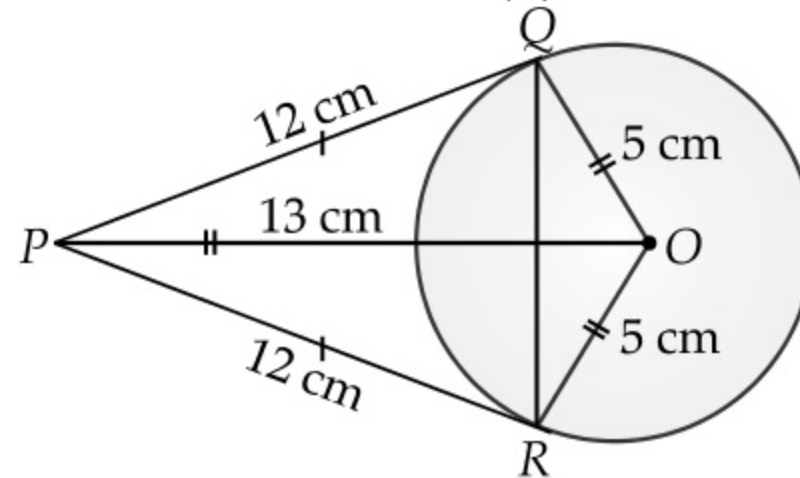


Self Assessment Paper

Section 'A'

Q 1- Q 10 are multiple choice questions. Select the most appropriate answer from the given options.

- The LCM of 6, 72 and 120 is :
 (a) 360 (b) 6 (c) 51840 (d) 720
- For positive integers a and b Euclid's division lemma satisfies the relation :
 (a) $a = bq - r, 0 \leq r < b$ (b) $a = bq + r, 0 \leq r \leq b$ (c) $a = bq - r, 0 \leq r \leq b$ (d) $a = bq + r, 0 \leq r < b$
- If one of the zeroes of a quadratic polynomial of the form $x^2 + ax + b$ is the negative of the other, then it
 (a) has no linear term and the constant term is negative.
 (b) has no linear term and the constant term is positive.
 (c) can have a linear term but the constant term is negative.
 (d) can have a linear term but the constant term is positive.
- If $\frac{1}{2}$ is a root of the equation $x^2 + kx - \frac{5}{4} = 0$, then the value of k is
 (a) 2 (b) -2 (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$
- If the points A (1, 2), B (0, 0) and C (a, b) are collinear, then :
 (a) $a = b$ (b) $a = 2b$ (c) $2a = b$ (d) $a = -b$
- ABC and BDE are two equilateral triangles such that D is the mid-point of BC. Ratio of the areas of triangles ABC and BDE is :
 (a) 2 : 1 (b) 1 : 2 (c) 4 : 1 (d) 1 : 4
- From a point P which is at a distance of 13 cm from the centre O of a circle of radius 5 cm, the pair of tangents PQ and PR to the circle are drawn. Then the area of the quadrilateral PQOR is :
 (a) 60 cm^2 (b) 65 cm^2 (c) 30 cm^2 (d) 32.5 cm^2



- The area of the square that can be inscribed in a circle of radius 8 cm is :
 (a) 256 cm^2 (b) 128 cm^2 (c) $64\sqrt{2} \text{ cm}^2$ (d) 64 cm^2
- Volumes of two spheres are in the ratio 64 : 27. The ratio of their surface areas is :
 (a) 3 : 4 (b) 4 : 3 (c) 9 : 16 (d) 16 : 9
- When a die is thrown, the probability of getting an odd number less than 3 is :
 (a) $\frac{1}{6}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) 0

(11-15) Fill in the blanks.

- If zeroes of the polynomial $x^2 + 4x + 2a$ are α and $\frac{2}{\alpha}$, then the value of a is
- The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is
- The quadratic equation $2x^2 - \sqrt{5}x + 1 = 0$ has real roots.

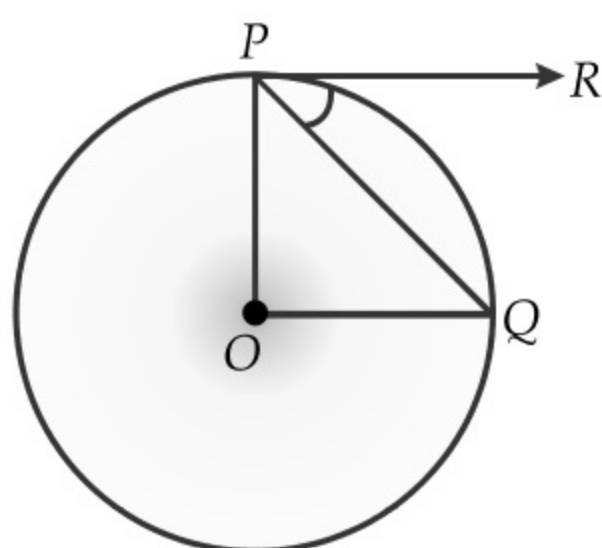
OR

The positive root of $\sqrt{3x^2 + 6} = 9$ is

- The common difference of the A.P. $\frac{1}{3q}, \frac{1-6q}{3q}, \frac{1-12q}{3q}, \dots$ is
- The distance of the point $(-4, -7)$ from the y -axis is

(16-20) Answer the following

- If O is centre of a circle, PQ is a chord and the tangent PR at P makes an angle of 50° with PQ , find $\angle POQ$.



- If $A + B = 90^\circ$ and $\sec A = \frac{2}{3}$, then find the value of $\operatorname{cosec} B$.

OR

If $\tan(3x + 30^\circ) = 1$, then find the value of x .

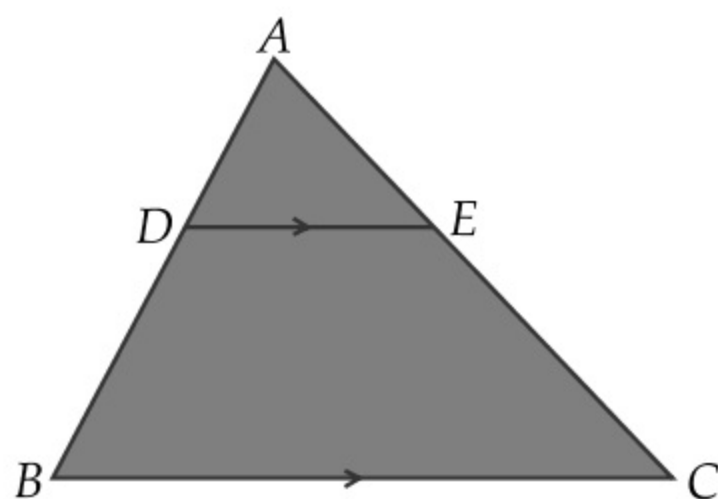
- The diameter of a wheel is 1.26 m. What is the distance covered in 500 revolutions ?
- The slant height of a bucket is 26 cm. The diameter of upper and lower circular ends are 36 cm and 16 cm. Find the height of the bucket.
- The times, in seconds, taken by 62 athletes to run 110 m hurdle race is tabulated below :

Class	13.8 - 14	14 - 14.2	14.2 - 14.4	14.4 - 14.6	14.6 - 14.8	14.8 - 15
Frequency	8	10	10	16	12	6

Find the number of athletes who completed the race in less than 14.6 seconds.

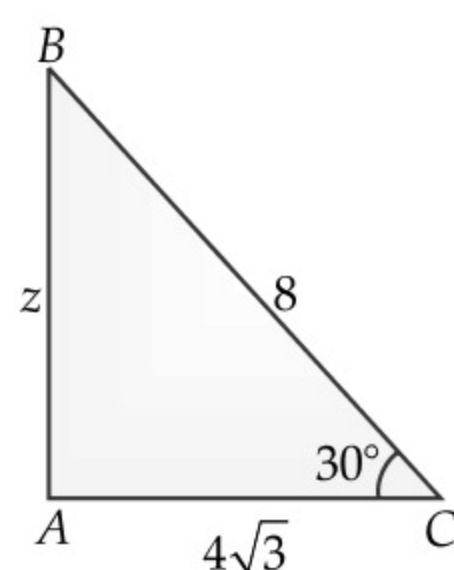
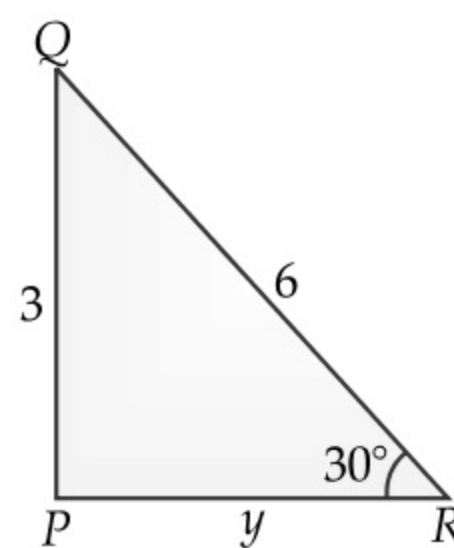
Section 'B'

- Prove that $2 + 5\sqrt{3}$ is an irrational number, given that $\sqrt{3}$ is an irrational number.
- In the given figure, $DE \parallel BC$. If $AD = 1.5$ cm, $BD = 2AD$, then find $\frac{\operatorname{ar}(\triangle ADE)}{\operatorname{ar}(\text{trapezium } BCED)}$.



OR

In the given figure, $\triangle ABC \sim \triangle PQR$. Find the value of $y + z$.



23. If $4 \cos \theta = 11 \sin \theta$, find the value of

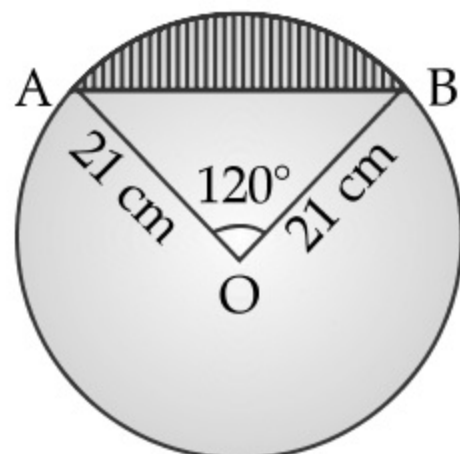
$$\frac{11 \cos \theta - 7 \sin \theta}{11 \cos \theta + 7 \sin \theta}$$

24. The angle of elevation of the top of a chimney from the foot of a tower is 60° and the angle of depression of the foot of the chimney from the top of the tower is 30° . If the height of tower is 40 m, find the height of smoke emitting chimney. According to pollution control norms, the minimum height of a smoke emitting chimney should be 100 m.
25. A solid metallic sphere of diameter 16 cm is melted and recasted into smaller solid cones, each of radius 4 cm and height 8 cm. Find the number of cones so formed.

OR

Find the area of the segment shown in figure, if radius of the circle is 21 cm and $\angle AOB = 120^\circ$

$$\left(\text{Use } \pi = \frac{22}{7} \right)$$



26. In a physical training camp, students appeared for their personality test of 80 marks and 20 marks for their physical fitness. They scored below marks out of 80 which has been arranged by Roli and wants to find mode but she is unable to find the result. So she asked her teacher for its solution.

Class	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
Frequency	8	10	10	16	12	6	7

Section 'C'

27. Ram's mother has given him money to buy some boxes from the market at the rate of $4x^2 + 3x - 2$. The total amount of money is represented by $8x^4 + 14x^3 - 2x^2 + 7x - 8$. Out of this money he donated some amount to a child who was studying in the light of street lamp. Find how much amount of money he donated and purchased how many boxes from the market ?

OR

A part of monthly hostel charge is fixed and the remaining depends on the number of days one has taken food in the mess. When Swati takes food for 20 days, she has to pay ₹ 3,000 as hostel charges whereas Mansi who takes food for 25 days has to pay ₹ 3,500 as hostel charges. Find the fixed charges and the cost of food per day.

28. Solve the following quadratic equation for x :

$$x^2 + \left(\frac{a}{a+b} + \frac{a+b}{a} \right) x + 1 = 0$$

OR

A takes 6 days less than B to do a work. If both A and B working together can do it in 4 days, how many days will B take to finish it ?

29. Solve the following pair of equations :

$$\frac{2}{\sqrt{x}} + \frac{3}{\sqrt{y}} = 2 \text{ and } \frac{4}{\sqrt{x}} - \frac{9}{\sqrt{y}} = -1.$$

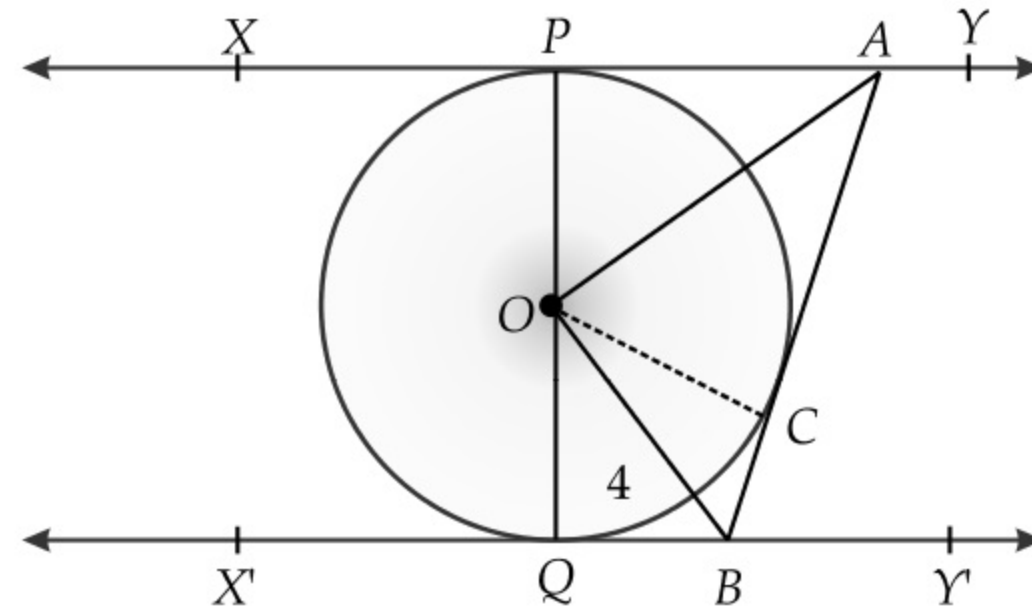
30. The first term of an A.P. is 3, the last term is 83 and the sum of all of its terms is 903. Find the number of terms and the common difference of the A.P.

OR

If the p^{th} term of an A.P. is q and q^{th} term is p , prove that its n^{th} term is $(p + q - n)$.

31. If $\sec \theta = x + \frac{1}{4x}$, $x \neq 0$, find $(\sec \theta + \tan \theta)$.

32. In the given figure, XY and $X'Y'$ are two parallel tangents to a circle with centre O and another tangent AB with point of contact C , is intersecting XY at A and $X'Y'$ at B . Prove that $\angle AOB = 90^\circ$.



33. In a triangle, if square of one side is equal to the sum of the squares of the other two sides, then prove that the angle opposite the first side is a right angle.

34. Ruhi's father organised a magic show in her birthday party. Various magics by magician are shown using coloured balls. Magician has a bag. That bag contains 15 white and some black balls. If the probability of drawing a black ball from the bag is thrice that of drawing a white ball, find the number of black balls in the bag.

Section 'D'

[AI] 35. Solve for x :

$$\frac{1}{x+1} + \frac{3}{5x+1} = \frac{5}{x+4}, x \neq -1, \frac{-1}{5}, -4$$

36. In what ratio does the point $\left(\frac{24}{11}, y\right)$ divide the line segment joining the points $P(2, -2)$ and $Q(3, 7)$?

Also find the value of y .

OR

Find the ratio in which the line $2x + 3y - 5 = 0$ divides the line segment joining the points $(8, -9)$ and $(2, 1)$. Also find the co-ordinates of the point of division.

37. Draw two concentric circles of radii 2 cm and 5 cm. Take a point P on the outer circle and construct a pair of tangents PA and PB to the smaller circle. Measure PA .

38. The angle of depression of two ships from an aeroplane flying at the height of 7500 m are 30° and 45° . If both the ships are in the same line and one ship is exactly behind the other, find the distance between the ships. **OR**

From the top of a tower, 100 m high, a man observes two cars on the opposite sides of the tower and in same straight line with its base, with angles of depression 30° and 45° . Find the distance between the cars. [Take $\sqrt{3} = 1.732$]

39. A toy is in the form of a cone of radius 3.5 cm mounted on a hemisphere of same radius on its circular face. The total height of the toy is 15.5 cm. Find the total surface area of the toy.

40. The following distribution gives the daily income of 50 workers of a factory:

Daily income (in ₹)	200 - 220	220 - 240	240 - 260	260 - 280	280 - 300
Number of workers	12	14	8	6	10

Convert the distribution above to a 'less than type' cumulative frequency distribution and draw its ogive. **OR**

The median of the following data is 525. Find the values of x and y if the total frequency is 100.

Class Interval	0 - 100	100 - 200	200 - 300	300 - 400	400 - 500	500 - 600	600 - 700	700 - 800	800 - 900	900 - 1000
Frequency	2	5	x	12	17	20	y	9	7	4