figure, where its base ABCD is golden plated from the front side at the rate of Rs 6 per cm^2
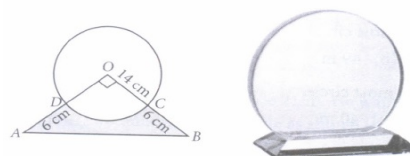
(i) Find the area of sector ODCO.

(a) 154 cm^2 (b) 155 cm^2 (c) 156 cm^2 (d) 157cm^2

(ii) Find the area of $\triangle$ AOB=

(a) 150 cm^2 (b) 200 cm^2 (c) 250 cm^2 (d) 300 cm^2

(iii) Find the total cost of golden plating.

(a) Rs 276   (b) Rs 280   (c) Rs 284   (d) Rs 200

(iv) Find the area of major sector formed in the given figure.

(a) 400 cm^2 (b) 450 cm^2 (c) 462 cm^2 (d) 472 cm^2

(v) Find the length of arc DC.

(a) 16 cm   (b) 18 cm   (c) 20 cm   (d) 22 cm

610) Kritika bought a pendulum clock for her living room. The clock contains a small pendulum oflength 15 cm. The minute hand and hour hand of the clock are 9 cm and 6 cm long respectively.

Based on the above information, answer the following questions.

(i) Find the area swept by the minute hand in 10 minutes.

(a) 24.24 cm^2 (b) 42.42 cm^2

(c) 44 cm^2 (d) 44.42 cm^2

(ii) If the pendulum covers a distance of 22 cm in one complete oscillation, then find the angle described by pendulum at the centre.

(a) 40°   (b) 42°   (c) 45°   (d) 48°

(iii) Find the angle described by hour hand in 10 minutes

(a) 5°   (b) 10°   (c) 15°   (d) 20°

(iv) Find the area swept by the hour hand in 1 hour

(a) 7.68 cm^2 (b) 8.2 cm^2 (c) 8.86 cm^2 (d) 9.428 cm^2

(v) Find the area swept by the hour hand between 11 a.m. and 5 p.m.

(a) 56.568 cm^2 (b) 62 cm^2 (c) 70 cm^2 (d) 72cm^2

611) Shiva made a painting on a square chart paper ABeD. The painting is made up of squares, semicircular arcs (painted with flowers) and arcs of quadrant of circles as shown below. He painted the same type of regions with same colours.
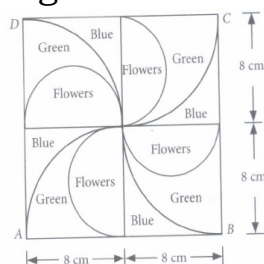
Based on the above information, answer the following questions.

(i) Find the total area of the region which is painted with flowers.

(a) 90.8 (b) 100.57 (c) 105.6 (d) 111.20
cm² cm² cm² cm²

(ii) Find the area of all the quadrants given in the figure.

(a) 190 cm² (b) 198.14 cm² (c) 201.14 cm² (d) 222.14 cm²

(iii) Find the area of the region which is painted green.

(a) 100.57 cm² (b) 111.57 cm² (c) 120 cm² (d) 128.57 cm²

(iv) Find the area of the region which is painted blue

(a) 46.86 cm² (b) 48 cm² (c) 50.86 cm² (d) 54.86 cm²

(v) Find the total length of the boundary of the region which is painted green.

(a) 128.57 cm (b) 132.56 cm (c) 145.57 cm (d) 150 cm

612) Sara hold a japanese folding fan in her hand as shown in the figure. It is shaped like a sector of a circle and made of a thin material such as paper or feather. The inner and outer radii are 3 em and 5 ern respectively. The fan has three colours i.e., red, blue and green.
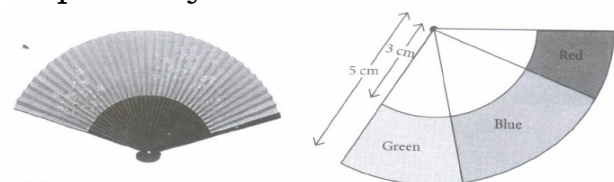
Based on the above information, answer the following questions.

(i) If the region containing blue colour makes an angle of 80° at the centre, then find the area of the region having blue colour.

(a) 9.17 cm² (b) 10.1 cm² (c) 11.17 cm² (d) 13.17 cm²

(ii) If the region containing green colour makes an angle of 60° at the centre, then find the area of the region having green colour

(a) 6.2 cm² (b) 8.38 cm² (c) 9.9 cm² (d) 11.12 cm²

(iii) If the region containing red colour makes an angle oflOo at the centre, then find the perimeter of the region containing red colour.

(a) 2.9 cm (b) 4.2 cm (c) 5.4 cm (d) 6.79 cm

(iv) Find the area of the region having radius 3 cm.

(a) 12.57 cm² (b) 14.8 cm² (c) 20 cm² (d) 26.57 cm²

(v) The region given in the figure represents

(a) minor sector (b) major sector (c) minor segment (d) major segment

613) A stadium is in circular shape. Within the stadium some areas have been allotted for a hockey court and a javelin range, as given in the figure. Assume the shape of the hockey court and the javelin range to be square and triangle, resp. The curators would like to accommodate a few more sports in the stadium. Help them by measuring the unallocated region within the stadium.(the radius of the stadium is 200 mts.)
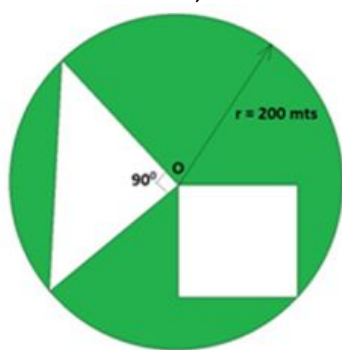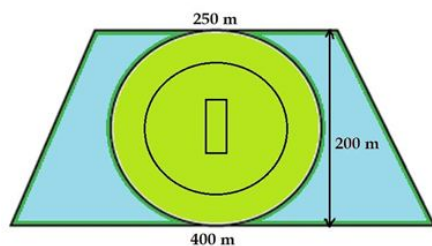

(i) What is the area of circular stadium? (Use = $\pi = 3.14$)

(a)) 85600 m² (b) 40000 m² (c) 120000m² (d) 125600 m²

(ii) What is the area of hockey court (square)?

(a) 80000 m² (b) 40000 m² (c) 20000 m² (d) 25600 m²

(iii) What is the area of Area of the Javelin Range?

(a) 80000 m² (b) 40000 m² (c) 20000 m² (d) 25600 m²

(iv) What is the ratio of the areas of Area of the Javelin Range and Area of Circular field?

(a) 25 : 157 (b) 5 : 157 (c) 50 : 157 (d) 100 : 157

(v) What is the unallocated area?(Use $\pi = 3.14$)

(a) 85600 m² (b) 40000 m² (c) 120000 m² (d) 125600 m²

614) Ravi went to stadium everyday to enjoy his summer vacation. In Stadium, there is a circular swimming pool with center O. The radius of pool is 7 m. There are 2 points on the wall of the pool separated by equal distance. These 2 points are named A and B. A rope is attached between A and B. This rope separates the shallow section of pool from deep section of pool such that ∠AOB = 900. The shallow section is the smaller section.
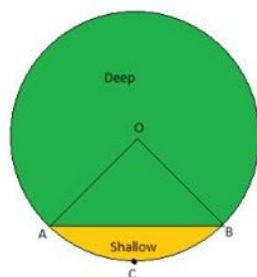
(i) What is the area of $\triangle$AOB ?

(a) 49 m² (b) 24.5 m² (c) 98 m² (d) 140 m²

(ii) What is the area of minor sector AOB? (Use $\pi = 22/7$)

(a) 77m² (b) 38.5 m2 (c) 154m² (d)) 70 m²

(iii) What is the area of Shallow?

(a) 28 m² (b) 56 m² (c) 14 m² (d) 7 m²

(iv) What is the area of swimming pool?

(a) 77 m² (b) 38.5 m² (c) 154 m² (d) 70 m²

(v) What is the area of deeper section?

(a) 77 m² (b) 150 m² (c) 154 m² (d) 140 m²

615) Mohan went to city along with his friends. He visited a cricket stadium which is in the trapezium shape. A circular green ground for playing cricket is inscribed in a trapezium shaped stadium of height 200 m and lengths of parallel sides are equal to 250 m and 400 m. What is the area of the shaded region?

(i) What is the area of trapezium shaped stadium?
(a) 65000 m²   (b) 130000 m²   (c) 75000 m²   (d) 100000 m²

(ii) What is the radius of the circular cricket field?
(a) 200 m   (b) 100 m   (c) 250 m   (d) 400 m

(iii) What is the area of circular cricket field?
(a) 65000 m²   (b) 33600 m²   (c) 31400 m²   (d) 40000 m²

(iv) What is the area of blue shaded part of the stadium (other than cricket field)?
(a) 31400 m²   (b) 33600 m²   (c) 25000 m²   (d) 40000 m²

(v) What is the area of circular cricket field excluding pitch whose dimension is 22 m x 3 m? (use $\pi = 3.14$)
(a) 31400 m²   (b) 33600 m²   (c) 31334 m²   (d) 65000 m²

616) The inauguration of 'Earth day' week in a school, badges were given to volunteers. Organisers purchased these badges from an NCO, who made these badges in the form of a circle inscribed in a square of side 8 cm.

O is the centre of the circle and $\angle$ AOB = 90°
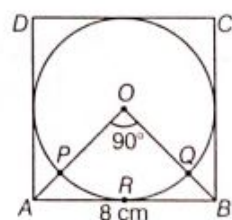
Based on the above information, answer the following questions.
(i) What is the area of square ABCD?
(ii) What is the length of diagonal AC of square ABCD?
(iii) Find the area of sector OPRQO.
Or
(iii) Find the area of remaining part of square ABCD when area of circle is excluded.

617) People of a circular village Dharmkot want to construct a road nearest to it. The road cannot pass through the village. But the people want the road at a shortest distance from the centre of the village (as shown in the figure) and touch the boundary of the circular village at B such that AB = 20 m. Also, the distance of the point A from the centre O of the village is 25 m.
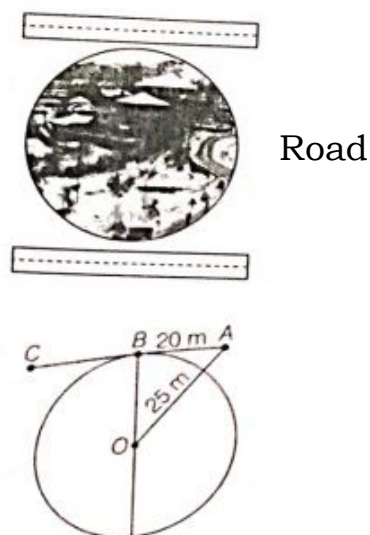
Road

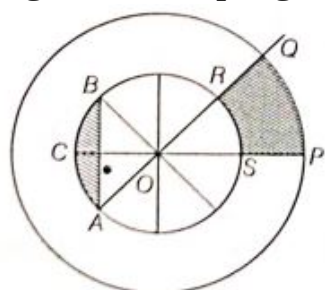Based on the above information, answer the following questions.
(i) If B is the mid-point of AC, then find the distance AC.
(ii) Find the shortest distance of the road from the centre of the village.
(iii) Find the circumference of the village.
Or
Find the area of the village.

618) NSS (National Service Scheme) aims to connect the students to the community and to involve them in problem solving process.
NSS symbol is based on the 'Rath' wheel of the Konark Sun Temple situated in Odisha. The wheel signifies the progress cycle of life. The diagrammatic representation of the symbol is given below

Observe the figure given above. The diameters of inner circle are equally placed. Given that OP = 21 cm and OS = 10 cm :
Based on the above information answer the following questions.
(i) Find m $\angle$ ROS
(ii) Find the perimeter of sector OPQ
(iii) (a) Find the area of shaded region PQRS.
Or
(b) Find the area of shaded region ACB i.e. the segment ACB.

619) A stable owner has four horses. He usually tie these horses with 7 m long rope to pegs at each corner of a square shaped grass field of 20 m length, to graze in his farm. But tying with rope Sometimes results in injuries to his horses, so he decided to build fence around the area, so that each horse can graze.
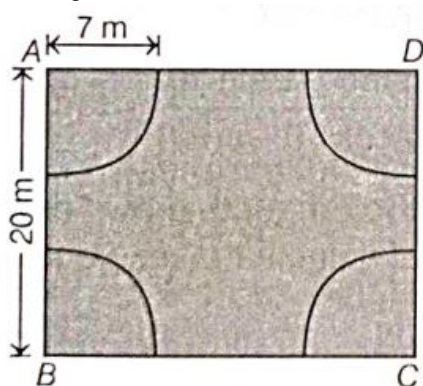
Based on the above, answer the following questions
(a) Find the area of the square shaped grass field.
(b) (i) Find the area of the total field in which these horses can graze.
Or
(ii) If the length of the rope of each horse is increased from 7m to 10m, find the area grazed by one horse. (use π = 3.14)
(c) What is area of the field that is left ungrazed, if the length of the rope of each horse is 7 cm?

**620)** In a circle of radius 21 cm, an arc subtends an angle of 60° at the centre. Find
(i) Length of the arc.
(ii) Area of the sector formed by the arc.
(iii) Area of the segment formed by the corresponding chord.

621) A chord of a circle of radius 15 cm subtends an angle of 60° at the centre. Find the areas of the corresponding minor and major segments of the circle. ($Use\ \pi = 3.14$ and $\sqrt{3} = 1.73$)
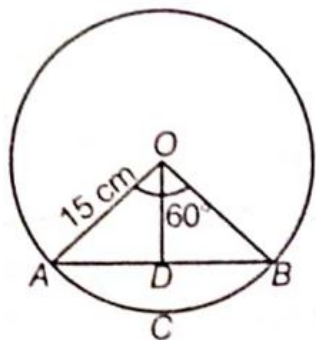

622) A chord of a circle of the radius 12 cm subtends an angle of 120° at the centre. Find the area of the corresponding segment of the circle. ($USE\ \pi = 3.14\ and\ \sqrt{3} = 1.73$).

623) A horse is tied to a peg at one corner of a square shaped grass field of side 15 m by means of a 5 m long rope (see figure). Find
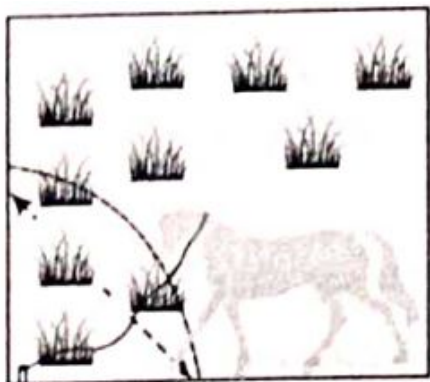
(i) the area of the part of the field in which the horse can graze.
(ii) the increase in the grazing area if the rope were 10 m long instead of 5 m. ($take,\ \pi = 3.14$)

624) A round table cover has six equal designs as shown in the figure. If the radius of the cover is 28 cm, find the cost of making the designs at the rate of Rs. 0.35 per cm^2 . [take, $\sqrt{3}$ = 1.732]
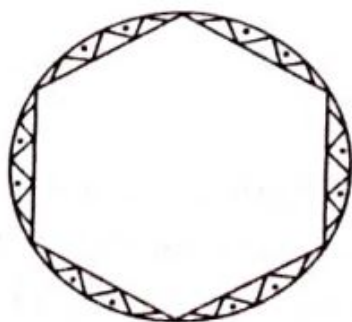
625) Find the area of the segment AYB shown in Figure, if radius of the circle is 21 cm and $\angle AOB = 120°$. $\left(\text{Use } \pi = \frac{22}{7} \right)$
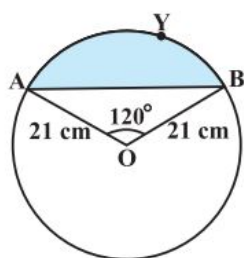
626) Find the area of a quadrant of a circle whose circumference is 22 cm.

627) Find the area of the sector of a circle with radius 4 cm and of angle 30°. Also find the area of the corresponding major sector. (Use π = 3.14).

628) A round table cover has six equal designs as shown in the figure. If the radius of the cover is 28 cm,

find the cost of making the designs at the rate of Rs. 0.35 per cm^2 . $(Use \sqrt{3} = 1.7)$
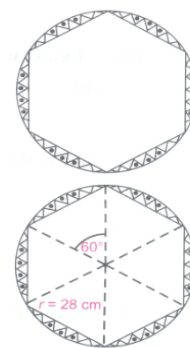
629) The diameters of the front and rear wheels of tractor are 80 cm and 2 m respectively. Find the number of revolutions that rear wheel will make to cover the distance which the front wheel covers in 1400 revolutions. [Use $\pi = \frac{22}{7}$]

630) A semicircular region and a square region have equal perimeters. The area of the square region exceeds that of the semicircular region by 4 cm^2 . Find the perimeters and areas of the two regions. $[Use \ \pi = \frac{22}{7}]$

631) Find the area of the shaded region in the given figure, if PQ=24 cm, PR = 7 cm and O is the centre of the circle.
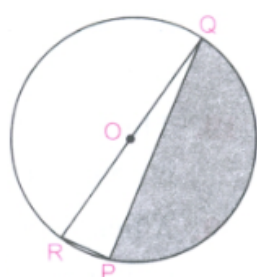
632) In a circular table cover of the radius 32 cm, a design is formed leaving an equilateral triangle ABC in the middle as shown in the figure. Find the area of the design.
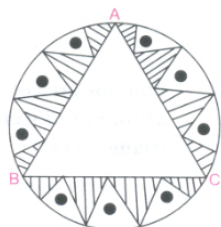
633) The given figure depicts a racing track whose left and right ends are semicircular. The distance between the two inner parallel line segments is 60 m and they are each 106 m long. If the track is 10 m wide, find:
(i) the distance around the track along its inner edge.
(ii) the area of the track.
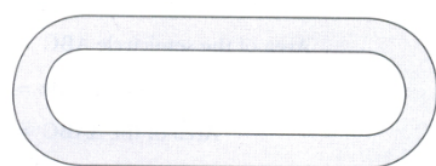
634) In the figure, AB and CD are two diameters of a circle (with centre O) perpendicular to each other and OD is the diameter of the smaller circle. If OA = 7 cm, find the area of the shaded region.
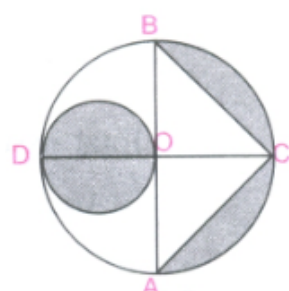
635) The area of an equilateral triangle ABC is 17320.5 cm^2. With each vertex of the triangle as centre, a circle is drawn with radius equal to half the length of the side of the triangle (see figure). Find the area of the shaded region. $(Use \ \pi = 3.14 \ and \ \sqrt{3} = 1.73205)$
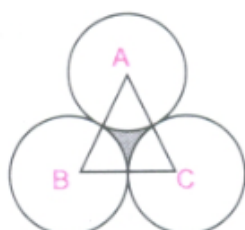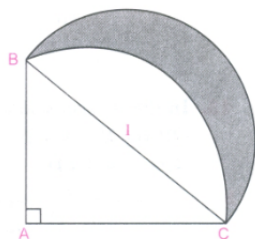
**636)** On a square handkerchief, nine circular designs each of the radius 7 cm are made (see figure). Find the area of the remaining portion of the handkerchief.
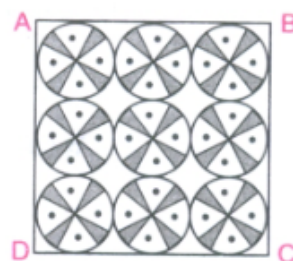
637) In the figure, ABC is a quadrant of a circle of radius 14 cm and a semicircle is drawn with BC as diameter. Find the area of the shaded region.

638) Calculate the area of the designed region in the figure common between the two quadrants of the circles of the radius 8 cm each.
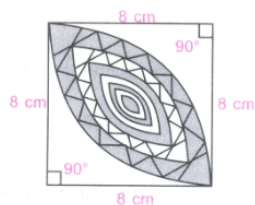
639) An elastic belt is placed round the rim of a pulley of radius 5 cm. One point on the belt is pulled directly away from the centre O of the pulley until it is at P, 10 cm away from O. Find the length of the belt that is in contact with the rim of the pulley. Also find the shaded area . (Use $\pi = 3.14, \sqrt{3} = 1.73$)
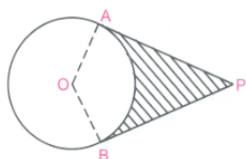
640) A bucket is raised from a well by means of a rope which is wound round a wheel of diameter 77 cm. If bucket ascends in 1 minute 28 seconds with a uniform speed of 1.1 m/s, then calculate the number of complete revolutions the wheel makes in raising the bucket.

641) In fig., PQRS is a square lawn with side PQ = 42 metres. Two circular flower beds are there on the sides PS and QR with centre at O, the intersection of its diagonals. Find the total area of the two flowers beds (shaped parts).
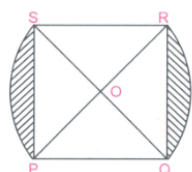
642) In fig., a sector OAP of a circle is shown with centre O, containing $\angle\theta$. AB is perpendicular to the radius OA and meets OP produced at B. Prove that the perimeter of shaded region is
$r\left[tan\theta + sec\theta + \frac{\pi\theta}{180} - 1\right].$
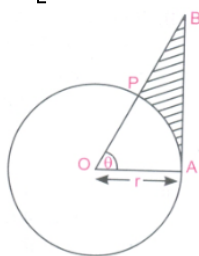
**643)** The long and short hands of a clock are 6 cm and 3 cm respectively. Find the sum of distance travelled by their tips in a day.

644) A bus has wheels which are 112 cm in diameter. How many complete revolutions does each wheel make in 20 minutes, when the bus is travelling at a speed of 66 km/h?

645) Find the diameter of the circle, which has circumference equal to the sum of the circumference of two circles with radii 7 cm and 14 cm.

646) The radius of a circular park is 50 m. A circular concrete footpath of width 5 m is constructed around the park. Find the cost of construction at the rate of Rs. 50 per m^2.

647) Find the cost of fencing a circular field of area 9856 m^2 at the rate of Rs. 20 per metre.

648) From the given figure, calculate:
(i) the area of the shaded region and
(ii) the length of the boundary
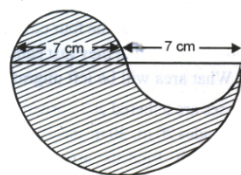
649) For the given figure, find its perimeter and area with given dimensions.
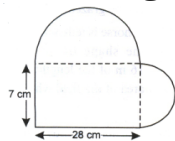
650) An equilateral triangle encloses an area of $484\sqrt{3}cm^2$, made from a wire. Find the area of the circle formed by the same wire.

651) A road which is 7 m wide surrounds a circular track whose circumference is 352 m. Find the area of the road.

652) The wheel of a car has diameter 56 cm. (i) How much times does it rotate when the car has travelled 11 km? (ii) If the wheel has rotated 25000 times when the car has travelled for 45 minutes, calculate speed in km/h.

653) The radii of front and rear wheels of a tractor are 42 cm and 70 cm respectively. Find the number of revolutions that the rear wheel will make in covering a distance, in which the front wheel makes 660 revolutions.

654) A car is travelling at 60 km/h. Its wheels (all of the same size) make 1000 revolutions per minute. Find the diameter of a wheel.

655) How long will a man take to go once round a circular track of radius 4.2 m, if he runs at an average speed of 6 km/h?

656) The radius of a wheel of a car is 35 cm. (i) Find the number of rotations it will make when the car travels 5.5 km. (ii) Calculate the speed of the car if it makes 8100 revolutions in 15 minutes.

657) The wheel of a cart is making 5 revolutions per second. If the diameter of the wheel is 84 cm, find its speed in km/h.

658) The length of the minute hand of a clock is 5 cm. Find the area swept by the minute hand during the time period 6 : 05 am and 6 : 40 am.

659) A bicycle wheel whose diameter is 77 cm makes 50 revolutions in 20 seconds. Find the speed in km/h.

660) In the given figure, the area enclosed between the two concentric circles is 770 cm^2. If the radius of the outer circle is 21 cm, calculate the radius of the inner circle.
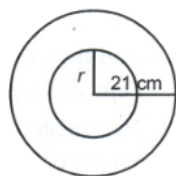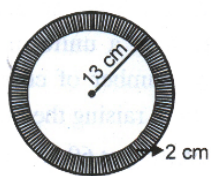

661) In the given figure, find the area of the region between two concentric circles, if the length of the chord of the outer circle touching the inner circle is 14 cm.
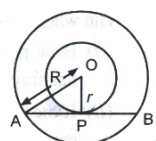
662) Find the area of an annulus whose inner and outer radii are : (i) 12 cm and 16 cm (ii) 6 cm and 8 cm (iii) 3 cm and 4 cm.

663) Calculate the area of the shaded portion in the given figure.

664) Two circles touch internally. The sum of their areas is $116\pi \; sq.\,cm$ and the distance between their centres is 6 cm. Find the radii of the circles.

665) Two circles touch externally. The sum of their areas is $130\pi \; sq.\,cm$ and the distance between their centres is 14 cm. Find the radii of the circles.

666) Three identical memento is made by a school to award three students for three values : Hardwork, Knowledge and Tolerance. If each memento is made as shown in the figure and its base KLMN is silver plated from the front side at the rate of Rs. 25 per cm^2 . Find the total cost of the silver plating.
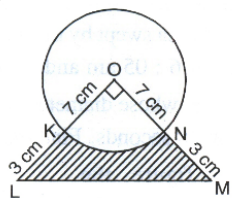
667) Find the area of the sector of a circle with radius 7 cm and angle 120 ° .

668) The length of a certain sector of a circle of radius 5.6 cm is 17.2 cm. Find the area of the sector.

669) If the radius of a circle is increased by 100%, by what per cent is the area of the circle increased?

670) In the given figure, the shape of the top of a table in a restaurant is that of a segment of a circle with centre O and $\angle BOD = 90°$. BO = OD = 60 cm. Find :
(i) the area of the top of the table
(ii) the perimeter of the table. [Take $\pi = 3.14$]
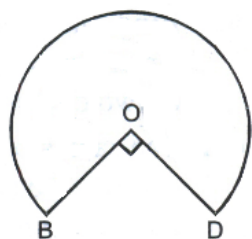
671) The long and short hands of a clock are 6 cm and 4 cm long respectively. Find the sum of distances travelled by their tips in a day.

672) Four cows are tethered at the four corner of a square plot of side 50 m, so that they just cannot reach one another. What area will be left ungrazed?

673) Three horses are tethered at 3 corner of a triangular plot having sides 20 m, 30 m and 40 m with ropes of 7 m length each. Find the area of this plot which can be grazed by the horses.

674) A horse is tethered to one corner of a field which is the shape of an equilateral triangle of side 16 m of the length of the rope is 10.5 m, find the area of the field which the horse cannot graze.

675) Calculate the area of the shaded portion. The quadrants shown in the figure are each of radius 7 cm.
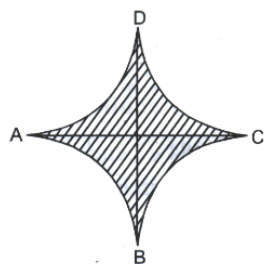
676) In the given figure, ABC is an equilateral triangle inscribed in a circle of radius 4 cm. Find the area of the shaded portion.
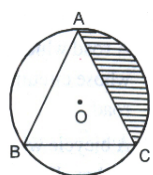

677) A chord AB of a circle of radius 10 cm makes a right angle at the centre of the circle. Find the area of the major and minor segments. [Take $\pi = 3.14$]

678) A chord PQ of a circle of radius 15 cm makes an angle of 60° at the centre of the circle. Find the area of the major and minor segments. [Take $\pi = 3.14$ and $\sqrt{3} = 1.73$]

679) In the adjoining figure, PQR is an equilateral triangle inscribed in a circle of radius 7 cm. Find the area of the shaded region.
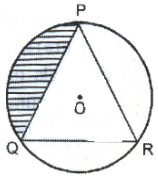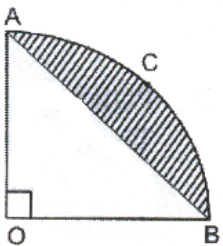

680) In figure, OABC is a square inscribed in a quadrant OPBQ. If OA = 10 cm, find the area of the shaded region. [Use $\pi = 3.14$].
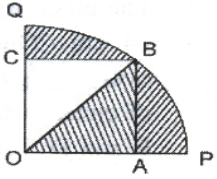

681) In the adjoining figure, AOBCA represents a quadrant of a circle of radius 3.5 cm with centre O. Calculate the area of the shaded portion.
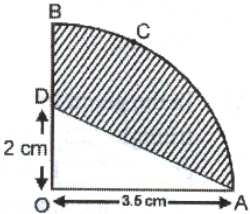
682) AOBC is a quadrant of a circle of radius 10 m. Calculate the area of the shaded portion. [Take $\pi = 3.14$]

683) In the figure given alongside, ABC is a right triangle, $\angle B = 90°$, AB = 28 cm and Bc = 21 cm. With AC as diameter a semicircle is drawn and with BC as radius a quarter circle is drawn. Find the area of the shaded region.
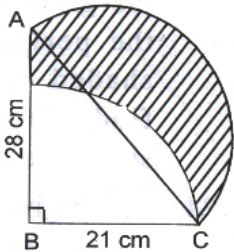
684) In the adjoining figure, find the area of the shaded region. [$Use \ \pi = 3.14$]
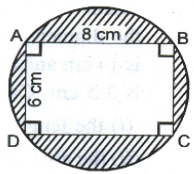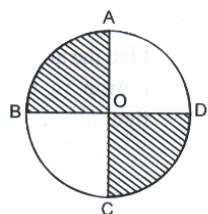

685) In the given figure, find the area of the shaded region. [$Use \ \pi = \frac{22}{7}$]
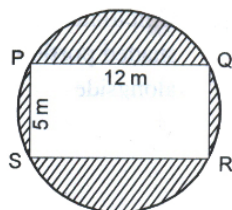

686) Find the area of the shaded region
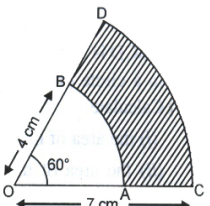
687) AC and BD are two perpendicular diameters of circle ABCD. Given that, the area of the shaded portion is 308 cm², calculate :

(i) the length of AC and

(ii) the circumference of the circle.

688) The figure alongside shows a circle inscribed in a square. The radius of the circle is 2.1 cm. Find the

area between the circle and the square. (shaded in the diagram.)
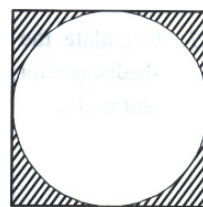
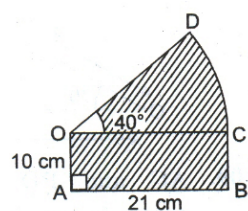**689)** Calculate the area of the shaded portion in the figure alongside.
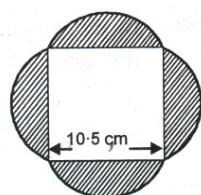
690) In the adjoining figure, ABCD is a square inscribed in a circle of radius 7 cm. Calculate

(i) the area of the circle

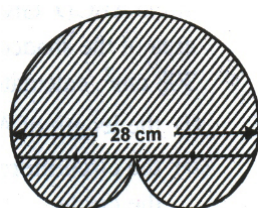(ii) the area of the shaded portion.
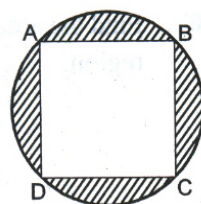
691) In the given figure, ABCD is a square of side 7 cm and A, B, C, D are centres of equal circles which touch externally in pairs. Find the area of the shaded region,
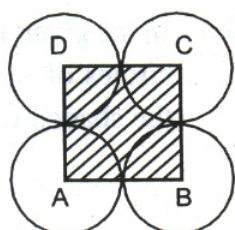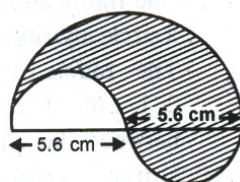
692) Find the area of the shaded region.

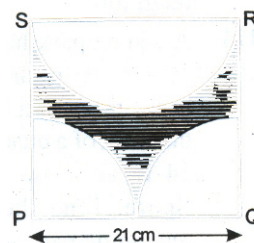**693)** Find the area of the shaded region in the adjoining figure.

694) Calculate the area of the shaded portion of the figure alongside.
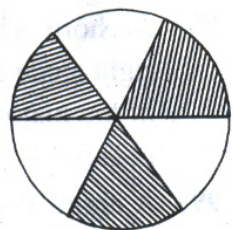
**695)** PQRS is a square of side 21 cm. with P and Q as centre, draw two quadrants. Draw another semicircle

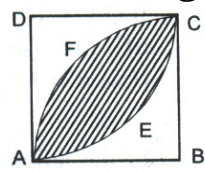with RS as diameter and find the area of the shaded region.

696) In the given figure, there are three blades of same size of a fan of radius 60 cm, find the area of each blade.

697) In the given figure, two circular flower beds have been shown in two sides of a square lawn in ABCD of side 56 m. If the centre of each circular flower bed is the point of intersection O of the diagonals of the sum of the areas of the lawn and the flower beds.
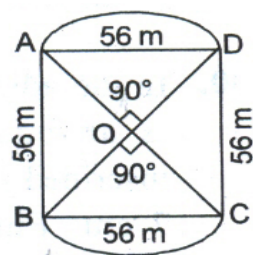
698) The given figure represent a square ABCD of side 14 cm. The shaded region is formed by the overlapping of two quadrants of circles whose centres are B and D. Find the area and perimeter of the shaded region.

699) In the given figure, an equilateral triangle has been inscribed in a circle of radius 4 cm. Find the area of the shaded region. [*Take* $\pi = 3.14$]
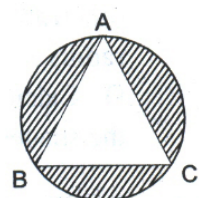
700) PQRS is a diameter of a circle of radius 6 cm. The lengths PQ, QR and RS are equal. Semicircles are drawn on PQ and QS as diameters as shown in the given figure. Find the perimeter of the shaded region. Also find the area of the shaded region.
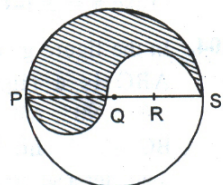
701) In the given figure, the boundary of the shaded region in the given diagram consists of four semicircular arcs, the smallest two being equal. If the diameter of the largest is 14 cm and of the smallest is 3.5 cm. Calculate :|
(i) the length of the boundary
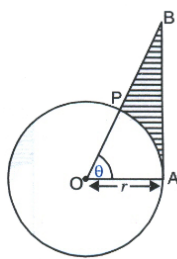(ii) the area of the shaded region.
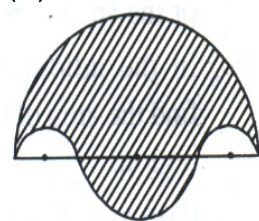
702) The figure given alongside shows a kite, in which BCD is in the shape of a quadrant of a circle of radius 42 cm. ABCD is a square and $\triangle CEF$ is an isosceles right-angled triangle whose equal sides are 6 cm long. Find the area of the shaded region.
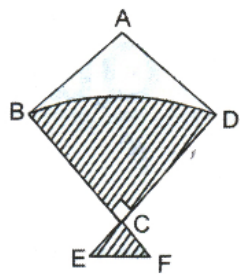

703) In a circular table cover of radius 32cm, a design is formed leaving an equilateral triangle ABC in figure.Find the area of the design (shaded region)
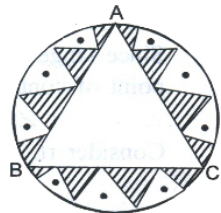

704) In figure, is shown a sector OAP of a circle with centre O, containing $\angle\theta$ .AB is perpendicular to the radius OA and meets OP produced at B.Prove that the perimeter of shaded region is

$$r\left[tan\theta + sec\theta + \frac{\pi\theta}{180^0} - 1\right]$$

705) In figure, O is centre of the circle with AC=24cm, AB=7cm and $\angle$ BOD=90^0.Find the area of the shaded region.[Use π =3.14]
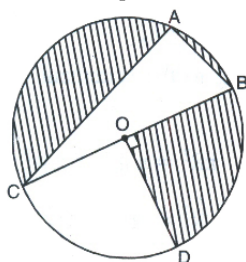
706) The figure shows a running track surrounding a grassed encloseure PQRSTU. The enclosure consists of a rectangle PQST with a semicircular region at each end. PQ = 200 m, PT = 70 m.
(i) calculate the area of the grassed enclosure in m^2
(ii) given that the track is of constant width 7 m, calculate the outer perimeter ABCDEF of the track.
$\left[Take\ \pi = \frac{22}{7}\right]$
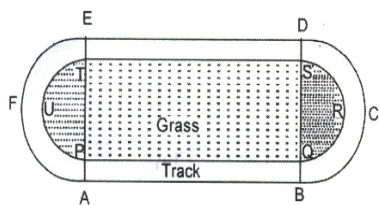
707) The inside perimeter of a running track is 400 m as shown in the figure. The length of each of the straight portion is 90 m and the ends are semicircles. If the track is everywhere 1.4 m wide, find the area of the track. Also, find the length of the outer running track.
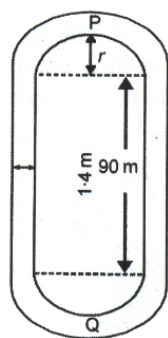
708) The diagram shows the inner boundary of a running track consisting of a rectangle with semicircular ends. The semicircular ends have a diameter of 63.7 m. Calculate the area covered by the track.
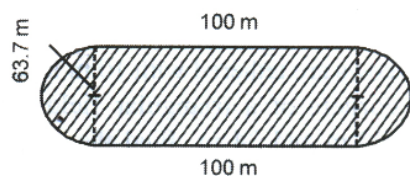

709) The inside perimeter of a practice running track (fig.) with semicircular ends and straight parallel sides is 312 m, The length of the straight portions of the track is 90 m. If the track has a uniform width of 2 m throughout, find its area.
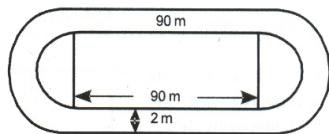
710) The figure shows the inner and outer boundary of a track which is 10 m wide. Find the area of the track.
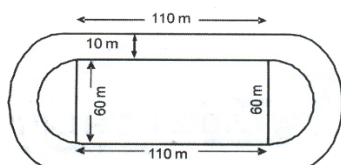

711) In the figure, $\triangle ABC$ is a rt. triangle, right-angled at C. Find the area of the shaded region.
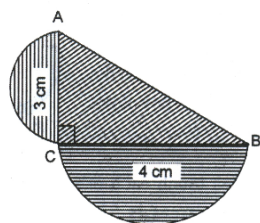
712) The central of two sectors of circles of radii 7cm and 21cm are respectively 120^0 and 40^0.Find the areas of the two sectors as well as the lengths of the corresponding arcs.What do you observe?

713) Floor of a room is of dimensions 5m x 4m and it is covered with circular tiles of diameters 50cm each as shown in figure.Find the area of floor that remains uncovered with tiles.
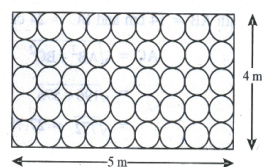
714) The radii of two circles are 19 cm and 9 cm, respectively. Find the radius of the circle which has circumference equal to the sum of the circumferences of the two circles.

715) The radii of two circles are 8 cm and 6 cm, respectively. Find the radius of the circle having area equal to the sum of the areas of the two circles.

716) In the figure given along side, depicts an archery target marked with its five scoring regions from the centre outwards as gold, red, blue, black and white.The diameter of the region representing gold score is 21 cm and each of the other bands is 10.5 crn wide. Find the area of each of the five scoring regions.
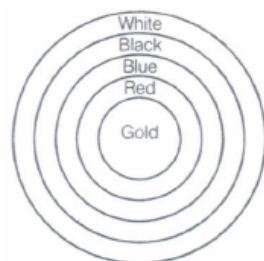
717) Tick the correct answer in the following and justify your choice. If the perimeter and the area of a circle are numerically equal. then the radius of the circle is (a) 2 units (b) 1t units (c) 4 units (d) 7 units.

**718)** The wheels of a car are of diameter 80 cm each. How many complete revolutions does each wheel make in 10 min when the car is travelling at a speed of 66 km per h?

**719)** Tick the correct answer in the following. Area of a sector of angle p of a circle with radius R is

(a) $\frac{p}{180°} \times 2\pi R$

(b) $\frac{p}{180°} \times \pi r^2$

(c) $\frac{p}{360°} \times 2\pi R$

(d) $\frac{p}{720°} \times 2\pi R^2$

720) In figure, AOB is a flower bed in the shape of a sector of a circle of radius 40 m and $\angle AOB = 60°$ Also, a 15 m wide concrete track is made as shown in the figure. Flower bed is made at the rate of Rs.240 per m^2 and rate of making the concrete track is Rs.20 per m^2. Find the total amount spent for the job.
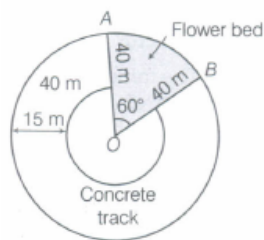

721) From an aluminium plate, which is a square of side 12.5 cm, a circular disc of diameter 7 cm is cut - off. Find the weight of the remaining part, if 1 sq cm of the plate weight 0.8 g.

722) A semi - circular garden is attached to a rectangular plot, whose dimensions are 40 m and 28 m. Find the cost of fencing the (combined) plot at Rs. 1.25 per m. [Take, $\pi = \frac{22}{7}$].

723) Find the area of the shaded region in figure, where arcs drawn with centre A, B, C and D intersect it pairs at mid - points P, Q, R and S of the side AB, BC, CD and DA respectively of a square ABCD. [Take, $\pi = 3.14$].

724) In the given figure, ABC is a right angled triangle, $\angle B = 90^o$, AB = 28 cm and BC = 21 cm. With AC as diameter, a semi - circle is drawn and with BC as radius, a quarter circle is drawn. Find the area of the shaded region.

725) In the given figure, arcs have been drawn with radius 14 cm each and with centres P, Q and R. Find the area of the shaded region.
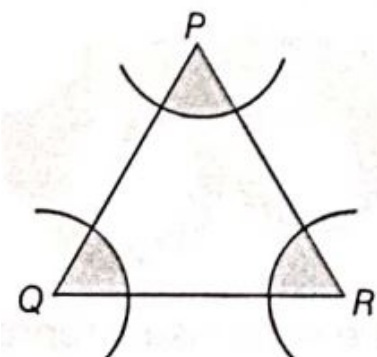

726) In the given figure, arcs have been drawn of radius 21 cm each with vertices A, B, C and D of quadrilateral ABCD as centres. Find the area of the shaded region.

727) Find the area of the segment of a circle of radius 12 cm, whose corresponding sector has a central angle of 60º . [Take, $\pi = 3.14$].

728) Four circular cardboard pieces of radius 7 cm are placed on a paper in such a way that each piece touches other two pieces, Find the area of the portion enclosed between these pieces.

729) The radius of the circumcircle of a right - angled triangle, is 3 cm and the altitude drawn to the hypotenuse is 2 cm long. Find the sum of the areas of the three disjoint segments of the circumcircle formed by the sides of this triangle.

730) It is proposed to add to a square lawn measuring 58 cm on a side two circular ends. The centre of each circle being the point of intersection of the diagonals of the square. Find the area of the whole lawn.

731) For the inauguration of ecoclub to the school, badges were given to teachers. Sangeeta made these badges in the shape of an equilateral triangle of side 5 cm with a circle of radius $\frac{5}{2\sqrt{3}}$ cm inscribed in it.
[Take, $\pi = 3.14$].
(i) Find the area of the shaded portion.
(ii) Which value is depicted by Sangeeta?

732) In the given figure, ABC is a right angled triangle at A. Find the area of the shaded region, if AB = 6 cm, BC = 10 cm and I is the centre of incircle of delta ABC.

733) In the following figure, ABCD is a trapezium with $AB \parallel CD$ and $\angle BCD = 60^o$. If BFEC is a sector of a circle with centre C and AB = BC = 7 cm and DE = 4cm, then find the area of the shaded region. [Take, $\pi = 22/7$ and $\sqrt{3} = 1.732$].

734) The diagram shows two arcs, A and B, Arc A is a part of the circle with centre with centre O and radius OP, Arc B is part of the circle with centre M and radius PM, where M is the mid - point of PQ. Show that the area enclosed by the two arcs is equal to $25\left(\sqrt{3} - \frac{\pi}{6}\right) cm^2$

735) Two farmers have circular plots. The plots are watered with the same water source placed in the point common to both the plots as shown in the figure. The sum of their areas is 130π and the distance between their centres is 14 m. Find the radii of the circles. What value is depicted by the farmers?

736) The perimeter of a semi-circular protractor is 108cm. Find the diameter of the protactor.

737) The length of hour hand of a clock is 7cm. Find the area swept by the hour hand in one hour.

738) A chord of a circle of radius 20 cm subtends an angle of 90° at the centre. Find the area of the corresponding major segment of the circle, [Take $\pi = 3.14$]

739) A farmer has a field in the form of circle.He wants to fencing the field. The field is to be ploughed at the rate of Rs.0.75 per m^2.If the cost of fencing of a circular field at the rate of Rs.25 per m is Rs.5500, then
(i) find the length of fencing the circular field.
(ii) find the cost of ploughing the field.
(iii) Which value is depicted by the farmer in fencing the field? [take, $\pi = \frac{22}{7}$]

740) In the given figure, o is the centre of the circle with radius equal to 14 cm. The length of the arc AB = 13.2 cm. Find the area of the shaded sector of the circle.
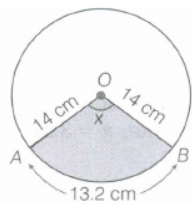

741) A mements is made as shown in the figure. Its base PBCR is silver plated from the front silver plated from the front side at the rate of Rs.20 per cm^2 . Find the total cost of the silver plating. $\left[Take, \pi = \frac{22}{7}\right]$
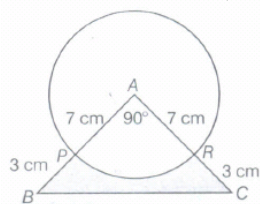
742) From each of the two opposite corners of square of side 8 cm, a quadrant of a circle of radius 1.4 cm is cut. Another circle of radius 4.2 cm is also cut from the centre as shown in the figure. Find the area of the remaining (shaded) portion of the square. [Take, π =22/7]
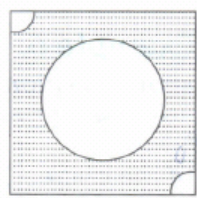

743) In the given figure, ABCD is a square of side 7 cm and A. B, C and D are centres of equal circles touching externally in pairs. Find the area of the shaded region.
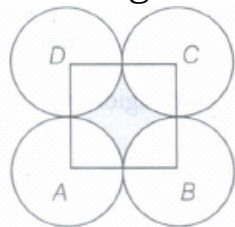

744) On a circular table cover of radius 42 cm, a design is formed by a girl leaving an equilateral △ ABC in the middle as shown in figure. It was decided that the payment to the girl be made proportional to the covered area of the design. Find the covered area of the design. $\left[take, \sqrt{3} = 1.73 \ and \ \pi = \frac{22}{7}\right]$

745) In the given figure, PQRS is a rectangle of length $10\sqrt{2}$ cm and breadth $5\sqrt{2}$ cm. If PEO is an isosceles triangle inscribed in the semi-circle with diameter PQ, then find the area of the shaded region.
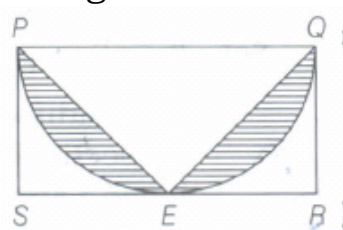
746) In the figure given alongside, a circle is inscribed in a square of side 4 ern and another circle is circumscribing the square. Prove that the area of the circumscribed circle is two times the area of the inscribed circle.

**747)** Find the area of the shaded region given in figure.
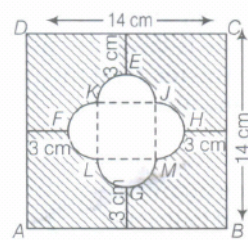
748) A farmer has two types of fields-In the form of a triangle and a rectangle. Rani is allowed to cut grass of triangular part (shaded) and Ramu of rectangular field (shaded). Calculate the areas of the shaded portion. What value is depicted by the farmer?
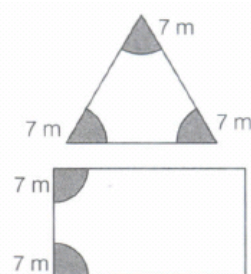

749) In figure is shown a sector OAP of a circle with centre O, containing $\angle\theta$. AB is perpendicular to the radius OA and meets OP produced at B. Prove that the perimeter of shaded region is
$r\left(\tan\theta + \sec\theta + \frac{\pi\theta}{180^0} - 1\right)$.

750) In the given figure, POR is a right angled triangle at P. Find the area of shaded region, if PR = 4 cm, RO = 5 em and I is centre of in circle of $\triangle$ POR.
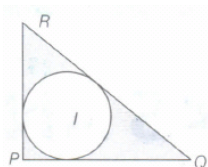
751) For inauguration of Eco-Club of the school, badges were given to teachers by the students. Seema made these badges in the shape of an equilateral triangle of side 6 cm with a circle of radius $\sqrt{3}$ cm inscribed in it as shown in the figure.
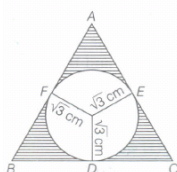
(i) Find the area of the shaded portion.
(ii) Which value is depicted?

752) Four equal circles are described at the four corners of a square so that each touches two of the others. The shaded area enclosed between the circles is $\frac{24}{7}$ cm^2.Find the radius of each circle.

753) Fig. depicts a racing track whose left and right ends are semi-circular. The distance between the two inner parallel line segments is 60 m and they are each 106 m long. If the track is 10 m wide everywhere, find the area of the track.

754) In figure, PQRS is square lawn with side PQ = 42 metre. Two circular flower beds are there on the sides PS and QR with centre at O, the intersection of its diagonals. Find the total area of the two flower beds (shaded parts).

755) In the figure, ABC is a right angled triangle right angled at $\angle$ A. Find the area of the shaded region, if AB = 6 cm, BC = 10 cm and O is the centre of the incircle of the triangle ABC.

756) Two circular beads of different sizes are joined together such that the distance between their centres is 14 cm. The sum of their areas is 130 π cm^2. Find the radius each bead.

757) A round thali has 2 inbuilt triangular for serving vegetables and a separate semi-circular area