Goa Board
Class IX Mathematics
Term II
Sample Paper - 5

Time: 3½ hrs **Total Marks: 90**

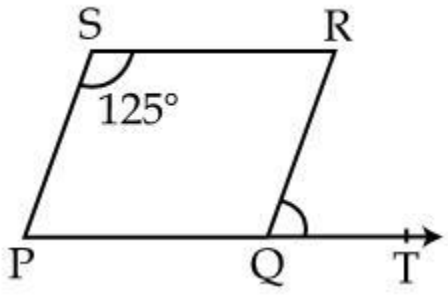
General Instructions:

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 choice has been provided in **1** question of **two marks**, **3** questions of **three marks** each and **2** questions of **four marks** each. You have to attempt only one of the alternatives in all such questions.
5. Use of calculator is **not** permitted.

(SECTION – A)

1. If we divide or multiply both sides of a linear equation with a non-zero number, then
the solution of the linear equation
(A) remains the same
(B) changes
(C) changes in case of multiplication only
(D) changes in case of division only

2. In the figure, PQRS is a parallelogram in which m∠PSR = 125°, m∠RQT is equal to



(A) 75°
(B) 65°
(C) 55°
(D) 85°

3. Class marks of a frequency distribution are 6, 10, 14, 18, 22, 26, and 30. Its class size will be

(A) 4
(B) 5
(C) 9
(D) 1

4. A right circular cylinder just encloses a sphere of radius r. Find the ratio of the surface area of the sphere to the curved surface area of the cylinder.

(A) 1:1
(B) 1:2
(C) 2:1
(D) 1:4

5. The equation $7x = 3$ is written in two variable as

(A) $7x + y = 3$
(B) $7xy = 3$
(C) $7x = 3y$
(D) $7x + 0y - 3 = 0$

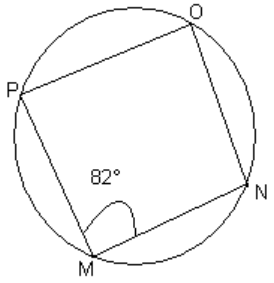
6. Class mark of a class is the

(A) lower limit
(B) upper limit
(C) $\frac{\text{upper limit} + \text{lower limit}}{2}$
(D) $\frac{\text{upper limit} - \text{lower limit}}{2}$

7. A cylindrical container of diameter 35 cm is full of oil. If 11 litres of oil is drawn off, the oil level in the container will drop by:

(A) $12\frac{3}{7}$ cm
(B) $11\frac{3}{5}$ cm
(C) $11\frac{4}{7}$ cm
(D) $11\frac{3}{7}$ cm

8. In the figure, m∠M = 82°, then m∠O = ?

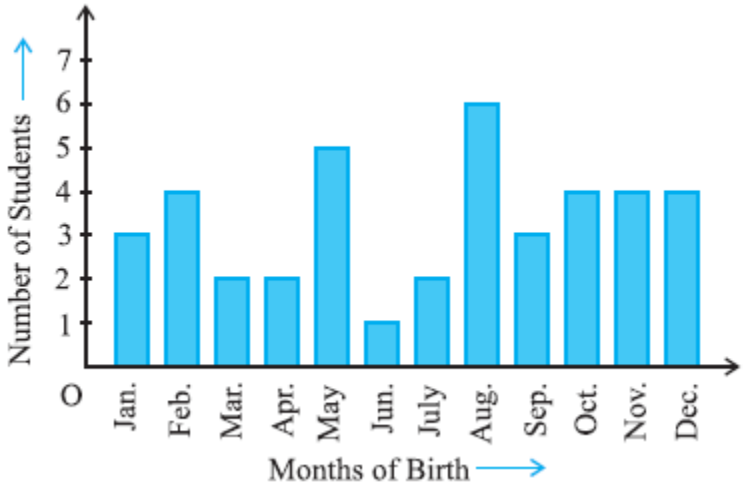


(A) 96°
(B) 98°
(C) 94°
(D) 92°

(SECTION – B)

9. The total surface area of a cube is 294 cm^2. Find its volume.

10. In a particular section of Class IX, 40 students were asked about their birth month and the following graph was prepared for the data so obtained:

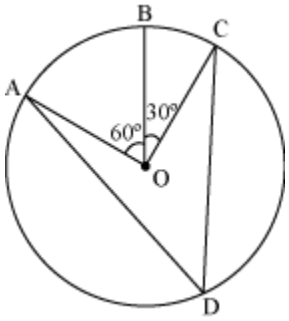


Find the probability that a student of Class IX was born in August.

11. The following data shows IQs of some children. Represent it using the continuous frequency distribution.

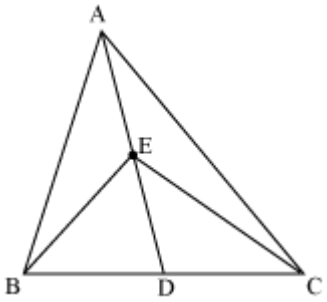
IQ	65-74	75-84	85-94	95-104	105-114	115-124	125-134
Number of children	120	142	134	90	108	38	15

12. In the given figure, A, B and C are three points on a circle with centre O such that m∠BOC = 30° and m∠AOB = 60°. If D is a point on the circle other than the arc ABC, find ∠ADC.



13. The range of a data set is 45. If the maximum value is thrice the minimum value, what are the minimum and maximum values in the data set?

14. In the given figure, E is any point on median AD of ΔABC. Show that ar(ΔABE) = ar(ΔACE)



(SECTION – C)

15. A bag contains 12 balls out of which x are white. If one ball is taken out from the bag, find the probability of getting a white ball. If 6 more white balls are added to the bag and the probability now for getting a white ball is twice the previous one, find the value of x.

16. A storehouse measures 40 m × 25 m × 10 m. Find the maximum number of wooden crates each measuring 1.5 m × 1.25 m × 0.5 m that can be stored in the storehouse.

17. A hemispherical bowl is made of steel, 0.25 cm thick. The inner radius of the bowl is 5 cm. Find the outer curved surface area of the bowl.

18. The length of 40 leaves of a plant are measured correct to one millimeter, and the data obtained is represented in the following table:

Length (in mm)	Number of leaves
118 – 126	3
127 – 135	5
136 – 144	9
145 – 153	12
154 – 162	5
163 – 171	4
172 – 180	2

i. Draw a histogram to represent the given data.
ii. Is there any other suitable graphical representation for the same data?
iii. Is it correct to conclude that maximum leaves are 153 mm long? Why?

19. In a two digit number, the units digit is thrice the tens digit. If 36 is added to the number, the digits interchange their place. Find the number.

OR

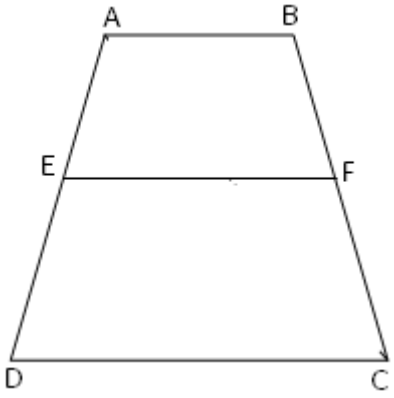
Yamini and Fatima, two students of Class IX of a school, together contributed Rs. 100 towards the Prime Minister's Relief Fund to help the earthquake victims. Write a linear equation which satisfies this data. (You may take their contributions as Rs x and Rs y.) Draw the graph of the same.

20. Construct an angle of 90° at the initial point of a given ray and justify the construction.

21. A solid cube of side 12 cm is cut into eight cubes of equal volume. What will be the side of the new cube? Also, find the ratio between their surface areas.

22. In a parallelogram, show that the angle bisectors of two adjacent angles intersect at right angles.

23. In the given figure, E is the mid-point of side AD of trapezium ABCD with AB || CD. A line through E parallel to AB meets BC in F. Show that F is the mid-point of BC.



24. 1500 families with 2 children were selected randomly, and the following data was recorded:

Number of girls in a family	2	1	0
Number of families	475	814	211

Compute the probability of a family, chosen at random, having
i. 2 girls ii. 1 girl iii. No girl
Also, check whether the sum of these probabilities is 1.

(SECTION D)

25. Shanti Sweets Stall placed an order for making cardboard boxes for packing their sweets. Two sizes of boxes were required, one having dimensions 25 cm × 20 cm × 5 cm and the other with dimensions 15 cm × 12 cm × 5 cm. For all the overlaps, 5% of the total surface area is required extra. If the cost of the cardboard is Rs. 4 for 1000 cm^2, find the cost of cardboard required for supplying 250 boxes of each kind.

26. A cubical box with an edge of 10 cm and another cuboidal box having dimensions 12.5 cm long, 10 cm wide and 8 cm high, are to be compared.
i. Which box has the greater lateral surface area and by how much?
ii. Which box has the smaller total surface area and by how much?

27. Construct a triangle with a base of length 7.5 cm, the difference between the other two sides being 2.5 cm and one of its base angles measuring 45^o. Justify the construction.

OR

Construct an angle of 90° at the initial point of a given ray and justify the construction.

28. A small indoor greenhouse (herbarium) is made entirely of glass panes (including the base) held together with tape. It is 30 cm long, 25 cm wide and 25 cm high.

i. What is the area of the glass?

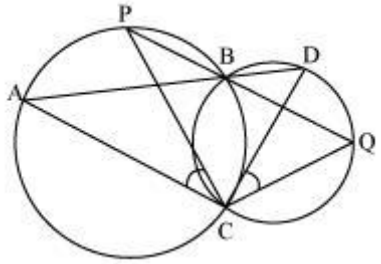
ii. How much of tape is needed for all the 12 edges?

29. Find:

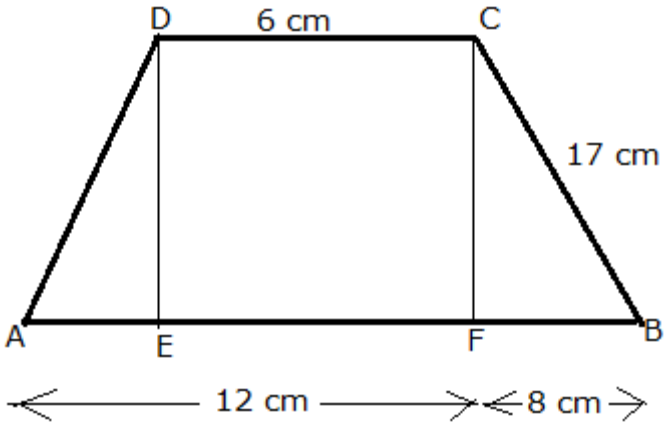
i. The lateral or curved surface area of a closed cylindrical petrol storage tank that is 4.2 m in diameter and 4.5 m high.

ii. How much steel was actually used for the constructing the above tank if $\frac{1}{12}$ of the steel actually used was wasted in making the tank?

30. Two circles intersect at two points B and C. Through B, two line segments ABD and PBQ are drawn to intersect the circles at A, D and P, Q respectively.
Prove that ∠ACP = ∠QCD.



31. Calculate the area of the quadrilateral ABCD given below.



32. The following table gives the distribution of students of two sections according to the marks obtained by them:

Section A		Section B	
Marks	**Frequency**	**Marks**	**Frequency**
0 – 10	3	0 – 10	5
10 – 20	9	10 – 20	19
20 – 30	17	20 – 30	15
30 – 40	12	30 – 40	10
40 – 50	9	40 – 50	1

Represent the marks of the students of both the sections on the same graph by two frequency polygons. From the two polygons compare the performance of the two sections.

33. A circus tent is cylindrical upto a height of 11 m and conical above it. If the diameter of the base is 24 m and the height of the cone is 5 m, find the length of the canvas required to make the tent if the width of the canvas is 5 m.

34. Laxmi purchases some bananas and some oranges. Each banana costs Rs. 2 while each orange costs Rs. 3. If the total amount paid by Laxmi was Rs. 30 and the number of oranges purchased by her was 6, then how many bananas did she purchase?