

**CBSE**  
**Class IX Mathematics**  
**Term II**  
**Sample Paper - 1**

**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.

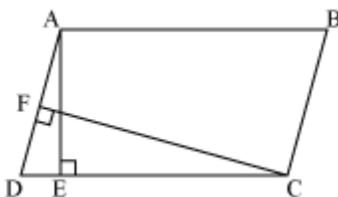
**(SECTION – A)**

- The graph of the linear equation  $3x = 4$  is
  - parallel to the x-axis
  - lies along the x-axis
  - parallel to the y-axis
  - passes through the Origin
- A curious class 10<sup>th</sup> student wants to know and collect data regarding the percentage of students who got A1 grade in Science during the last 10 years at the Board examinations. This data is known as
  - a primary data
  - a secondary data
  - raw data
  - frequency data
- Distance of a chord PQ of a circle from the center is 12 cm and the length of the chord is 10 cm, then the diameter of the circle is
  - 12 cm
  - 13 cm
  - 26 cm
  - 25 cm
- A cylinder of base radius 'R' and height 'h' is dipped vertically to half its height in a bucket full of yellow paint. Find the area of the surface which gets painted.

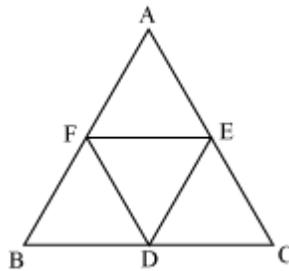
- (A)  $\frac{1}{2} \pi R^2 h$   
 (B)  $\frac{1}{3} \pi R^2 h$   
 (C)  $\pi R h$   
 (D)  $\pi R(R + h)$
5. The sum of the length, breadth and height of a cuboidal box is 19 cm and the length of its diagonal is 11 cm. Find the surface area of the cuboidal box.  
 (A)  $240 \text{ cm}^2$   
 (B)  $315 \text{ cm}^2$   
 (C)  $215 \text{ cm}^2$   
 (D)  $254 \text{ cm}^2$
6. In quadrilateral PQRS,  $PQ = QR$  and  $RS = SP$ , then the quadrilateral is a  
 (A) parallelogram  
 (B) rhombus  
 (C) kite  
 (D) trapezium
7. The ratio of the areas of two parallelograms on the same base and between the same parallel lines is  
 (A) 1 : 2  
 (B) 1 : 1  
 (C) 1 : 3  
 (D) 2 : 1
8. A parallelogram DEFG is such that  $DM \perp FG$ ,  $FN \perp DG$ . If  $DM = 15\text{cm}$ ,  $FN = 25\text{cm}$ ,  $DG = 6\text{cm}$ , then what is the area of the parallelogram DEFG?  
 (A) 120 square cm  
 (B) 180 square cm  
 (C) 150 square cm  
 (D) 130 square cm

**(SECTION – B)**

9. In the given figure, ABCD is parallelogram,  $AE \perp DC$  and  $CF \perp AD$ . If  $AB = 16$  cm.  $AE = 8$  cm and  $CF = 10$  cm, find AD.



10. A right triangle with its sides 3 cm, 4 cm and 5 cm is rotated about its side of 4 cm to form a cone having base radius as 3 cm. Find the volume of the solid so generated. ( $\pi = 3.14$ )
11. Eleven bags of wheat flour, each marked 5 kg, actually contained the following weights of flour (in kg):  
4.97 5.05 5.08 5.03 5.00 5.06 5.08 4.98 5.04 5.07 5.00
- Find the probability that any of these bags chosen at random contains more than 5 kg of flour.
12. Draw the graph of  $y - 4x = 8$ .
13. D, E and F are respectively the mid-points of the sides BC, CA and AB of  $\triangle ABC$ . Show that BDEF is a parallelogram.



14. Using Protractor draw an angle of  $70^\circ$  and bisect it.

**(SECTION – C)**

15. The length of a chord of a circle is equal to its radius. Find the angle subtended by the chord at a point on the minor arc and also at a point on the major arc.
16. The taxi fare in a city is as follows: For the first kilometre, the fare is Rs. 8 and for the remaining distance it is Rs.5 per kilometre. Taking the distance covered as  $x$  km and total fare as Rs.  $y$ , write a linear equation for this information, and draw its graph.

**OR**

Draw the graph of  $2x + 3y = 11$ . From graph, find the value of  $x$ , if  $y = 5$ .

17. A village, having a population of 4000, requires 150 litres of water per head per day. It has a tank measuring  $20\text{ m} \times 15\text{ m} \times 6\text{ m}$ . For how many days will the water of this tank last?

18. Fifty seeds each were selected at random from 5 bags of seeds, and were kept under standardised conditions favorable to germination. After 20 days, the number of seeds which had germinated in each collection were counted and recorded as follows:

Bags	1	2	3	4	5
Number of germinated seeds	40	48	42	39	41

What is the probability of

- i. More than 40 seeds germinating in a bag?
  - ii. 49 seeds germinating in a bag?
  - iii. More than 35 seeds germinating in a bag?
19. 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

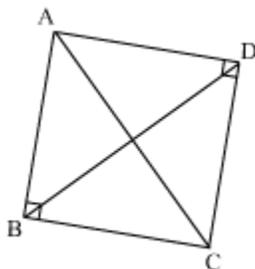
- i. Draw a histogram to represent the given data.
  - ii. Is there any other suitable graphical representation for the same data?
  - iii. Is it correct to conclude that the maximum numbers of leaves are 153 mm long? Why?
20. The paint in a certain container is sufficient to paint an area equal to  $9.375 \text{ m}^2$ . How many bricks of dimensions  $22.5 \text{ cm} \times 10 \text{ cm} \times 7.5 \text{ cm}$  can be painted out of this container?
21. Show that the line segments joining the mid-points of the opposite sides of a parallelogram bisect each other.

**OR**

Show that if the diagonals of a quadrilateral are equal and bisect each other at right angles, then it is a square.

22. Show that the bisectors of the angles of a parallelogram form a rectangle.

23.  $\triangle ABC$  and  $\triangle ADC$  are two right triangles with common hypotenuse  $AC$ . Prove that  $ABCD$  is a cyclic quadrilateral and hence prove that  $\angle CAD = \angle CBD$ .



24. 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 double the previous one, find the value of  $x$ .

**(SECTION – D)**

25. Construct  $\triangle XYZ$  in which  $m\angle Y = 30^\circ$ ,  $m\angle Z = 90^\circ$  and  $XY + YZ + ZX = 11$  cm.

**OR**

Construct a right triangle whose base is 12 cm and the sum of its hypotenuse and other side is 18 cm.

26. The sum of the twice the first number and thrice of the second number is equal to 12 more than fifty percent of the first number. Represent the above information in the form of linear equation and also draw the graph.

**OR**

Two years later the age of a father will be eight years more than three times the age of his son's age. Taking the present age of father and son as  $x$  and  $y$  respectively,

(a) Write a linear equation for the above and draw its graph.

(b) From the graph find the age of the father when the son's age is 10 years.

27. A wooden bookshelf has external dimensions as follows: Height = 110 cm, Depth = 25 cm, Breadth = 85 cm. The thickness of the plank is 5 cm

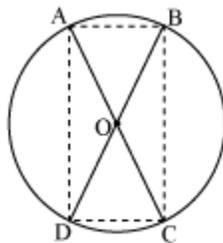
everywhere. The external faces are to be polished and the inner faces are to be painted. If the rate of polishing is 20 paise per  $\text{cm}^2$  and the rate of painting is 10 paise per  $\text{cm}^2$ , find the total expenses required for polishing and painting the surface of the bookshelf.

28. Three girls Reshma, Salma and Mandip are playing a game by standing on a circle of radius 5 m drawn in a park. Reshma throws a ball to Salma, Salma to Mandip, Mandip to Reshma. If the distance between Reshma and Salma and between Salma and Mandip is 6 m each, what is the distance between Reshma and Mandip?
29. The diameter of a sphere is decreased by 25%. By what percent does its curved surface area decrease?
30. 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.

31. Construct  $\triangle ABC$  in which  $BC = 7$  cm,  $m\angle B = 75^\circ$  and  $AB + AC = 13$  cm.
32. AC and BD are chords of a circle which bisect each other. Prove that (i) AC and BD are diameters; (ii) ABCD is a rectangle.



33. A study was conducted to find out the concentration of sulphur dioxide in the air in parts per million (ppm) of a certain city. The data obtained for 30 days is as follows:

0.03 0.08 0.08 0.09 0.04 0.17 0.16 0.05 0.02 0.06 0.18 0.20  
 0.11 0.08 0.12 0.13 0.22 0.07 0.08 0.01 0.10 0.06 0.09 0.18  
 0.11 0.07 0.05 0.07 0.01 0.04

- i. Make a grouped frequency distribution table for this data with class intervals as 0.00 - 0.04, 0.04 - 0.08, and so on.
  - ii. For how many days, was the concentration of sulphur dioxide more than 0.11 ppm?
34. The length, breadth and height of a room are 5 m, 4 m and 3 m respectively. Find the cost of white washing the walls of the room and the ceiling at the rate of Rs. 7.50/m<sup>2</sup>.