

Self Assessment Paper

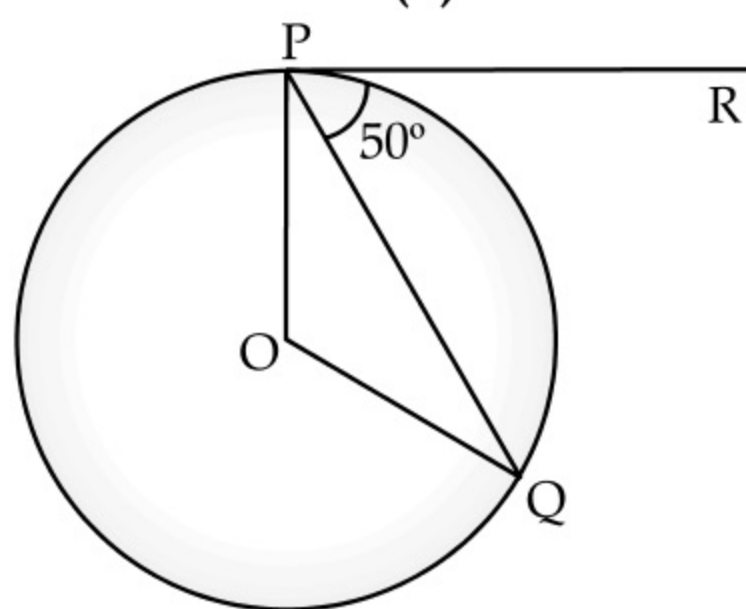
Section 'A'

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

- What is the HCF of 3000 and 525 ?
 (a) 75 (b) 25 (c) 55 (d) 35
- On a morning walk, three persons step off together and their steps measure 40 cm, 42 cm and 45 cm respectively. The minimum distance each should walk, so that each can cover the same distance in complete steps is :
 (a) 2250 cm (b) 2520 cm (c) 2550 cm (d) 2050 cm
- For what value of k , the roots of the equation $3x^2 - 10x + k = 0$ are reciprocal of each other ?
 (a) $k = 3$ (b) $k = 10$ (c) $k = \frac{10}{3}$ (d) $k = \frac{1}{3}$
- The pair of equations $x = a$ and $y = b$ graphically represents lines which are :
 (a) parallel (b) intersecting at (b, a) (c) coincident (d) intersecting at (a, b)
- If the points $A(x, y)$, $B(-4, 6)$ and $C(-2, 3)$ are collinear, then relation between x and y is
 (a) $x + y = 0$ (b) $x + 3y = 0$ (c) $3x + 2y = 0$ (d) $2x + 3y = 0$
- In triangles ABC and DEF , $\angle B = \angle E$, $\angle F = \angle C$ and $AB = 3DE$. Then, the two triangles are :
 (a) congruent but not similar (b) similar but not congruent
 (c) neither congruent nor similar (d) congruent as well as similar

[AI] 7. In the given figure, 'O' is the centre of circle, PQ is a chord and the tangent PR at P makes an angle of 50° with PQ, then $\angle POQ$ is equal to :

- (a) 100° (b) 80° (c) 90° (d) 75°



- $(\sec A + \tan A)(1 - \sin A) =$
 (a) $\sec A$ (b) $\sin A$ (c) $\operatorname{cosec} A$ (d) $\cos A$
- Area of the largest triangle that can be inscribed in a semi-circle of radius ' r ' units is :
 (a) r^2 sq. units (b) $\frac{1}{2}r^2$ sq. units (c) $2r^2$ sq. units (d) $\sqrt{2}r^2$ sq. units
- In a right circular cone, the cross-section made by a plane parallel to the base is a :
 (a) circle (b) frustum of a cone (c) sphere (d) hemisphere

(11-15) Fill in the blanks.

11. If $\text{HCF}(336, 54) = 6$, $\text{LCM}(336, 54) = \dots\dots\dots$
12. The nature of roots of the quadratic equation $2x^2 - 4x + 3 = 0$ is $\dots\dots\dots$ real roots
13. If the n^{th} term of A.P. 12, 15, 18..... 99 is 99. Then value of n is equal to $\dots\dots\dots$

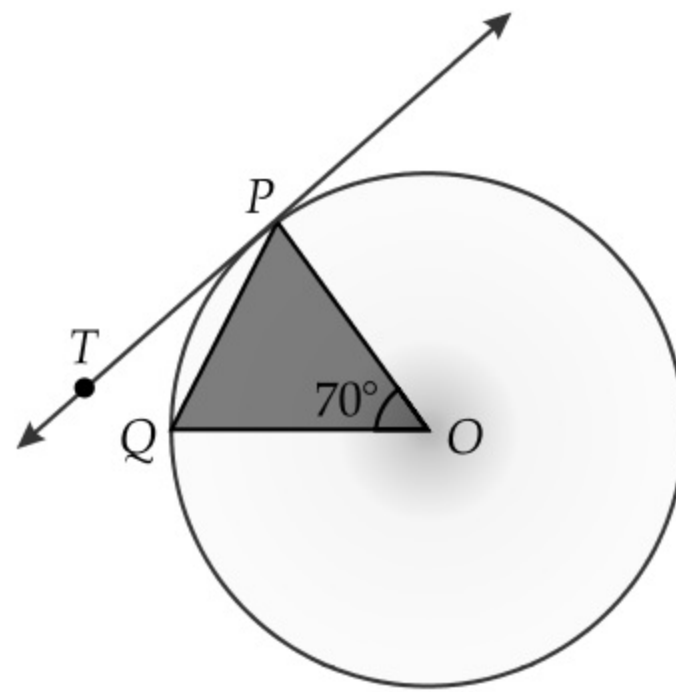
OR

If S_n , the sum of first n terms of an A.P. is given by $S_n = 3n^2 - 4n$, the n^{th} term is $\dots\dots\dots$

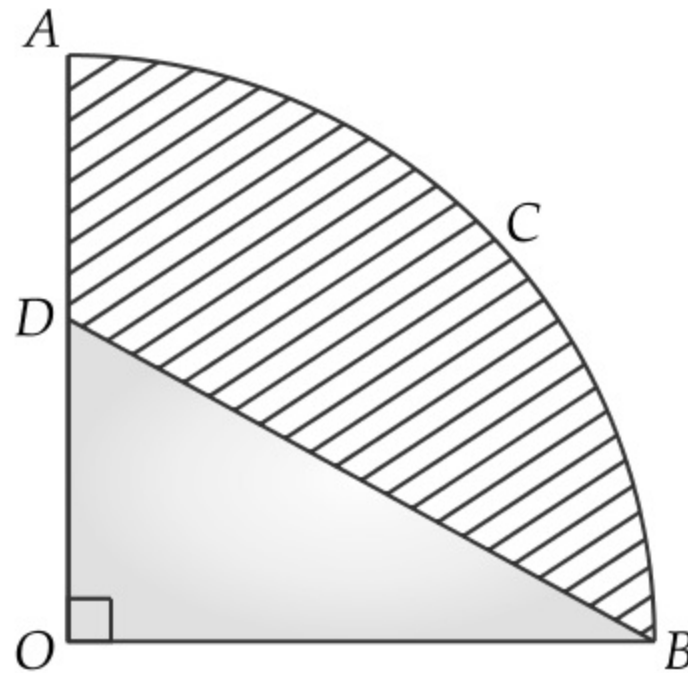
14. The quadratic polynomial whose sum and product of the zeroes are $\frac{21}{8}$ and $\frac{5}{16}$ respectively is $\dots\dots\dots$
15. The co-ordinates of a point A, where AB is the diameter of the circle with centre $(-2, 2)$ and B is the point with coordinates $(3, 4)$ is $\dots\dots\dots$

(16-20) Answer the following

16. In given figure, O is the centre of the circle, PQ is a chord and PT is tangent to the circle at P . Find $\angle TPQ$.



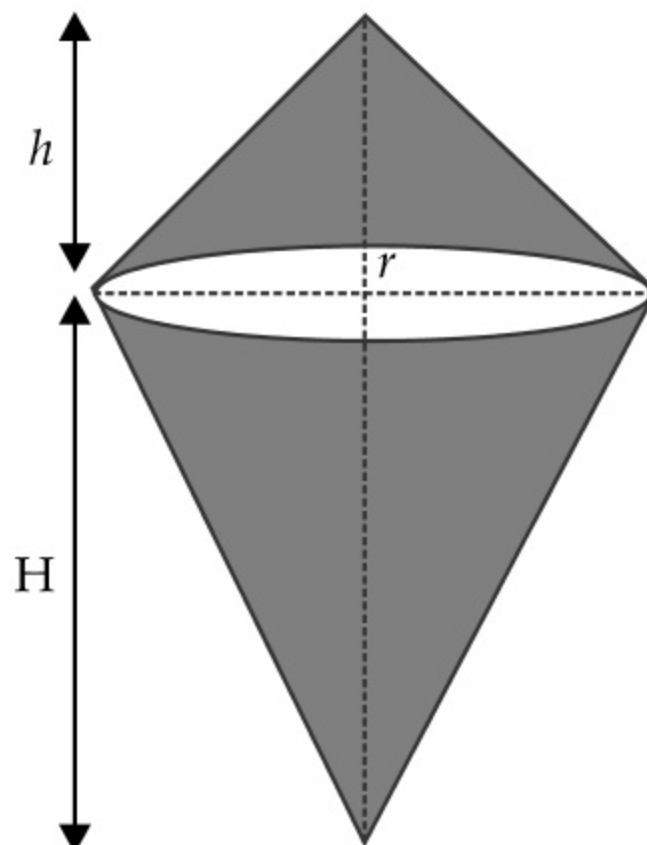
17. In the given figure, $OACB$ is a quadrant of a circle with centre O and radius 3.5 cm. If $OD = 2$ cm, find the area of the shaded region.



18. Two cubes each of volume 8 cm^3 are joined end to end, then what is the surface area of resulting cuboid.

OR

A solid metallic object is shaped like a double cone as shown in figure. Radius of base of both cones is same but their heights are different. If this cone is immersed in water, find the quantity of water it will displace.



19. The probability of selecting a blue marble at random from a jar that contains only blue, black and green marbles is $\frac{1}{5}$. The probability of selecting a black marble at random from the same jar is $\frac{1}{4}$. If the jar contains 11 green marbles, find the total number of marbles in the jar.
20. Convert the following data into 'more than type' distribution :

Class	50 – 55	55 – 60	60 – 65	65 – 70	70 – 75	75 – 80
Frequency	2	8	12	24	38	16

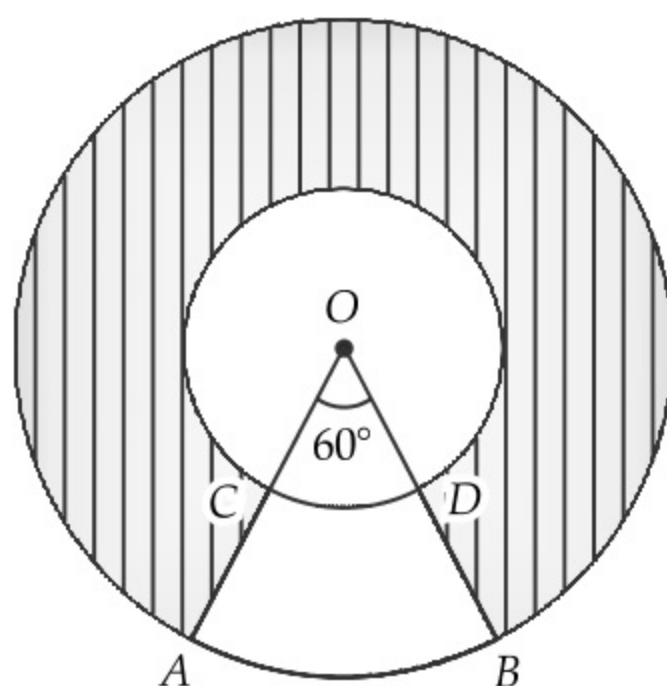
Section 'B'

21. Prove that $\sqrt{2}$ is an irrational number.

OR

Using Euclid's algorithm, find the HCF of 2048 and 960.

22. Point A lies on the line segment XY joining X(6, -6) and Y(-4, -1) in such a way that $\frac{XA}{XY} = \frac{2}{5}$. If point A also lies on the line $3x + k(y + 1) = 0$, find the value of k.
23. Prove that : $-1 + \frac{\sin A \sin (90^\circ - A)}{\cot (90^\circ - A)} = -\sin^2 A$
24. A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle of 30° with it. The distance between the foot of the tree to the point where the top touches the ground is 8 m. Find the height of the tree.
25. In the given figure, two concentric circles with centre O have radii 21 cm and 42 cm. If $\angle AOB = 60^\circ$, find the area of the shaded region. (Use $\pi = \frac{22}{7}$)



26. Roma knows about how to find the arithmetic mean from the given data (which is 53) but she has confused how to find the unknown term so she asked to her father to help for this type of problem.

Class	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100
Frequency	12	15	32	k	13

Section 'C'

27. Find all zeroes of the polynomial $3x^3 + 10x^2 - 9x - 4$ if one of its zero is 1.
28. Sumit is 3 times as old as his son. Five years later, he shall be two and a half times as old as his son. How old is Sumit at present?

OR

Find the value of k for which the following pair of linear equations have infinitely many solutions :

$$2x + 3y = 7, (k + 1)x + (2k - 1)y = 4k + 1$$

29. Four boys went for ride on motor boat. A motor boat whose speed is 24 km/h in still water takes 1 hour more to go 32 km upstream than to return downstream to the same spot. Find the speed of the stream.
30. If m^{th} term of A.P. is $\frac{1}{n}$ and n^{th} term is $\frac{1}{m}$, find the sum of first mn terms.

OR

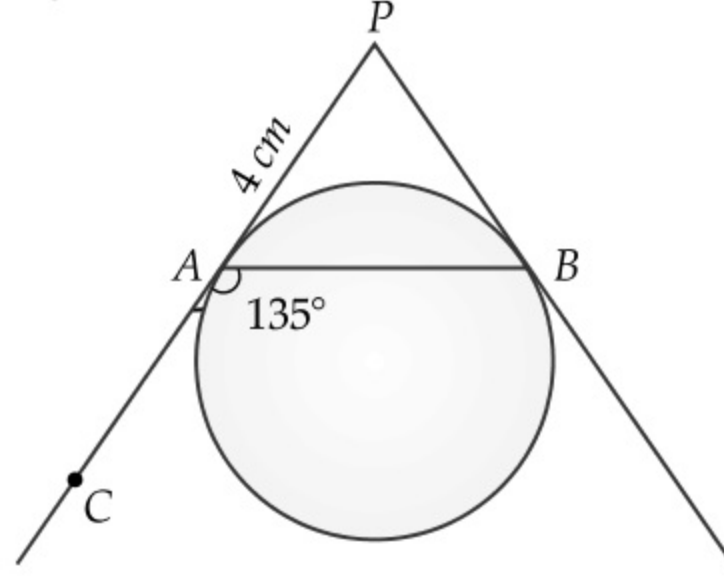
How many terms of an A.P. 9, 17, 25, must be taken to give a sum of 636 ?

31. Prove that a line drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.

OR

31. ΔABC is a right angled at C . If p is the length of the perpendicular from C to AB and a, b, c are the lengths of the sides opposite $\angle A, \angle B$ and $\angle C$ respectively, then prove that $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$.

32. In the given figure, PA and PB are tangents to a circle from an external point P such that $PA = 4$ cm and $\angle BAC = 135^\circ$. Find the length of chord AB .



33. Find A and B if $\sin(A + 2B) = \frac{\sqrt{3}}{2}$ and $\cos(A + 4B) = 0$, where A and B are acute angles.

34. At the kitty party, some ladies decided to play the tambola game. They have a box with 90 cards. A box contains cards, number 1 to 90. A card is drawn at random from the box. Find the probability that the selected card bear a :

- (i) Two digit number. (ii) Perfect square number

Section 'D'

35. A journey of 192 km from a town A to town B takes 2 hours more by an ordinary passenger train than a super fast train. If the speed of the faster train is 16 km/h more than the passenger train, find the speed of the faster and the passenger train.

OR

The total cost of a certain length of a piece of cloth is ₹ 200. If the piece was 5 m longer and each metre of cloth costs ₹ 2 less, the cost of the piece would have remained unchanged. How long is the piece and what is its original rate per metre ?

36. Construct a triangle ΔABC having $BC = 5$ cm, $AB = 4$ cm and $AC = 6$ cm. Then construct another triangle whose sides are $\frac{2}{3}$ times the corresponding sides of ΔABC .

OR

Draw a circle of radius 4 cm. Draw two tangents to the circle inclined at an angle of 60° to each other.

37. Show that ΔABC with vertices $A(-2, 0)$, $B(0, 2)$ and $C(2, 0)$ is similar to ΔDEF with vertices $D(-4, 0)$, $E(0, 4)$ and $F(4, 0)$.
38. From a point P on the ground, the angle of elevation of the top of a tower is 30° and that of the top of the flag-staff fixed on the top of the tower is 45° . If the length of the flag-staff is 5 m, find the height of the tower. (Use $\sqrt{3} = 1.732$)
39. The height of a cone is 10 cm. The cone is divided into two parts using a plane parallel to its base at the middle of its height. Find the ratio of volume of the two parts.

OR

The dimensions of a solid iron cuboid are 4.4 m \times 2.6 m \times 1.0 m. It is melted and recast into a hollow cylindrical pipe of 30 cm inner radius and thickness 5 cm. Find the length of the pipe.

40. Change the following data into 'less than type' distribution and draw its ogive :

Class Interval	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100
Frequency	7	5	8	10	6	6	8