

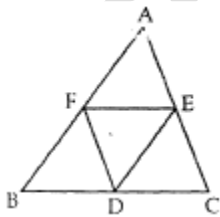
General Instructions:

1. All questions are compulsory.
2. The question paper consists of 34 questions divided into four sections A, B, C and D. Section – A comprises of 8 questions of 1 mark each, Section – B comprises of 6 questions of 2 marks each, Section – C comprises of 10 questions of 3 marks each and Section – D comprises of 10 questions of 4 marks each.
3. Question numbers 1 to 8 in Section – A are multiple choice questions where you are to select one correct option out of the given four.
4. There is no overall choice. However, internal choices have been provided in 1 question of two marks, 3 questions of three marks each and 2 questions of four marks.
5. Use of calculator is not permitted.

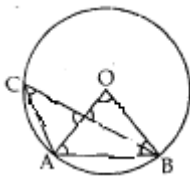
SECTION – A

Question numbers 1 to 8 carry 1 mark each. For each question, four alternative choices have been provided of which only one is correct. You have to select the correct choice.

1. Straight line passing through the points $(-1, 1)$, $(0, 0)$ and $(1, -1)$ has equation:
a. $y = x$ b. $x + y = 0$ c. $y = 2x$ d. $2 + 3y = 7x$
2. In $\triangle ABC$; D, E and F are the mid points of sides BC, CA and AB respectively. If $\text{ar}(\triangle ABC) = 56 \text{ cm}^2$, then $\text{ar}(\text{AEDF})$ is:



- a. 21 cm^2 b. 18 cm^2 c. 26 cm^2 d. 14 cm^2
3. $\angle ADB = 90^\circ$ and $\angle ABC = 30^\circ$, then $\angle CAO$ is:

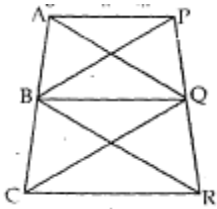


- a. 30° b. 45° c. 90° d. 60°
4. The linear equation $2x + 5y = 7$ has:
a. A unique solution b. two solutions
c. Three solutions d. infinitely many solutions
5. Mean of first 10 natural numbers is:
a. 6.5 b. 5.5 c. 7.5 d. 8.5
6. The radius of a sphere is $\frac{2d}{3}$, then its volume is:
a. $\frac{32}{81}\pi d^3$ b. $\frac{23}{4}\pi d^3$ c. $\frac{32}{4}\pi d^3$ d. $\frac{34}{3}\pi d^3$
7. In the throw of a die in a game of Ludo, the probability of getting an even number is;
a. 1 b. 0 c. $\frac{1}{2}$ d. 2
8. Volume of a cone of radius $\frac{r}{2}$ and height $2h$ is:
a. $\frac{1}{3}\pi r^2 h$ b. $\frac{1}{4}\pi r^2 h$ c. $\frac{1}{5}\pi r^2 h$ d. $\frac{1}{6}\pi r^2 h$

SECTION – B

Questions 9 to 14 carry 2 marks each.

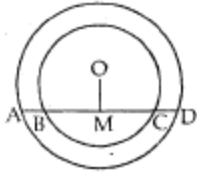
9. In figure: $AP \parallel BQ \parallel CR$. Prove that $\text{ar}(\text{AQC}) = \text{ar}(\text{PBR})$



10. Two cylindrical cans have bases of the same size. The diameter of each is 14 cm. One of the cans is 10 cm high and the other is 20 cm high. Find the ratio of their volumes.
11. Find the mean salary of 60 workers of a factory from the table:

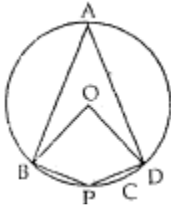
Salary per worker (in Rs.)	300	400	500	600	700	800
No. of workers	17	13	11	9	6	4

12. A bag contains 5 red balls, 8 white balls, 4 green balls and 7 black balls. If one ball is drawn at random, find the probability that it is:
a. Black b. not green
13. Two concentric circles are with centre O. ABCD are the points of intersection with a line. If $AD = 12$ cm and $BC = 8$ cm, find the length of AB, CD, AC and BD.



OR

ABC is a cyclic quadrilateral. O is the centre of the circle. If $\angle BOD = 160^\circ$, find $\angle BPD$.



14. The following observations have been arranged in ascending order. If median of the data is 63, find the value of x .

29, 32, 48, 50, x , $x + 2$, 72, 84, 95

SECTION – C

Questions 15 to 24 carry 3 marks each.

15. Draw the graph of the linear equation $y = \frac{2}{3}x + \frac{1}{3}$. Check from the graph that (7, 5) is a solution of the linear equation.

OR

Draw the graph of $y = 3$ as an equation in two variables. What does the graph represent?

16. ABCD is a quadrilateral such that $AB = CD$, diagonals AC and BD intersect at O such that $OA = OC$. AL and CM are perpendiculars drawn from A and C on BD. Show that:

a. $\text{ar}(\triangle OAB) = \text{ar}(\triangle OCD)$

17. construct an angle of 15° using scale and compass only.

18. The radius and vertical height of a cone are 5 cm and 12 cm respectively. Find the curved surface area.

19. 30 children were asked about the number of hours they watched TV programs in the previous week. The results were found as follows:

1, 6, 2, 3, 5, 12, 5, 8, 4, 8, 10, 3, 4, 12, 2, 8, 15, 1, 17, 6, 3, 2, 8, 5, 9, 6, 8, 7, 14, 12

a. Make a frequency distribution table for this data, taking class width 5.

b. How many children watched TV for 15 or more hours a week?

20. Write the equation $2x = y$ in the form $ax + by + c = 0$ and find values of a, b, c in the equation. How many solutions this equation has?

21. A hollow cylindrical copper pipe is 210 cm long. Its outer and inner diameter are 10 cm and 6 cm respectively. Find the volume of the copper used in making the pipe?

OR

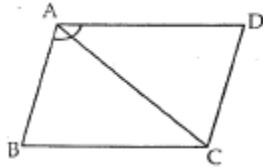
Find the volume of a sphere whose surface area is 55.44 cm^2 . ($\pi = \frac{22}{7}$)

22. If the diagonals of a parallelogram are equal and intersect at right angles, then show that the parallelogram is a square.

OR

Prove that the line segment joining the mid – point of the hypotenuse of a right triangle to its opposite vertex is half of the hypotenuse.

23. Diagonal AC of a parallelogram ABCD bisects $\angle A$ (see figure), show that:
- It bisects $\angle C$ also.
 - ABCD is a rhombus.



24. Cards marked with numbers 2 to 101 are placed in a box and mixed thoroughly. One card is drawn at random from this box. Find the probability that the number on the card is:
- A number less than 14
 - A number which is a perfect square.
 - A prime number less than 20.

SECTION – D

Questions 25 to 34 carry 4 marks each.

25. ABCD is a trapezium in which $AB \parallel CD$ and $AD = BC$. Show that:
- $\angle A = \angle B$
 - $\angle C = \angle D$
 - $\triangle ABC \cong \triangle BAD$
26. Construct a triangle ABC in which $BC = 8$ cm, $\angle B = 45^\circ$ and $AB - AC = 3.5$ cm.
27. Give the geometric representation of $2x + 9 = 0$ as an equation in two variables. Give two solutions of the equation from the graph.

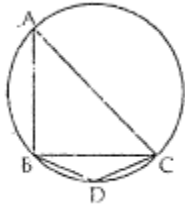
OR

Find the value of m , if $x = 2$, $y = 1$ is a solution of the equation $2x + 3y = m$ and represent it graphically.

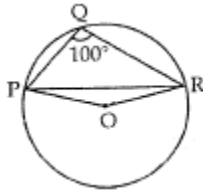
28. The floor of a rectangular hall has perimeter 250 m. If the cost of painting the four walls the rate of Rs. 10 per m^2 is Rs. 15,000. Find the height of the hall.
29. 3 girls Sapna, Mariam and Naveena are playing a game by standing on a circle of radius 5 m drawn in a park. Sapna throws a ball to Mariam, Mariam to Naveena, Naveena to Sapna. If the distance between Sapna and Mariam and between Mariam and Naveena is 6m each, what is the distance between Sapna and Naveena.

OR

In the figure, $BD = DC$ and $\angle DBC = 25^\circ$. Find the measure of $\angle BAC$.



30. D, E and F are respectively the mid – points of the sides BC, CA and AB of a triangle ABC. Show that:
- BDEF is a parallelogram.
 - DFEC is a parallelogram.
31. Work done by a body on application of a constant force is directly proportional to the distance travelled by the body. Express this in the form of an equation in two variables. Draw the graph of the equation taking constant force as 5 units. Find from the graph, the work done when the distance travelled by the body is 2 units.
32. In the figure, $\angle PQR = 100^\circ$ where P, Q and R are points on circle with centre O. Find $\angle OPR$.



33. Ajay has built a cubical water tank in his house. The top of the water tank is covered with lid. He wants to cover the inner surface of the tank including the lid with square tiles of side 25 cm. If each inner edge of the water tank is 2 m long and the tiles cost Rs. 360 per dozen, then find the total amount required for tiles.
34. Draw a histogram and frequency polygon of the following data:

Marks	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80	80 – 90	90 – 100
No. of students	5	12	6	20	18	10	16	3