Goa Board
Class IX Mathematics
Term II
Sample Paper - 6

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

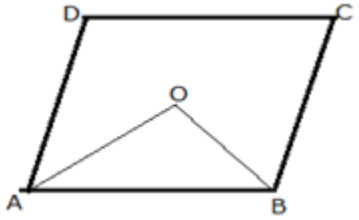
2. Class marks of a frequency distribution are 6, 10, 14, 18, 22, 26, and 30. Its class size will be
(A) 4
(B) 5
(C) 9
(D) 1

3. The equation $7x = 3$ can be written in two variable as
(A) $7x + y = 3$
(B) $7xy = 3$
(C) $7x = 3y$
(D) $7x + 0y - 3 = 0$

4. The median of a triangle divides it into two
(A) Congruent triangles
(B) Right triangles
(C) Triangles of equal area
(D) Equilateral triangles

5. The range of the data 25.7, 16.3, 2.8, 21.7, 24.3, 22.7, 24.9, is:
(A) 22
(B) 22.9
(C) 21.7
(D) 20.5

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



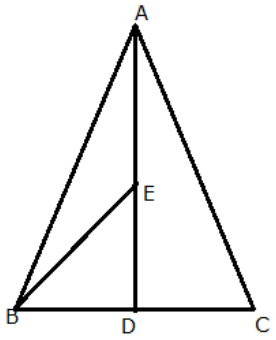
(A) 45°
(B) 60°
(C) 90°
(D) 30°

7. 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

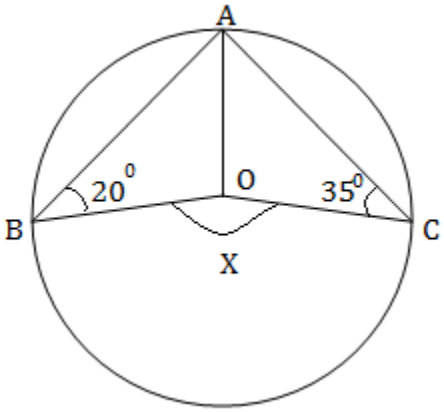
8. Find the surface area of a cube whose edge is 12 cm.
(A) 846 cm^2
(B) 864 cm^2
(C) 866 cm^2
(D) 844 cm^2

(SECTION – B)

9. If ABC is a triangle in which D is the midpoint of BC and E is the midpoint of AD, then area(ΔBED) =



10. In the following figure, a circle with centre at O is given. If m∠ABO = 20° and m∠ACO = 35°, then find the value of x.



11. The median of following observations, arranged in ascending order, is 25. Find x.
11, 13, 15, 19, x + 2, x + 4, 30, 35, 39, and 46.

12. The inner diameter of a circular well is 3.5 m. It is 10 m deep. Find

i. Its inner curved surface area

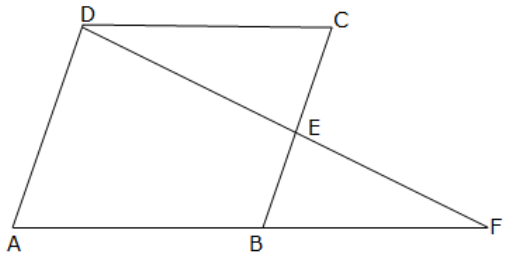
ii. The cost of plastering this curved surface at the rate of Rs. 40 per m^2.

13. A large basket of fruit contains 3 oranges, 2 apples and 5 bananas. If a fruit is chosen at random, what is the probability of getting an orange or a banana?

14. The mean of 25 observations is 36. If the mean of the first 13 observations is 32 and that of the last 13 observations is 39. Find the 13^{th} observation.

(SECTION – C)

15. In the given figure, ABCD is a parallelogram and E is the midpoint of side BC. If DE and AB when produced meet at F, prove that AF = 2AB.



16. The following frequency distribution table gives the weights of 38 students of a class

Weight in kg	Number of students
30 – 35	10
35 – 40	5
40 – 45	15
45 – 50	5
50 – 55	1
55 – 60	2
Total	38

Find the probability that the weight of students is
1. More than or equal to 45 Kg
2. Less than 30kg
3. More than or equal to 30 Kg but less than 60 Kg

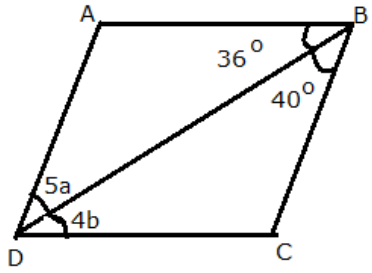
17. Construct a triangle with base of length 7.5 cm, the difference of the other two sides 2.5 cm and one base angle of 45^{o}. Justify the construction.

18. The distribution of weight (in kg) of 100 people is given below.

Weight in kg	Frequency
40-45	13
45-50	25
50-55	28
55-60	15
60-65	12
65-70	5
70-75	2

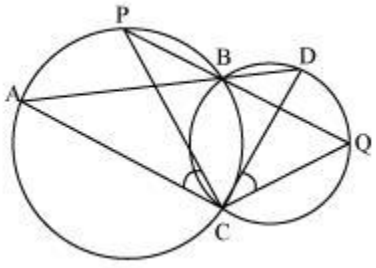
Construct a histogram for the above distribution.

19. In the given figure, ABCD is a parallelogram. Compute the values of 'a' and 'b'.



20. Draw a graph of the linear equation x + y = 0 in two variables; also find the points of intersection with the axes

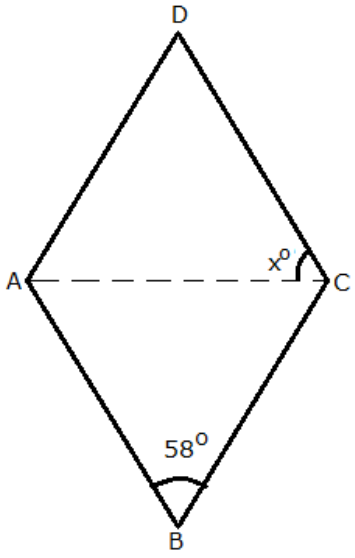
21. Two circles intersect at two points B and C. Through B, two line segments ABD and PBQ are drawn to intersect the circles at A, D and P, Q respectively.
Prove that ∠ACP = ∠QCD.



OR

Prove that if chords of congruent circles subtend equal angles at their centres, then the chords are equal.

22. If ABCD is a rhombus with m∠ABC = 58°, determine m∠ACD.



23. Find five different solutions for the equation 2x = 3y + 5

24. 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?

OR

A bus stop is barricaded from the remaining part of the road, by using 50 hollow cones made of recycled cardboard. Each cone has a base diameter of 40 cm and height of 1 m. If the outer side of each of the cones is to be painted and the cost of painting is Rs. 12 per m^2, what will be the cost of painting all these cones? (Use π = 3.14 and take $\sqrt{1.04}$ = 1.02).

(SECTION – D)

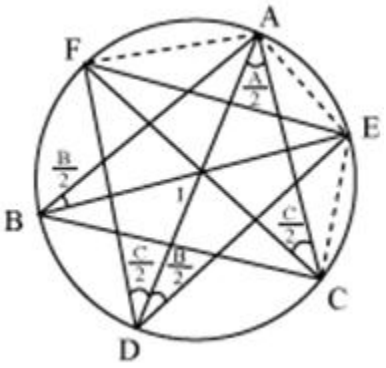
25. Construct ΔPQR in which QR = 6 cm, m∠Q = 60° and PR – PQ = 2 cm.

OR

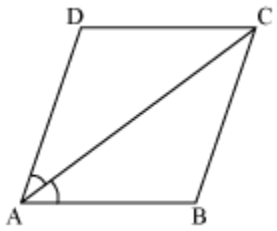
Construct ΔABC in which m∠B = 60°, m∠C = 45° and the perimeter of the triangle is 11 cm.

26. Two chords AB and CD of lengths 5 cm and 11cm respectively of a circle are parallel to each other and on opposite sides of the centre. If the distance between AB and CD is 6 cm, find the radius of the circle

27. Bisectors of angles A, B and C of ΔABC intersect its circumcircle at D, E and F respectively. Prove that the angles of ΔDEF are $90° - \frac{1}{2}A$, $90° - \frac{1}{2}B$ and $90° - \frac{1}{2}C$.



28. Diagonal AC of a parallelogram ABCD bisects ∠A (see the given figure).
Show that (i) It bisects ∠C (ii) ABCD is a rhombus.



29. Two years later a father will be eight years more than three times the age of the son. Taking the present age of the 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 is 10 years.

30. 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.

31. The capacity of a closed cylindrical vessel of height 1 m is 15.4 litres. How many square meters of metal sheet would be needed to make it? Use $\left(\pi = \frac{22}{7}\right)$

32. Draw a histogram for the following data:

Class interval	Frequency
10 - 14	300
15 - 19	980
20 - 24	800
25 - 29	600
30 - 34	300
35 - 39	430
40 - 44	530

Make the intervals continuous.

33. Represent geometrically the solution of the equation 3y + 2 = 2y – 3 on the (i) same number line (ii) same Cartesian plane.

34. 3 equal cubes are placed adjacently in a row. Find the ratio of the total surface area of the new cuboid to that of the sum of the surface areas of three cubes.