

IITJEE Foundation Practice paper

AREAS RELATED TO CIRCLES

class-10th-Mathematics Number of Questions: 48

For Answers and Solutions, Go to www.micromerits.com.

1

The perimeter of a semi-circle of radius r is

- $2\pi r$ $\frac{\pi r}{2}$ $\pi r + 2r$ πr^2

2

When two circles touch internally, then

- distance between their centres = sum of their radii
 distance between their centres = difference of their radii
 distance between their centres = product of their radii can't be determined

3

When two circles touch externally, then

- distance between their centres = sum of their radii
 distance between their centres = difference of their radii
 distance between their centres = product of their radii can't be determined

4

Find the area and circumference of a circle of diameter 42 cm.

- area = 1329 cm^2 , perimeter = 105 cm area = 1532 cm^2 , perimeter = 145 cm
 area = 1249 cm^2 , perimeter = 128 cm area = 1386 cm^2 , perimeter = 132 cm

5

Find the area of a circle whose circumference is 88 cm.

- 645 cm^2 616 cm^2 532 cm^2 794 cm^2

6

A wire is looped in the form of a circle of radius 21 cm. It is rebent into a square form. Find the area of the square.

- 441 cm² 883 cm² 1089 cm² 1236 cm²

7

The difference between the circumference and radius of a circle is 37 cm. Using $\pi = \frac{22}{7}$, find the area of the circle.

- 154 cm² 44 cm² 132 cm² 196 cm²

8

The circumference of a circle is 44 cm. Find the area of its quadrant.

- 154 cm² 77 cm² 115.5 cm² 38.5 cm²

9

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

- 4 cm 8 cm 10 cm 7 cm

10

The perimeter of a square which circumscribes a circle of radius of p cm is _____

- 8p cm 6p cm 5p cm 4p cm

11

Find the length of the arc of a circle of diameter 35 cm which subtends an angle of 72° at the centre.

- 35 cm 21 cm 22 cm 28 cm

12

The minute hand of a clock is 14 cm long. Find the area of the face of the clock described by the minute hand in 40 minutes.

- 410.67 cm² 425 cm² 446.83 cm² 456.92 cm²

13

If the circumference of a circle and the perimeter of a square are equal then

- area of the circle = area of the square (area of the circle) < (area of the square)
 (area of the circle) > (area of the square) None of the above

14

If the sum of the circumferences of two circles with radii R_1 and R_2 is equal to the circumference of a circle of radius R then

- $R_1 + R_2 > R$ $R_1 + R_2 < R$ $R_1 + R_2 = R$ None of the above

15

If the sum of the areas of two circles with radii R_1 and R_2 is equal to the area of a circle of radius R then

- $R_1^2 + R_2^2 > R^2$ $R_1^2 + R_2^2 < R^2$ $R_1^2 + R_2^2 = R^2$ None of the above

16

On increasing the diameter of a circle by 50%, its area

- Increases by 125% Decreases by 50% Increases by 50%
 Decreases by 75%

17

On decreasing the radius of a circle by 20%, its area is

- Remains the same Increases by 20% Decreases by 20%
 Decreases by 36%

18

The areas of two circles in the ratio 25 : 16. The ratio of their circumferences is

- 25 : 16 5 : 4 4 : 5 3 : 4

19

The radii of two concentric circles are 18 cm and 14 cm respectively. The area of the ring enclosed by these circles is _____

- 402.28 cm² 400 cm² 423.52 cm² 396.88 cm²

20

In a circle of radius 35 cm, an arc subtends an angle of 120° at the centre. If $\sqrt{3} = 1.73$, then the area of the segment of the circle is ____

- 1283.33 cm² 306.25 cm² 753.5175 cm² 529.8125 cm²

21

The length of the minute hand of a clock is 28 cm. The area swept by the minute hand in 15 minutes is

- 453 cm² 526 cm² 248 cm² 616 cm²

22

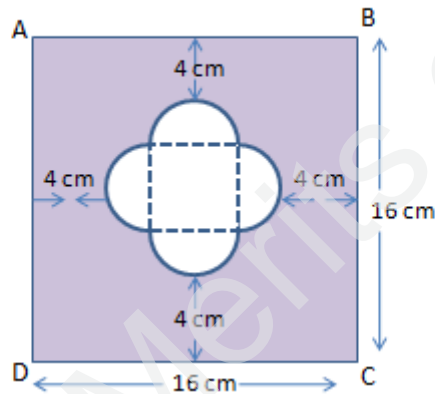
The diameter of a wheel is 56 cm. How many revolutions will it make in covering 880 m?

- 500 450 234 348

23

Find the area of the shaded region in the figure given below.

[Take $\pi = 3.14$]



- 154.88 cm² 200.83 cm² 214.88 cm² 226.89 cm²

24

Three horses are tethered with 7 metres long ropes at the three corners of a triangular field having sides 20 m, 34 m and 42 m. Find the area of the plot which can be grazed by the horses. Also, find the area of the plot which remains ungrazed.

- Area of the plot that can be grazed = 83 m² ; Area of ungrazed plot = 363 m²
 Area of the plot that can be grazed = 77 m² ; Area of ungrazed plot = 259 m²
 Area of the plot that can be grazed = 100 m² ; Area of ungrazed plot = 278 m²
 Area of the plot that can be grazed = 123 m² ; Area of ungrazed plot = 336 m²

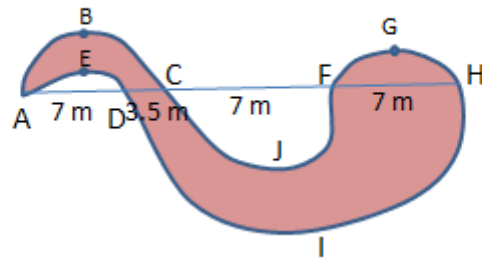
25

The perimeter of a sector of a circle of radius 18 cm is 72 cm. Find the area of the sector.

- 324 cm²
 280 cm²
 300 cm²
 419 cm²

26

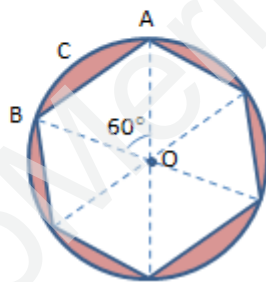
Find the area of the shaded region of the figure given below



- 98.41 m²
 144.38 m²
 144.38 m²
 150.23 m²
 161.69 m²

27

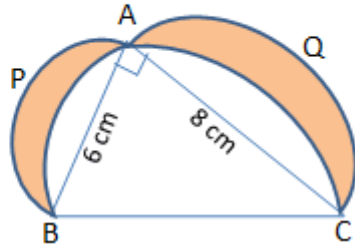
A round table cover has six equal designs, as shown in the figure. If the radius of the cover is 28 cm, find the cost of making the designs at the rate of Rs. 0.45 per cm². (Use $\sqrt{3} = 1.7$)



- Rs. 162.68
 Rs. 209.16
 Rs. 209.16
 Rs. 200.32
 Rs. 191.34

28

In the given figure, $\triangle ABC$ is right angled at A. Semicircles are drawn on AB, AC and BC as diameters. It is given that AB = 6 cm and AC = 8 cm. Find the area of the shaded region.



- 16 cm²
 30 cm²
 24 cm²
 24 cm²
 42 cm²

29

The length of an arc of a sector of angle θ° of a circle with radius R is

- $\frac{2\pi R\theta}{360}$
 $\frac{2\pi R\theta}{180}$
 $\frac{\pi R^2\theta}{360}$
 $\frac{\pi R^2\theta}{180}$

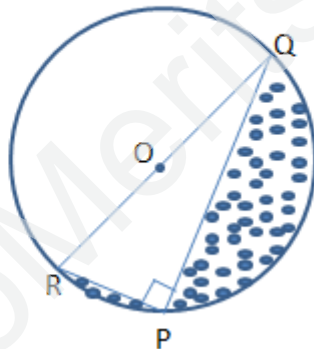
30

The area of a sector of angle θ° of a circle with radius R is

- $\frac{\pi R^2\theta}{180}$
 $\frac{\pi R^2\theta}{360}$
 $\frac{2\pi R\theta}{360}$
 $\frac{\pi R^2\theta}{180}$

31

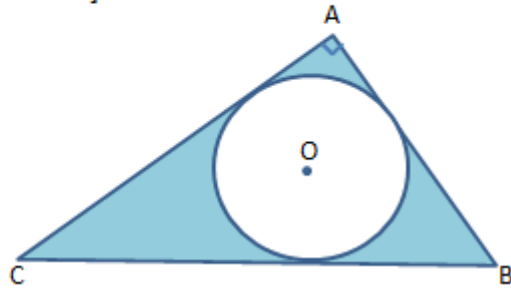
In the given figure, PQ = 24 cm, PR = 7 cm and 'O' is the centre of the circle. Find the area of the shaded region. [Take $\pi = 3.14$]



- 84 cm²
 593.46 cm²
 245.31 cm²
 161.31 cm²
 161.31 cm²

32

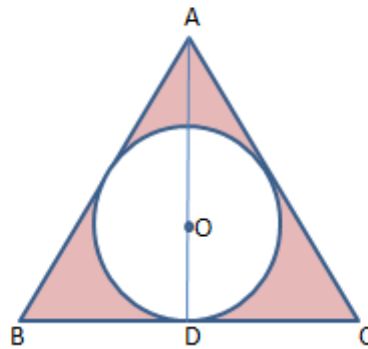
In the given figure, $\triangle ABC$ is right angled at A. Find the area of the shaded region if $AB = 8$ cm, $BC = 17$ cm and 'O' is the centre of the incircle of $\triangle ABC$.
[Take $\pi = 3.14$]



- 31.74 cm^2
 31.74 cm^2
 38 cm^2
 15 cm^2
 24.69 cm^2

33

In the given figure, a circle is inscribed in an equilateral triangle ABC of side 12 cm. Find the radius of inscribed circle and the area of the shaded region. (Use $\sqrt{3} = 1.73$ and $\pi = 3.14$)



- radius = $5\sqrt{3}$ cm, ar(shaded region) = 49.68 cm^2
 radius = $6\sqrt{3}$ cm, ar(shaded region) = 54.38 cm^2
 radius = $2\sqrt{3}$ cm, ar(shaded region) = 24.6 cm^2
 radius = $2\sqrt{3}$ cm, ar(shaded region) = 24.6 cm^2
 radius = $3\sqrt{3}$ cm, ar(shaded region) = 32.5 cm^2

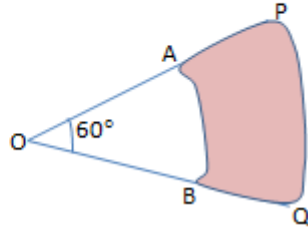
34

The side of a square is 14 cm. Find the area of the inscribed circle and the area of the circumscribed circle.

- Area of the inscribed circle = 196 cm^2 , Area of the circumscribed circle = 548 cm^2
 Area of the inscribed circle = 154 cm^2 , Area of the circumscribed circle = 308 cm^2
 Area of the inscribed circle = 148 cm^2 , Area of the circumscribed circle = 420 cm^2
 Area of the inscribed circle = 163 cm^2 , Area of the circumscribed circle = 241 cm^2

35

In the given figure, PQ and AB are respectively the arc of two concentric circles of radii 8 cm and 4 cm with centre 'O'. If $\angle POQ = 60^\circ$, find the area of shaded region.



- 25.142 cm²
 25.142 cm²
 28.23 cm²
 32.48 cm²
 22.345 cm²

36

The perimeter of the quadrant of a circle is 25 cm. Find its area.

- 154 cm²
 38.5 cm²
 50 cm²
 77 cm²

37

A square is inscribed in a circle. Find the ratio of the areas of the square and the circle.

- $\pi : \sqrt{2}$
 $\pi : 2$
 $2 : \pi$
 $\sqrt{2} : \pi$

38

Four equal circles are described about the four corners of a square so that each touches two of the others. The shaded area enclosed between the circles being $\frac{24}{7}$ sq. cm, find the radius of the circles. (Use $\pi = \frac{22}{7}$)

- 4 cm
 3.5 cm
 2.5 cm
 2 cm

39

A boy is cycling such that the wheels of the cycle are making 140 revolutions per minute. If the diameter of the wheel is 60 cm, calculate the speed per hour with which the boy is cycling.

- 17.93 km/hr
 15.84 km/hr
 18.46 km/hr
 16 km/hr

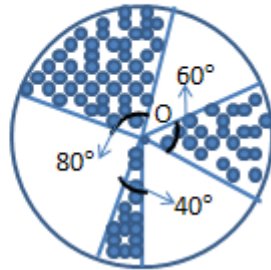
40

A chord of a circle of radius 28 cm makes a right angle at the centre. Find the areas of the minor and major segments of the circle.

- ar(minor segment) = 56 cm², ar(major segment) = 560 cm²
 ar(minor segment) = 198 cm², ar(major segment) = 1980 cm²
 ar(minor segment) = 224 cm², ar(major segment) = 2240 cm²
 ar(minor segment) = 356 cm², ar(major segment) = 3560 cm²

41

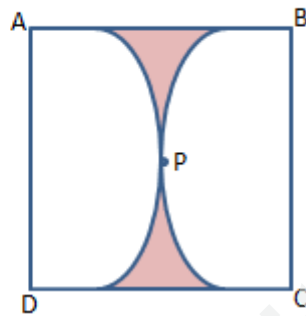
In the given figure, three sectors of a circle of radius 7 cm, making angles of 60° , 80° and 40° at the centre are shaded. Find the area of the shaded region.



- 210 cm²
 77 cm² 77 cm²
 49 cm²
 154 cm²

42

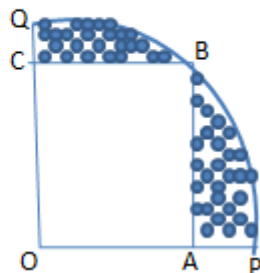
In the given figure, find the area of the shaded region, if ABCD is a square of side 35 cm and APD and BPC are semicircles.



- 262.5 cm²
 262.5 cm²
 250 cm²
 280.63 cm²
 292.45 cm²

43

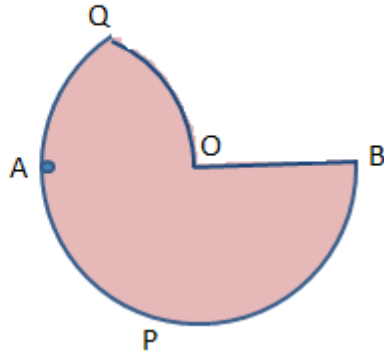
In the given figure, a square OABC is inscribed in a quadrant OPBQ of a circle. If OA = 10 cm, find the area of the shaded region. (Use $\pi = 3.14$)



- 93 cm²
 157 cm²
 100 cm²
 57 cm² 57 cm²

44

In the given figure, APB and AQO are semicircles and $AO = OB$. If the perimeter of the figure is 40 cm, find the area of the shaded region.



- 96.25 cm²
 96.25 cm²
 121.39 cm²
 38.4 cm²
 132.5 cm²

45

Two circles touch externally, the sum of their areas is 106π sq. cm and the distance between their centres is 14 cm. Find the radii of the circles.

- 10 cm, 4 cm
 8 cm, 6 cm
 9 cm, 5 cm
 7 cm, 7 cm

46

Two circles touch internally, the sum of their areas is 41π sq. cm and the distance between their centres is 1 cm. Find the radii of the circles.

- 4 cm, 5 cm
 2 cm, 3 cm
 6 cm, 5 cm
 7 cm, 8 cm

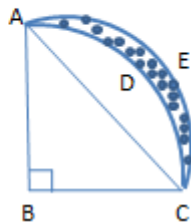
47

If the perimeter of a semi-circular protractor is 72 cm, find its diameter.

- 7 cm
 14 cm
 28 cm
 21 cm

48

In the given figure, ABCD is a quadrant of a circle of radius 28 cm and a semicircle ABECA is drawn with AC as diameter. Find the area of the shaded region.



- 364 cm²
 392 cm²
 392 cm²
 459 cm²
 616 cm²

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