

CBSE
Class IX Mathematics
Term II
Sample Paper - 8

Time: 3½ hrs

Total Marks: 90

General Instructions:

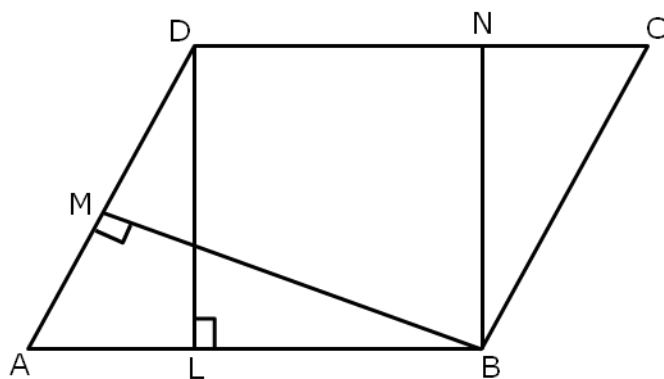
- 1. All** questions are **compulsory**.
- The question paper consists of **34** questions divided into **four sections** A, B, C, and D. **Section A** comprises of **8** questions of 1 mark each, **Section B** comprises of **6** questions of 2 marks each, **Section C** comprises of **10** questions 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 to select **one** correct option out of the given four.
- There is no overall choice. However, internal choice has been provided in **2** 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.
- Use of calculator is **not** permitted.

(SECTION – A)

- The lowest observation of a data is 24 and the highest is 56. The range of the given data is
(A) 16
(B) 32
(C) 40
(D) 35
- If a triangle and a parallelogram are on the same base and between same parallels, then the ratio of the area of the triangle to the area of parallelogram is
(A) 1 : 3
(B) 1 : 2
(C) 3 : 1
(D) 1 : 4
- A cuboidal water tank is 6 m long, 5 m wide and 4.5 m deep. How many litres of water can it hold? ($1 \text{ m}^3 = 1000 \text{ l}$)
(A) 136000 litres
(B) 135000 litres
(C) 134500 litres
(D) 134000 litres

4. Three angles of a quadrilateral are 60° , 110° and 86° . The measure of the fourth angle of the quadrilateral is
 (A) 104°
 (B) 124°
 (C) 126°
 (D) 108°
5. A water storage tank has a cylindrical shape. If it is 2.1 m high and has a diameter of 1.4 m, its lateral surface area is
 (A) 9.34 m^2
 (B) 9.24 m^2
 (C) 9.26 m^2
 (D) 9.25 m^2
6. A line l intersects two concentric circles at P, Q, R and S. Then
 (A) $PQ = RS$
 (B) $PS \cdot RS = PS \cdot PQ$
 (C) $AS = PR$
 (D) $PQ > RS$
7. The equation $7x = 3$ is written in two variables as
 (A) $7x + y = 3$
 (B) $7xy = 3$
 (C) $7x = 3y$
 (D) $7x + 0y - 3 = 0$

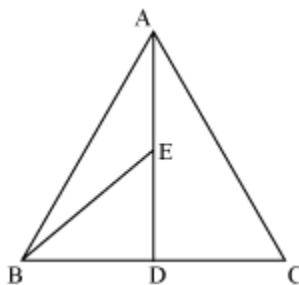
8. The area of parallelogram ABCD is :



- (A) $AB \times BM$
 (B) $BC \times BN$
 (C) $DC \times DL$
 (D) $AD \times DL$

(SECTION – B)

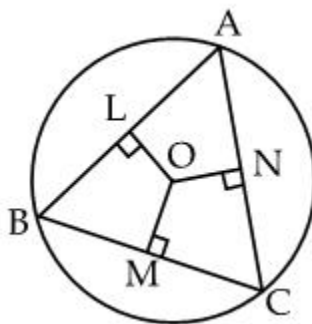
- 9.** Two cubes of side 6 cm each are joined end to end. Find the surface area of the resultant cuboid.
- 10.** D, E and F are respectively the mid-points of the sides BC, CA and AB of $\triangle ABC$. Show that $\text{ar}(\text{BDEF}) = \frac{1}{2} \text{ar}(\text{ABC})$.
- 11.** What is the probability that a leap year has 53 Sundays?
- 12.** In $\triangle ABC$, E is the mid-point of median AD.
Show that $\text{area}(\text{BED}) = \frac{1}{4} \text{area}(\text{ABC})$



- 13.** Neha went to a 'sale' to purchase some pants and skirts. When her friend asked her how many of each she had bought, she answered, "The number of skirts are two less than twice the number of pants purchased. Also the number of skirts is four less than four times the number of pants purchased." Help her friend to find how many pants and skirts Neha bought.
- 14.** Draw a line segment of length 5.8 cm. Bisect it and measure the length of each part.

(SECTION – C)

- 15.** In the figure, O is the centre of the circle, $OM \perp BC$, $OL \perp AB$, $ON \perp AC$ and $OM = ON = OL$.



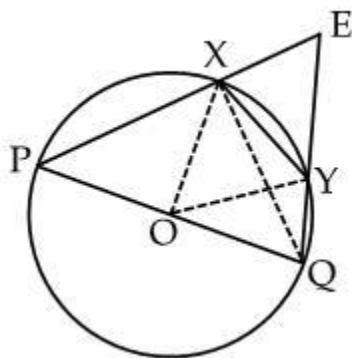
Is $\triangle ABC$ equilateral? Give reasons.

16. When three coins are tossed simultaneously, find the probability of getting at least two tails.

17. E and F are the mid-points of non parallel sides of trapezium ABCD in which AB and CD are the parallel sides.

Prove that i. $EF \parallel AB$ and ii. $EF = \frac{1}{2}(AB + CD)$

18. In the figure, PQ is the diameter of the circle and XY is chord equal to the radius of the circle. PX and QY when extended intersect at point E. Prove that $m\angle PEQ = 60^\circ$



19. The relative humidity (in %) of a certain city for a month of 30 days was as follows:

98.1	98.6	99.2	90.3	86.5	95.3	92.9	96.3	94.2	95.1
97.3	89.2	92.3	97.1	93.5	92.7	95.1	97.2	93.3	95.2
89	96.2	92.1	84.9	90.2	95.7	98.3	97.3	96.1	92.1

- Construct a grouped frequency distribution table with classes 84 - 86, 86 - 88
- Which month or season do you think this data is about?
- What is the range of this data?

20. A cylinder and cone have bases of equal radii and are of equal heights. Show that their volumes are in the ratio of 3 : 1.

21. An algebra textbook has a total of 1382 pages. It is broken up into two parts. The second part of the book has 64 pages more than the first part. How many pages are there in each part of the book?

OR

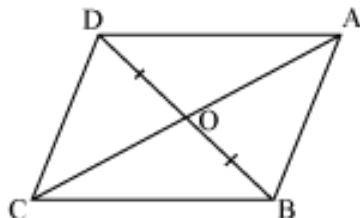
Draw the graph of $y - 4x = 8$.

22. A solid is in the form of a right circular cylinder with a hemisphere at one end and a cone at the other end. The radius of the common base is 8 cm and the height of the cylindrical and conical portions are 10 cm and 6 cm respectively. Find the total surface area of the solid.

OR

A sphere, a cylinder and a cone have the same radius. Find the ratio of their curved surface areas.

- 23.** In the given figure, diagonals AC and BD of quadrilateral ABCD intersect at O such that $OB = OD$. If $AB = CD$, then show that: $\text{area}(\text{DOC}) = \text{area}(\text{AOB})$



- 24.** A company selected 2400 families at random and surveyed them to determine relationship between income level and the number of television sets at home. The information gathered is listed in the table below:

Monthly income in Rs.	Television per family			
	0	1	2	Above 2
Less than 7,000	10	160	25	0
7,000 – 10,000	0	305	27	2
10,000-13,000	1	535	29	1
13,000-16,000	2	469	59	25
16,000 or more	1	579	82	88

If one family is chosen at random find the probability of choosing

- A family whose income is 16,000 or more and has more than 2 TV sets
- A family whose income is less than 7,000 and has 2 TV's
- A family whose income is between 10,000 and 13,000 and has 1 TV.

(SECTION – D)

- 25.** The taxi charges in Hyderabad include fixed charges as well a charge for the distance covered. For a distance of 10 km, the total charge paid is Rs. 220 and for a journey of 15 km the total charge paid is Rs. 310.
- What are fixed charges and charge per km?
 - How much does a person have to pay for travelling a distance of 25 km?

OR

Formulate the following problem as a pair of equations and then find their solutions. A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours it can go 40 km upstream and 55 km downstream. Determine the speed of the stream and that of the boat in still water.

- 26.** 30 circular plates, each of radius 14 cm and thickness 3cm are placed one above the other to form a cylindrical solid. Find :
- The total surface area
 - Volume of the cylinder so formed.

- 27.** Construct a right triangle whose base is 6 cm and the difference of its hypotenuse and the other side is 2 cm.
- 28.** If O is the circumcentre of a $\triangle ABC$ and $OD \perp BC$, prove that $\angle BOD = \angle A$
- 29.** Construct $\triangle ABC$ in which $BC = 4.5$ cm, $m\angle B = 45^\circ$ and $AB - AC = 2.5$ cm. Justify the construction.
- 30.** The daily income of 50 doctors is given below:

Daily income (in Rs.)	No. of Doctors
0 - 1000	8
1000 - 2000	7
2000 - 3000	12
3000 - 4000	6
4000 - 5000	11
5000 - 6000	6

Draw a histogram for the above data.

- 31.** The students of a Vidyalaya were asked to participate in a competition for making and decorating penholders in the shape of a cylinder with a base, using cardboard. Each penholder was to be of radius 3 cm and height 10.5 cm. The Vidyalaya was to supply the competitors with cardboard. If there were 35 competitors, how much cardboard was required to be bought for the competition?
- 32.** Metallic spheres of radius 6 cm, 8 cm, and 10 cm respectively are melted to form a single solid sphere. Find the radius of the resulting sphere.

OR

The cost of painting the complete outside surface of a closed cylindrical oil tank at 60 paise per sq dm is Rs. 237.60. The height of the tank is 6 times the radius of the base of the tank. Find its volume corrected to two decimal places.

- 33.** The following is the data of the average marks obtained by 20 students in all subjects:
36 39 40 48 51 52 50 51 43 40 33 49 54 47 45 51 45 44 32 50
Form a grouped discontinuous frequency distribution table such that one of the classes is 46-50.
Find the median and mode for the above data.

- 34.** ABCD is a parallelogram. The circle through A, B and C intersect CD (produced if necessary) at E. Prove $AE = AD$.