Goa Board
Class IX Mathematics
Term II
Sample Paper - 10

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

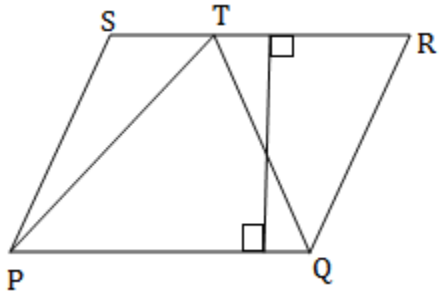
2. The lateral surface area of a cube is 100 m^2. The volume of the cube is
(A) 1000 m^3
(B) 150 m^3
(C) 250 m^3
(D) 125 m^3

3. The graph of the equation $y = -4$ is a line
(A) parallel to the x-axis and at a distance of 4 units from the origin
(B) parallel to the x-axis and below it and at a distance of 4 units from the origin
(C) parallel to the y-axis and to its left and at a distance of 4 units from the origin
(D) which cuts an intercept of 8 units on both the axes

4. The range of the data set, 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

5. A cylindrical container of diameter 35 cm is full of oil. If 11 litres of oil are drawn off, the oil level in the container will drop by:
(A) $12\frac{3}{7}$ cm
(B) $11\frac{3}{5}$ cm
(C) $11\frac{4}{7}$ cm
(D) $11\frac{3}{7}$ cm

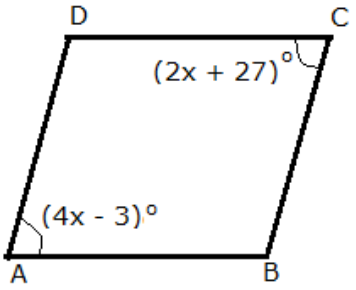
6. In the given figure, PQRS is a parallelogram having base PQ = 6 cm and perpendicular height as 6 cm, then ar(ΔPTQ) is



(A) 12 cm^2
(B) 18 cm^2
(C) 6 cm^2
(D) 24 cm^2

7. The mean marks of 30 students of a class are 50. The sum of their marks is equal to
(A) 500
(B) 400
(C) 700
(D) 1500

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



(A) 16°
(B) 15°
(C) 30°
(D) 35°

(SECTION – B)

9. A sports company was ordered to prepare 100 paper cylinders for shuttle cocks. The required dimensions of the cylinder are 35cm length/height and radius is 7 cm. Find the required area of the thin paper sheet needed to make 100 cylinders.

10. A company manufactures car batteries of a particular type. The lives (in years) of 40 such batteries were recorded as follows:

2.6	3.0	3.7	3.2	2.2	4.1	3.5	4.5
3.5	2.3	3.2	3.4	3.8	3.2	4.6	3.7
2.5	4.4	3.4	3.3	2.9	3.0	4.3	2.8
3.5	3.2	3.9	3.2	3.2	3.1	3.7	3.4
4.6	3.8	3.2	2.6	3.5	4.2	2.9	3.6

Construct a grouped frequency distribution table for this data, using class intervals of size 0.5 starting from the intervals 2 – 2.5.

11. A bag contains lemon flavored candies only. Meghai takes out one candy without looking into the bag. What is the probability that she takes out

i. An orange flavored candy
ii. A lemon flavored candy.

12. Five cards- the ten, jack, queen, king and ace of diamonds are well-shuffled with their face downwards. One card is then picked up at random.

i. What is probability that the card is the queen?

ii. If the queen is drawn and put aside, what is the probability that the second card picked up is (a) an ace? (b) a queen?

(SECTION – C)

13. 10 students of Class X took part in a mathematics quiz. If the number of girls is 4 more than the number of boys, then find the number of boys and the number of girls who took part in the quiz.

14. An iron pole is in the form of a cone mounted on a cylinder. The diameter of the base and the height of the cone are 20 cm and 42 cm respectively. The height of cylinder is 2.8 m. Determine the weight of the iron pole. (Take 1 cm^3 = 7.5 g)

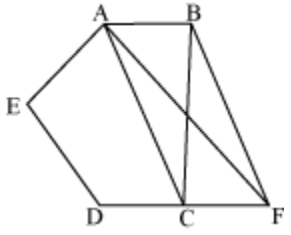
15. The area of a rectangle gets reduced by 80 sq units if its length is reduced by 5 units and breadth is increased by 2 units. If we increase the length by 10 units and decrease the breadth by 5 units, the area will increase by 50 sq units. Find the length and breadth of the rectangle.

16. A wooden article was made by scooping out a hemisphere from each end of a solid cylinder. If the height of the cylinder is 10 cm and its base is 7 cm, find the total surface area of the article.

17. The larger of two supplementary angles exceeds the smaller by 18°. Find the angles.

18. Two angles are complementary. The larger angle is 3° less than twice the measure of the smaller angle. Find the measure of each angle.

19. In the given figure, ABCDE is a pentagon. A line through B parallel to AC meets DC produced at F. Show that ar(ΔACB) = ar(ΔACF).



20. Construct ΔABC in which BC = 7 cm, m∠B = 75° and AB + AC = 13 cm.

21. A survey was conducted by a group of students as a part of their Environment Awareness Programme, in which they collected the following data regarding the number of plants in 20 houses in a locality. Find the mean number of plants per house.

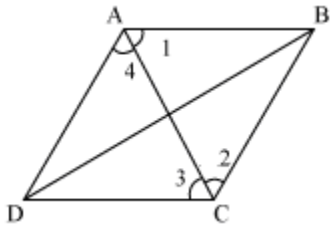
No of plants	0-2	2-4	4-6	6-8	8-10	10-12	12-14
No of houses	1	2	1	5	6	2	3

22. A die is thrown once. Find the probability of getting

i. A prime number
ii. A number lying between 2 and 6
iii. An odd number.

23. Recall that two circles are congruent if they have the same radii. Prove that equal chords of congruent circles subtend equal angles at their centres.

24. ABCD is a rhombus. Show that the diagonal AC bisects ∠A as well as ∠C and diagonal BD bisects ∠B as well as ∠D.

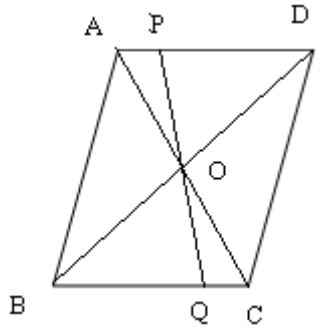


(SECTION – D)

25. The bus fare in a city is as follows: For the first kilometre, the fare is Rs. 8 and for the subsequent distance it is Rs. 5 per kilometre. Taking the distance covered as x km and total fares as Rs. y, write a linear equation for this information and draw its graph.

26. The ratio of income of two persons is 9 : 7 and the ratio of their expenditures is 4 : 3. If each of them manages to save Rs. 2000 per month, find their monthly income.

27. The diagonals of parallelogram ABCD intersect at point O. Through O, a line is drawn to intersect AS at P and BC at Q. Show that PQ divides the parallelogram into two parts of equal areas.



28. A cylindrical tub of radius 5 cm and length 9.8 cm is full of water. A solid in the form of a right circular cone mounted on a hemisphere is immersed into the tub. The radius of the hemisphere is 3.5 cm and height of cone outside the hemisphere is 5 cm. Find the volume of water left in the tub(take π=3.14)

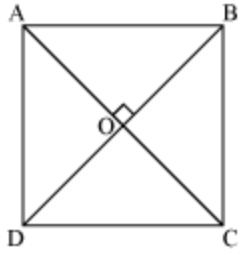
OR

A conical tent is 10 m high and the radius of its base is 24 m. Find

i. Slant height of the tent
ii. Cost of the canvas required to make the tent, if the cost of 1 m^2 canvas is Rs. 70.

29. A cube and cuboid have the same volume. The dimensions of the cuboid are in the ratio 1 : 2 : 4. If the difference between the cost of polishing the cube and cuboid at the rate of Rs. 5 per m^2 is Rs. 80, find their volumes. Let the dimensions of the cuboid be x, 2x, and 4x.

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



31. A parallelogram and a rectangle have a common base and equal areas. Show that the perimeter of the rectangle is smaller than the perimeter of the parallelogram.

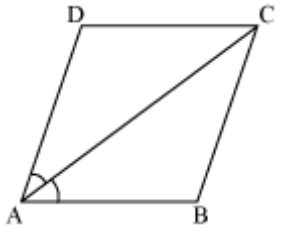
32. A game of chance involves spinning an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8 and these are equally likely outcomes. What is the probability that it will point at

i. 8?
ii. An odd number?
iii. A number greater than 2?
iv. A number less than 9?

33. D, E and F are respectively the mid-points of the sides BC, CA and AB of ΔABC. Show that $ar(\Delta DEF) = \frac{1}{4} ar(\Delta ABC)$.

34. Diagonal AC of a parallelogram ABCD bisects $\angle A$ (see the given figure). Show that

i. It bisects $\angle C$
ii. ABCD is a rhombus.



OR

Construct a right triangle in which one side is of length 4 cm and the difference between the hypotenuse and the other side is 2 cm.