

Goa Board
Class IX Mathematics
Term II
Sample Paper - 7

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. Mode of the data set 3, 2, 5, 2, 3, 5, 6, 6, 5, 3, 5, 2, 5 is:
(A) 3
(B) 4
(C) 6
(D) 5
2. A cylinder of base radius 'R' and height h is dipped vertically to half the height, a bucket full of yellow paint. Then find the area of the surface gets painted.
(A) $\frac{1}{2}\pi R^2 h$
(B) $\frac{1}{3}\pi R^2 h$
(C) $\pi R h$
(D) $\pi R(h + R)$

3. Probability of getting an even number on throwing a dice is

(A) $\frac{1}{2}$

(B) $\frac{3}{2}$

(C) $\frac{5}{2}$

(D) 1

4. The surface area of a sphere is same as the curved surface area of a right circular cylinder whose height and diameter are 12 cm each. The radius of the sphere is:

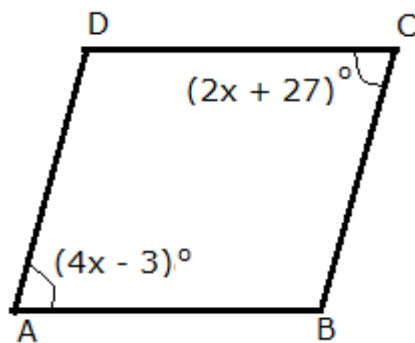
(A) 5 cm

(B) 4 cm

(C) 6 cm

(D) 7 cm

5. In the following figure ABCD is a parallelogram, find the value of 'x'



(A) 10°

(B) 15°

(C) 20°

(D) 25°

6. ABCD is a parallelogram. OA and OB are the angle bisectors of the consecutive angles, then $m\angle AOB =$

(A) 45°

(B) 60°

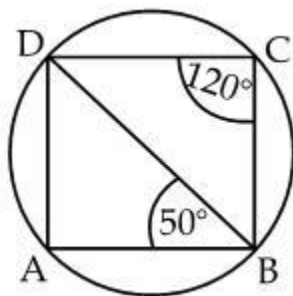
(C) 90°

(D) 30°

7. The speed x of train A is twice the speed y of the train B. Express this in the form of a linear equation.
- (A) $2x = y$
 (B) $x = 2y$
 (C) $x = \frac{y}{2}$
 (D) $x = y$
8. If the volume of a sphere is numerically equal to its surface area, then radius of the sphere is
- (A) 1 unit
 (B) 6 units
 (C) 2 units
 (D) 3 units

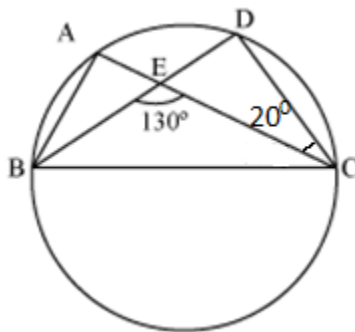
(SECTION – B)

9. How many litres of water flow out through a pipe having 5 cm^2 area of cross section in one minute, if the speed of water in the pipe is 30 cm/sec ?
10. ABCD is a cyclic quadrilateral. Find $\angle ADB$



11. The inner diameter of a circular well is 3.5 m . It is 10 m deep. Find
- Its inner curved surface area,
 - The cost of plastering this curved surface at the rate of Rs 40 per m^2 .
12. The marks obtained by 40 students of class IX in Mathematics are given below:
 81, 55, 68, 79, 85, 43, 29, 68, 54, 73, 47, 35, 72, 64, 95, 44, 50, 77, 64, 35, 79, 52, 45,
 54, 70, 83, 62, 64, 72, 92, 84, 76, 63, 43, 54, 38, 73, 68, 52, 54
 Prepare a grouped continuous frequency distribution table with class-size of 10 marks.
13. When a thumbtack is tossed, there are two possible outcomes. If the empirical probability of 'point up' is fixed to be 0.73, what should be the probability of 'point down'?

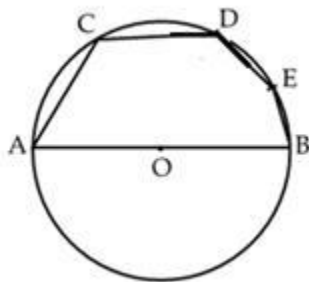
14. In the given figure, A, B, C and D are four points on a circle. AC and BD intersect at a point E such that $m\angle BEC = 130^\circ$ and $m\angle ECD = 20^\circ$. Find $m\angle BAC$.



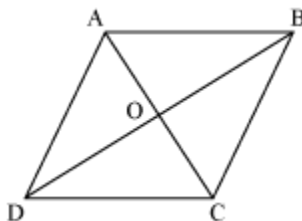
15. Find the mode of 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, and 18.

(SECTION – C)

16. AOB is the diameter of a circle and C, D, and E are any three points on the circle on the same side of AOB. Find the value of $m\angle ACD + m\angle BED$.



17. Show that if the diagonals of a quadrilateral bisect each other at right angles, then it is a rhombus.



18. Draw a line segment of length 10 cm and bisect it. Further bisect one of the equal parts and measure its length.
19. The larger of two supplementary angles exceeds the smaller by 18° . Find the angles.

20. 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

Find the number of families:

- Earning Rs. 10,000 to Rs. 13,000 per month and owning exactly 2 television sets.
- Earning Rs. 16,000 or more per month and owning exactly 1 television set.
- Owning not more than 1 television set and earning less than Rs. 7,000.

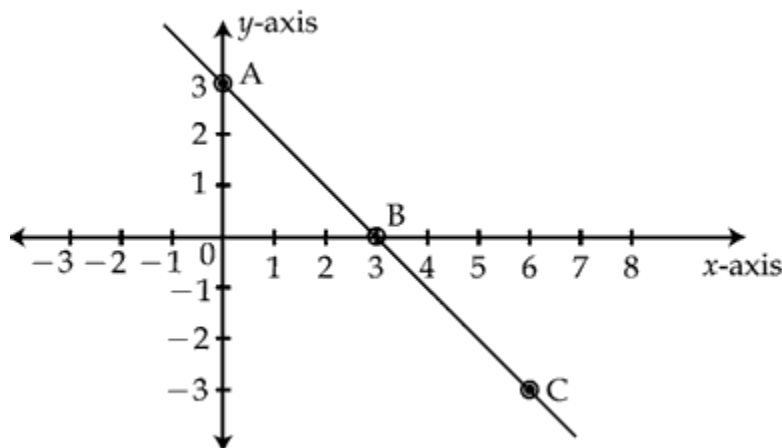
21. Solve:

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

OR

Observe the graph and answer the following questions:

- Write the co-ordinates of points B and C.
- Find one more solution of the line passing through A and B.
- Write equations of the x-axis and y-axis.



22. The distance (in km) of 40 engineers from their residence to place of work were found as follows:

5	3	10	20	25	11	13	7	12	31
19	10	12	17	18	11	32	17	16	2
7	9	7	8	3	5	12	15	18	3
12	14	2	9	6	15	15	7	6	12

Construct a grouped frequency distribution table with class size 5 for the data given above taking the first interval as 0 - 5 (5 not included). What main feature do you observe from this tabular representation?

23. The slant height and base diameter of a conical tomb are 25 m and 14 m respectively. Find the cost of white-washing its curved surface at the rate of Rs. 210 per 100 m^2 .
24. The angles of a quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all the angles of the quadrilateral.
25. We know that two circles are congruent if they have the same radii, hence prove that equal chords of congruent circles subtend equal angles at their centres.

(SECTION – D)

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

OR

Construct $\triangle ABC$ in which $m\angle B = 60^\circ$, $m\angle C = 45^\circ$ and the perimeter of the triangle is 11 cm.

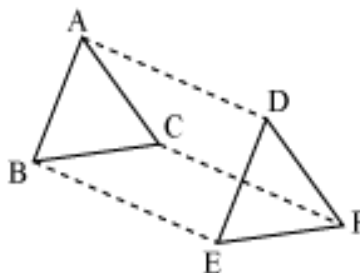
27. The students of a Vidyalaya were asked to participate in a competition for making and decorating penholders in the shape of a cylinder with a base, using cardboard. Each penholder was to be of radius 3 cm and height 10.5 cm. The Vidyalaya was to supply the competitors with cardboard. If there were 35 competitors, how much cardboard was required to be bought for the competition?

28. In a study of diabetic patients in a village, the following observations were noted.

Age in years	10-20	20-30	30-40	40-50	50-60	60-70
Number of patients	2	5	12	19	9	4

Represent the above data by a frequency polygon

29. In $\triangle ABC$ and $\triangle DEF$, $AB = DE$, $AB \parallel DE$, $BC = EF$ and $BC \parallel EF$. Vertices A, B and C are joined to vertices D, E and F respectively (see the given figure). Show that



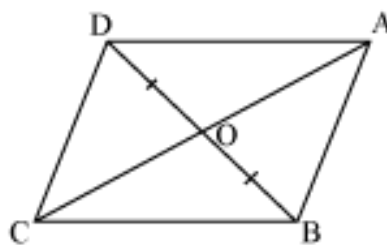
- Quadrilateral ABED is a parallelogram
- Quadrilateral BEFC is a parallelogram
- $AD \parallel CF$ and $AD = CF$

30. If the work done by a body on application of a constant force is directly proportional to the distance travelled by the body, express this in the form of an equation in two variables and draw the graph of the same by taking the constant force as 5 units. Also from the graph determine the work done when the distance travelled by the body is

- 2 units
- 0 units

31. In the given figure, diagonals AC and BD of quadrilateral ABCD intersect at O such that $OB = OD$. If $AB = CD$, then show that:

- $\text{area}(\text{DOC}) = \text{area}(\text{AOB})$



32. The front compound wall of a house is decorated by wooden spheres of diameter 21 cm, placed on small supports as shown in the given figure. Eight such spheres are used for this purpose and are to be painted silver. Each support is a cylinder of radius 1.5 cm and height 7 cm and is to be painted black. Find the cost of paint required if silver paint costs 25 paise per cm^2 and black paint costs 5 paise per cm^2 .

OR

A solid cylinder has a total surface area of 462 sq cm. Its curved surface area is one third of the total surface area. Find the volume of the cylinder.

33. 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. $EF = \frac{1}{2} (AB + CD)$

34. A farmer owned a field in the form of a parallelogram PQRS. She took point A on RS and joined it to points P and Q. In how many parts is the field divided? What are the shapes of these parts? The farmer wants to sow wheat and pulses in equal portions of the field separately. How should he do it?

