

**Very Short Answer Type Questions [ 1 Mark each ]**

- Write the next term of the  $\sqrt{8}, \sqrt{18}, \sqrt{32}, \dots$ .
- Find the length of the tangent drawn from a point whose distance from the centre of a circle is 25cm. Given that the radius of the circle is 7cm.
- If the altitude of the sun is at  $60^\circ$ , then the height of the vertical tower that will cast a shadow of length 30m is\_\_\_\_\_.
- Two coins are tossed simultaneously. The probability of getting at most one head is\_\_\_\_\_.

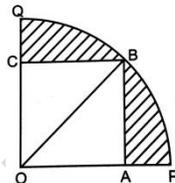
**Short Answer Type Questions - I [ 2 Marks each ]**

- The sum of two numbers is 15. If the sum of their reciprocals is  $\frac{3}{10}$ , find the numbers.
- For what value of k are the points (1, 1), (3, k) and (-1, 4) collinear?
- A quadrilateral ABCD is drawn to circumscribe a circle. Prove that  $AB+CD = BC+AD$ .
- Two cubes each of volume  $64 \text{ cm}^3$  are joined end to end. Find the surface area and volume of the resulting cuboid.
- Find the value(s) of k for which quadratic equation  $4x^2 + kx + 9 = 0$ , has equal roots
- Find the length of the line AB formed by joining two points  $A(\cos\theta, 0)$  and  $B(0, \sin\theta)$ .

**Short Answer Type Questions - II [ 3 Marks each ]**

11. Solve for x:  $2\left(\frac{2x+3}{x-3}\right) - 25\left(\frac{x-3}{2x+3}\right) = 5$ .

12. In fig. a square OABC is inscribed in a quadrant OPBQ. If  $OA=20\text{cm}$ , find the area of the shaded region.



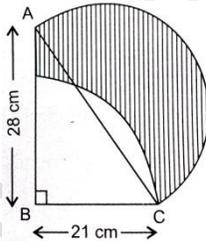
(Use  $\pi = 3.14$ )

- Which term of the A.P. 3, 10, 17,..... Will be 84 more than its 13<sup>th</sup> term.
- Prove that the lengths of the tangents drawn from an external point to a circle are equal.
- Draw a circle of radius 5 cm. From a point 8 cm away from the centre, construct a pair of tangents to the circle and measure of their lengths.
- Two poles of equal heights are standing opposite each other on either side of the road, which is 80 m wide. From a point between them on the road, the angles of elevation of the top of the poles are  $60^\circ$  and  $30^\circ$ , respectively. Find the height of the poles and the distances of the point from the poles.
- A Jar contains 24 marbles some are green and others are blue. If a marble is drawn at random from the jar, the probability that it is green is  $\frac{2}{3}$ . Find the number of blue marbles in the jar.
- If the point (x, y) is equidistant from the points (a+b, b-a) and (a-b, a+b), prove that  $bx = ay$ .
- In a circle of radius 21cm, an arc subtends an angle of  $60^\circ$  at the centre. Find: (1) the length of the arc  
(2) area of the sector formed by arc. [ use  $\pi = \frac{22}{7}$ ].

20. A metallic solid sphere of radius 4.2cm is melted and recast into the shape of a solid cylinder of radius 6 cm. Find the height of the cylinder. [ use  $\pi = \frac{22}{7}$  ]

### Long Answer Type Questions [ 4 Marks each ]

21. In a flight of 600km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200km/h and the time increased by 30 minutes. Find the duration of the flight.
22. If  $S_n$  denote the sum of the first  $n$  terms of an A.P., prove that  $S_{30} = 3(S_{20} - S_{10})$ .
23. A  $\Delta ABC$  is drawn to circumscribe a circle of radius 4cm such that the segment BD And DC into which the point of contact D is of lengths 8cm and 6cm divides BC respectively. Find the sides AB and AC.
24. Construct a triangle ABC of sides 4cm, 5cm and 6 cm. Then construct another triangle similar to it whose sides are  $\frac{3}{4}$  times the corresponding sides of the given triangle.
25. A TV tower stands vertically on a bank of a canal. From a point on the other bank directly opposite the tower, the angle of elevation of the top of the tower is  $60^\circ$ . From another point 20 m away from this point on the line joining this point to the foot of the tower, the angle of elevation of the top of the tower is  $30^\circ$ . Find the height of the tower and the width of the canal.
26. A metallic bucket, open at the top, of height 24 cm is in the form of the frustum of a cone, the radii of whose lower and upper circular ends are 7 cm and 14 cm respectively, find:  
(i) the volume of water which can completely fill the bucket.  
(ii) the area of the metal sheet used to make the bucket. [ use  $\pi = \frac{22}{7}$  ].
27. In the fig, ABC is a right angled triangle,  $\angle B = 90^\circ$ , AB = 28cm and BC = 21cm. 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.



[ use  $\pi = \frac{22}{7}$  ].

28. From a pack of 52 playing card, King, queen and Jack of Clubs are removed. From the remaining, a card is drawn at random. Find the probability that the card drawn is (i) a black queen (ii) '10' of clubs (iii) a red face card (iv) a face card
29. Points P, Q, R and S divide the line segment joining the points A(1, 2) and B(6, 7) in 5 equal parts. Find the coordinates of the points P, Q and R.
30. A sum of Rs 700 is to be used to give seven cash prizes to students of a school for their overall academic performance. If each prize is Rs 20 less than its preceding prize, find the value of each prize.
31. Rachel, an engineering student was asked to make a model in her workshop, which was shaped like a cylinder with two cones attached to its two ends, using thin aluminium sheet. The diameter of the model is 3 cm and its length is 12 cm. If each cone has a height of 2 cm, find the volume of air contained in the model that Rachel made.

\*\*\*\*\*XXX\*\*\*\*\*