

CBSE
Class IX Mathematics
Term II
Sample Paper - 4

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.

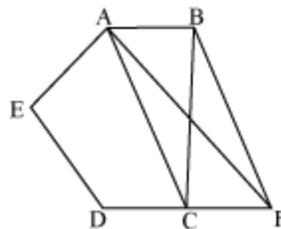
(SECTION – A)

- An inconsistent system of two linear equations in two variables will have
(A) one solution
(B) two solutions
(C) no solution
(D) more than two solutions
- The range of the data set, 70, 65, 75, 71, 36, 55, 61, 62, 41, 40, 39, 35, is
(A) 35
(B) 38
(C) 40
(D) 39
- In a parallelogram PQRS, the sum of angles $\angle R$ and $\angle S$ is
(A) 90°
(B) 180°
(C) 240°
(D) 360°
- Two right circular cylinders have equal volumes and heights in the ratio of 1 : 2. Find the ratio of their radii.
(A) 1 : 2
(B) 2 : 1
(C) $\sqrt{2} : 1$
(D) $1 : \sqrt{2}$

5. The figure formed by joining the mid-points of the adjacent sides of a rectangle of sides 7 cm and 4 cm is a
 (A) trapezium of area 14 cm^2
 (B) square of area 14 cm^2
 (C) rhombus of area 14 cm^2
 (D) rectangle of area 14 cm^2
6. AB and CD are two parallel chords of a circle of radius 10 cm which lie on the same side of centre O. If $AB = 16 \text{ cm}$ and $CD = 12 \text{ cm}$. Find the distance between the chords.
 (A) 3 cm
 (B) 4 cm
 (C) 2 cm
 (D) 5 cm
7. A cylindrical tube 7 m long has an inside diameter of 12 cm and an outside diameter of 16 cm. The volume of the metal in the tube is
 (A) 61610 cm^3
 (B) 61600 cm^3
 (C) 61601 cm^3
 (D) 61700 cm^3
8. In ΔPQR , PS is the median and A is the midpoint of PS. QA produced meets PR at B. If $PR = 9 \text{ cm}$, then PB
 (A) 2 cm
 (B) 9 cm
 (C) 8 cm
 (D) 3 cm

(SECTION – B)

9. In the given figure, ABCDE is a pentagon. A line through B and parallel to AC meets DC produced at F. Show that $\text{area}(\Delta ACB) = \text{area}(\Delta ACF)$.

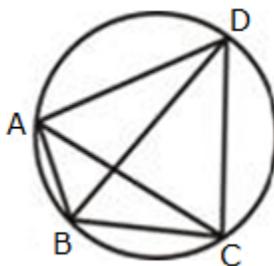


10. A rectangular metallic sheet has dimensions 48 cm x 36 cm. From each corner a square of 8 cm is cut off. An open box is made of the remaining sheet. Find the volume of the box.

11. Find the value of k , if $x = 1$, $y = 1$ is a solution of the equation $9kx + 12ky = 63$.
12. The lengths of the diagonals of a rhombus are 8 cm and 6 cm. Find the length of each side of the rhombus.
13. Two coins are tossed 1000 times and the outcomes are two heads–200 times, one tail–550 times and no tail–250 times. Hence, find the probability of getting at most one head.
14. Draw a line segment of length 8 cm and bisect it.

(SECTION – C)

15. A card is drawn at random from a well-shuffled deck of playing cards. Find the probability that the card drawn is a
 - (a) queen
 - (b) non-ace card
 - (c) black card
16. Show that the line segments joining the mid points of the opposite sides of a quadrilateral bisect each other.
17. In the given figure, ABCD is a cyclic quadrilateral, in which AC and BD are the diagonals. If $m\angle DBC = 55^\circ$ and $m\angle BAC = 45^\circ$, find $m\angle BCD$.



18. The diameter of a roller is 84 cm and its length is 120 cm. It takes 500 complete revolutions to move over once to level a playground. Find the area of the playground in m^2 ? $\left[\pi = \frac{22}{7} \right]$

OR

The curved surface area of a right circular cylinder of height 14 cm is 88 cm^2 . Find the diameter of the base of the cylinder.

- 19.** The following observations have been arranged in the ascending order.
29, 32, 48, 50, x , $x + 2$, 72, 78, 84, 95
If the median of the data is 63, find the value of x .

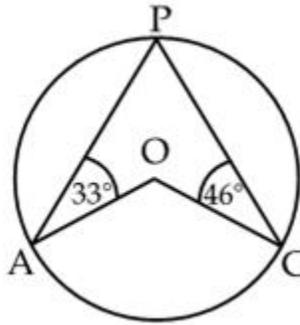
- 20.** Solve:

$$x - \frac{2}{3}y = \frac{8}{3}, \quad \frac{2x}{5} - y = \frac{7}{5}$$

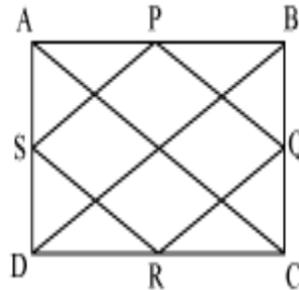
OR

Plot the graph of $2x + 3y = 9$.

- 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 the figure, O is the centre of the circle. Calculate $\angle APC$ and $\angle AOC$.



- 23.** ABCD is a rectangle in which P, Q, R and S are the mid-points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rhombus.



- 24.** Three coins are tossed simultaneously 200 times with different outcomes having the following frequencies:

Outcome	3 heads	2 heads	1 head	No head
Frequency	23	72	77	28

If the three coins are simultaneously tossed again, compute the probability of 2 heads coming up.

(SECTION – D)

- 25.** The volume of a cylinder is 6358 cu. cm and its height is 28 cm. Find its radius and the curved surface area.
- 26.** Construct a triangle having a perimeter of 12.5 cm and angles in the ratio of 3 : 4 : 5.
- 27.** Construct $\triangle ABC$ in which $BC = 8$ cm, $m\angle B = 45^\circ$ and $AB - AC = 3.5$ cm.
- 28.** Neha and Richa, two students of class IX of a school, together contributed Rs. 100 towards the Prime Minister's Relief Fund, to help earthquake victims. Assume Neha's contribution to be x and that of Richa to be y . Write a linear equation which this data satisfies and draw a graph of the same.

OR

Draw the graph of the line $x - 2y = 4$. From the graph, find the co-ordinates of the point when $x = -1$.

- 29.** If two intersecting chords of a circle make equal angles with the diameter passing through their point of intersection, prove that the chords are equal.
- 30.** A dome of a building is in the form of a hemisphere. From inside, it was white-washed at the cost of Rs. 498.96. If the cost of white-washing is Rs 2.00 per square metre, find the
- inner surface area of the dome
 - volume of the air inside the dome.
- 31.** The ages (in years) of 360 patients treated in a hospital on a particular day are given below.

Age in years	10-20	20-30	30-40	40-50	50-60	60-70
Number of patients	90	40	60	20	120	30

Draw a histogram and a frequency polygon on the same graph to represent the above data.

OR

Find the value of p , if the mean of the following distribution is 20.

x:	15	17	19	$20 + p$	23
f:	2	3	4	$5p$	6

- 32.** Hamid built a cubical water tank lid for his house, with each outer edge 1.5 m long. He gets the outer surface area of the tank excluding the base covered with square tiles of sides 25 cm. How much will he spend on the tiles, if the cost of the tiles is Rs. 360 per dozen?
- 33.** Two chords AB and CD of lengths 5 cm and 11 cm respectively of a circle are parallel to each other, and are on opposite sides of its centre. If the distance between AB and CD is 6 cm, then find the radius of the circle.
- 34.** 100 surnames were randomly picked up from a local telephone directory and a frequency distribution of the number of letters in the English alphabet in the surnames was found as follows:

Number of letters	Number of surnames
1 – 4	6
4 – 6	30
6 – 8	44
8 – 12	16
12 – 20	4

Draw a histogram to depict the given information.