CBSE
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 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.
5. Use of calculator is **not** permitted.

(SECTION – A)

1. 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

2. 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

3. 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

4. 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) $12\dfrac{3}{7}$ cm

(B) $11\dfrac{3}{5}$ cm

(C) $11\dfrac{4}{7}$ cm

(D) $11\dfrac{3}{7}$ cm

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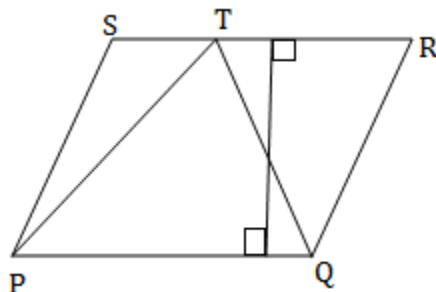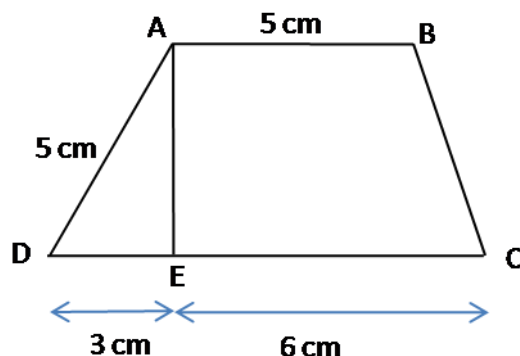

(A) 12 cm^2
(B) 18 cm^2
(C) 6 cm^2
(D) 24 cm^2

6. In the following figure ABCD is a parallelogram, find the value of 'x'
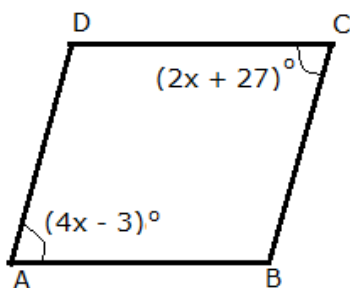
(A) 16°
(B) 15°
(C) 30°
(D) 35°

7. The area of the trapezium ABCD is

(A) 5.5 sq. cm
(B) 22 sq.cm
(C) 15 sq.cm
(D) 28 sq.cm

8. Which of the following is the length of a chord which is at a distance 5 cm from the centre of a circle whose radius is 13 cm?
(A) 24 cm
(B) 12 cm
(C) 10 cm
(D) 26 cm

(SECTION – B)

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

10. 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.

11. 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.

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

13. 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 is 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?

14. In ∆ABC and ∆DEF, AB = DE, AB || DE, BC = EF and BC || EF. Vertices A, B and C are joined to vertices D, E and F respectively (see the given figure). Show that
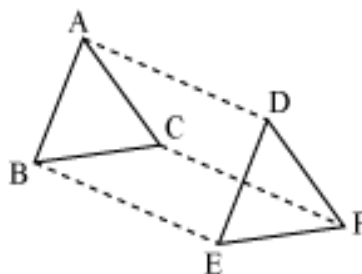
  i. Quadrilateral ABED is a parallelogram
  ii. Quadrilateral BEFC is a parallelogram

(SECTION – C)

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.

OR

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

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. 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

18. 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?

19. 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.

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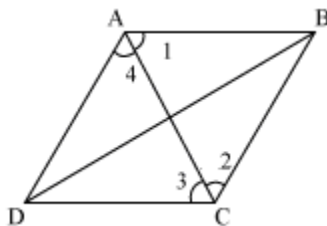

OR

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.

21. Diagonal AC of a parallelogram ABCD bisects ∠A (see the given figure). Show that
i. It bisects ∠C
ii. ABCD is a rhombus.
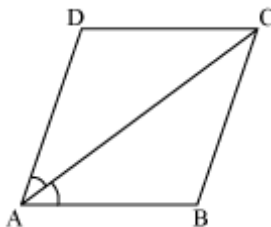
22. An iron pole is in the form of a cone mounted on a cylinder. The diameter of the base and the height of the cone are 20 cm and 42 cm respectively. The height of cylinder is 2.8 m. Determine the weight of the iron pole. (Take 1 cm³ = 7.5 g)

23. 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. An odd number?
 ii. A number greater than 2?
iii. A number less than 9?

24. PQST is a parallelogram. The circle through S, P and Q intersect QT produced at R. Prove that ST = SR
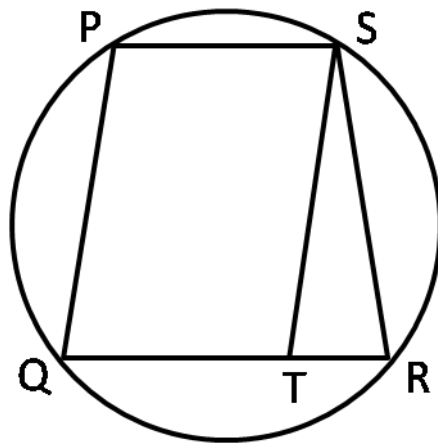
(SECTION – D)

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.

OR

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.

26. 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 п=3.14)

27. 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.

28. 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.

29. 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.

30. 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

i. Construct a grouped frequency distribution table for this data, using class intervals of size 0.5 starting from the intervals 2 – 2.5.
ii. Draw a bar graph to represent the given data.

31. The bisector of ∠Q of an isosceles triangle PQR with PQ = PR meets the circumcircle of ΔPQR at A. If PA and QR produced meet at B, prove that RB = RP.

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. Construct a ΔPQR whose perimeter is equal to 10 cm, ∠P = 35° and ∠Q = 70°.

OR

Construct a ΔABC in which BC = 6.2 cm, AC – AB = 2.2 cm and ∠B = 50°

34. The monthly profit(in Rs.) of 100 products are distributed as follows:

Profit per product	0−50	50−100	100−150	150−200	200−250	250−300
Number of products	12	18	27	20	17	6

Draw a histogram for the data and show the frequency polygon for it.