

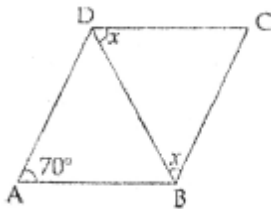
General Instructions:

- All questions are compulsory.
- 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.
- Question numbers 1 to 8 in Section – A are multiple choice questions where you are required to select one correct option out of the given four.
- There is no overall choice.
- Use of calculator is not permitted.

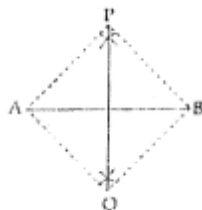
SECTION – A

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

- The linear equation $y = mx$, where m is a real number, always passes through
 - (1, 1)
 - (-1, -1)
 - (1, 0)
 - (0, 0)
- Any point on the y -axis is of the form:
 - ($x, 0$)
 - (x, x)
 - (0, y)
 - none
- In the figure ABCD is a rhombus. If $\angle A = 70^\circ$, then find the value of x is:



- 65°
 - 55°
 - 35°
 - 45°
4. If $AB = 16$ cm and PQ is a bisector of AB, then:

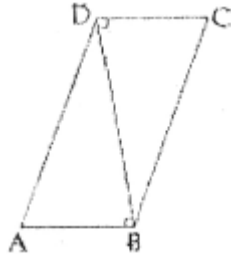


- a. $PA = PB$ b. $PA = PQ$ c. $PB < AQ$ d. $PA > PB$
5. The radii of two cylinders are in the ratio 2:3 and their heights are in the ratio 5:3. Then the ratio of their volumes is:
- a. 10:17 b. 20:27 c. 17:27 d. 20:37
6. Internal and external radii of hollow wooden cylinder 10 cm high are 4 cm and 5 cm respectively. The volume of material of the hollow cylinder is:
- a. 45π cu. cm b. 9π cu. cm c. 90π cu. cm d. 900π cu. cm
7. Following observations have been written in ascending order. If median of the data is 22, then value of x will be:
11, 12, 14, 16, 18, $x+2$, $x+4$, 30, 32, 35, 41
- a. 18 b. 14 c. 19 d. 20
8. Out of 35 students participating in a debate 10 are girls. The probability that winner is a boy is:
- a. $\frac{1}{7}$ b. $\frac{3}{7}$ c. $\frac{4}{7}$ d. $\frac{5}{7}$

SECTION – B

Question numbers 9 to 14 carry two marks each.

9. ABCD is parallelogram in which $AB = 4$ cm and $BD = 6$ cm. Find ar (ABCD).

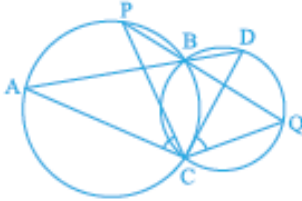


10. Construct an angle of 52.5° .
11. The radius of the base of a cone is 5.25 cm and its slant height is 12 cm. Find the curved surface area of the cone.
12. The following observations have been arranged in ascending order. If the median of the data is 63, find x
29, 32, 48, 50, x , $x + 2$, 72, 78, 84, 95
13. The mean of 10, 12, 18, 13, x and 17 is 15. Find the value of x .
14. The blood groups of students of class IX are recorded as follows:
A, B, O, O, AB, O, A, O, B, A, O, B, A, O, O, A, AB, O, A, A, O, O, AB, B, A, O, A, B, O, B, O, AB, A, B, O
Represent this data in the form of frequency distribution table.

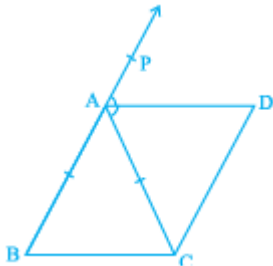
SECTION – C

Question numbers 15 to 24 carry three marks each.

15. Draw the graph of linear equation whose solutions are represented by the points having the sum of the co-ordinates as 7 units.
16. The present age of girl is two fifth the age of her father. Express the above statement as a linear equation in two variables. Also find:
- The age of the girl when father is 40 years.
 - The age of father when the girl in 22 years.
17. Construct an isosceles right angled triangle ABC with $AB = BC = 6$ cm and $\angle B = 90^\circ$, find AC.
18. Prove that the rhombus, inscribed in a circle is a square.
19. In figure, two circles intersect at two points B and C. Through B, two line segments ABD and PBQ are drawn to intersect the circle at A, D and P, Q respectively. Prove that $\angle ACP = \angle QCD$.



20. In the given figure, ABC is an isosceles triangle in which $AB = AC$, $CD \parallel AB$ and AD is the bisector of exterior $\angle CAE$ of $\triangle ABC$. Prove that $\angle CAD = \angle BCA$ and ABCD is a parallelogram.



21. Two cylindrical vessels are filled with oil. The radius of one vessel is 15 cm and its height is 25 cm. The radius and height of the other vessel are 10 cm and 18 cm respectively. Find the radius of a cylindrical vessel 30 cm in height, which will just contain the oil of the two given vessels.
22. A room is in the form of a cuboid measuring 60 m x 40 m x 30 m. How many cuboidal cartons of capacity 0.8 m^3 can be stored in the room?
23. Given below is the frequency distribution of salary in rupees of 80 workers in factory.

Salary	1000 – 2000	2000 – 3000	3000 – 4000	4000 – 5000	5000 – 6000
No. of workers	8	14	20	24	14

Find the probability that the salary of a worker selected at random is

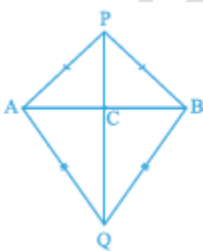
- Less than 4000
 - More than or equal to 3000
 - More than or equal to 2000 but less than 5000.
24. The following table gives the life time of 100 neon lamps. Draw a histogram to represent the information.

Lifetime (in hours)	300 – 400	400 – 500	500 – 600	600 – 700	700 – 800	800 – 900
Number of lamps	12	8	15	25	30	10

SECTION – D

Question numbers 25 to 34 carry four marks each.

25. Find four solutions for the following linear equation: $y = \frac{9}{5}(x - 273) + 32$
26. A taxi charges Rs. 25 for the first km and Rs. 12 per km for subsequent distances covered. Taking the distance covered as x km and total fare as y , write the linear depicting the relation in x and y . Draw the graph. From the graph, find the taxi charges for covering 6 km.
27. AC and BD are two chords of a circle which bisect each other. Prove that
- AC and BD are diameters.
 - ABCD is a rectangle.
28. In the figure, ABCD is a quadrilateral in which $AB = BC$ and $AD = CD$. Prove that



- $\Delta APQ \cong \Delta BPQ$
 - PQ is the bisector of $\angle APB$ and $\angle AQB$.
 - $\Delta ACQ \cong \Delta BCQ$
 - $\angle ACQ = \angle BCQ = 1$ right angle
29. Prove that the diagonals of a rectangle are of equal length.
30. If two equal chords of a circle intersect within the circle, prove that the segments of one chord are equal to corresponding segments of the other chord.

31. Two brothers have a triangular plot. They decide to distribute it equally amongst themselves but also want to give away a triangular part of it for charity to a school which is attached on the base side of 120 m of the triangular plot.

Answer the following questions:

- What is the area of the triangular plot if its height is 90 m?
- Explain with the help of a figure how could this be possible and what type of parts do the brothers get?
- What value of the two brothers is depicted here?

32. The surface area of a sphere of radius 5 cm is five times the curved surface area of a cone of radius 4 cm. Find the height and volume of the cone.

33. The water for a factory is stored in a hemispherical tank with internal diameter 14 m. The tank contains 50 kl of water. Water is pumped into the tank to full to its capacity.

Calculate the volume of the water pumped into the tank.

34. For the following data, construct a frequency polygon.

Pocket money of a student (in Rs.)	Number of students
0 – 5	10
5 – 10	16
10 – 15	30
15 – 20	42
20 – 25	50
25 – 30	30
30 – 35	16
35 – 40	12