

Class IX Session 2025-26
Subject - Mathematics
Sample Question Paper - 2

Time Allowed: 3 hours

Maximum Marks: 80

General Instructions:

Read the following instructions carefully and follow them:

1. This question paper contains 38 questions.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Questions no. 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion-Reason based questions of 1 mark each.
4. In Section B, Questions no. 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Questions no. 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Questions no. 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Questions no. 36-38 are case study-based questions carrying 4 marks each with sub-parts of the values of 1, 1 and 2 marks each respectively.
8. All Questions are compulsory. However, an internal choice in 2 Questions of Section B, 2 Questions of Section C and 2 Questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required.
10. Take $\pi = 22/7$ wherever required if not stated.
11. Use of calculators is not allowed.

Section A

1. If $g = t^{\frac{2}{3}} + 4t^{-\frac{1}{2}}$, what is the value of g when $t = 64$? [1]
a) 16 b) $\frac{33}{2}$
c) $\frac{257}{16}$ d) $\frac{31}{2}$
2. $x = 5$ and $y = -2$ is the solution of the linear equation. [1]
a) $2x - y = 12$ b) $x + 3y = 1$
c) $3x + y = 0$ d) $2x + y = 9$
3. The signs of abscissa and ordinate of a point in quadrant II are respectively _____. [1]
a) $(-, +)$ b) $(-, -)$
c) $(+, +)$ d) $(+, -)$
4. To draw a histogram to represent the following frequency distribution : [1]

Class interval	5-10	10-15	15-25	25-45	45-75
Frequency	6	12	10	8	15

The adjusted frequency for the class 25-45 is

- a) 5
b) 6
c) 3
d) 2

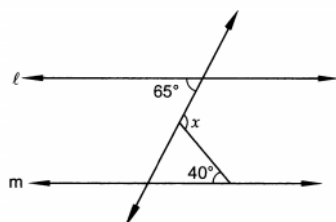
5. The linear equation $3x - 5y = 15$ has [1]

- a) infinitely many solutions
b) two solutions
c) no solution
d) a unique solution

6. Euclid's Postulate 1 is [1]

- a) A straight line may be drawn from any one point to any other point.
b) All right angles are equal to one another.
c) A terminated line can be produced indefinitely.
d) A terminated line can be produced definitely.

7. In Fig. if $l \parallel m$, then $x =$ [1]



- a) 65°
b) 105°
c) 25°
d) 40°

8. The diagonals of a rectangle PQRS intersect at O. If $\angle ROQ = 60^\circ$, then find $\angle OSP$. [1]

- a) 60°
b) 50°
c) 70°
d) 80°

9. The factors of $x^3 - x^2y - xy^2 + y^3$, are [1]

- a) $(x + y)^2(x - y)$
b) $(x + y)(x^2 - xy + y^2)$
c) $(x - y)^2(x + y)$
d) $(x + y)(x^2 + xy + y^2)$

10. The graph of the linear equation $2x + 3y = 6$ is a line which meets the x-axis at the point [1]

- a) (0,3)
b) (2, 0)
c) (0 ,2)
d) (3,0)

11. In the adjoining figure, $AB = AC$ and AD is median of $\triangle ABC$, then $\angle ADC$ is equal to [1]



13. The value of x in the given figure is [1]



15. The distance between the graph of the equations $x = -3$ and $x = 2$ is [1]
- a) 2 b) 1
c) 5 d) 3

- a) $\overline{AB} = \overline{DF}$
c) $\overline{AC} = \overline{DE}$
- b) $\angle A = \angle D$
d) $\overline{BC} = \overline{EF}$

18. The total surface area of a cube of side 20 cm is [1]
- a) 2400 cm^2 b) 160 cm^2
- c) 240 cm^2 d) 1600 cm^2

- Reason (R):** If $2s = (a + b + c)$, where a, b, c are the sides of a triangle, then $\text{area} = \sqrt{(s - a)(s - b)(s - c)}$.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

20. **Assertion (A):** For all values of k , $(\frac{-3}{2}, k)$ is a solution of the linear equation $2x + 3 = 0$. [1]

Reason (R): The linear equation $ax + b = 0$ can be expressed as a linear equation in two variables as $ax + y + b = 0$.

a) Both A and R are true and R is the correct explanation of A.

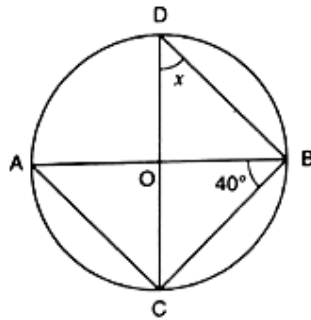
b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

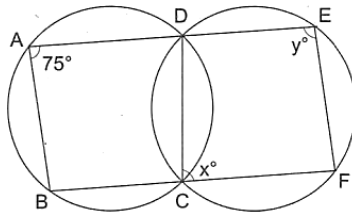
Section B

21. If O is the centre of the circle, find the value of x : [2]

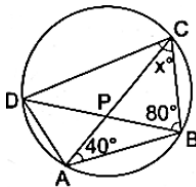


22. The area of a trapezium is 475 cm^2 and the height is 19 cm. Find the lengths of its two parallel sides if one side is 4 cm greater than the other. [2]

23. In the given figure, $\angle BAD = 75^\circ$, $\angle DCF = x^\circ$ and $\angle DEF = y^\circ$. Find the values of x and y . [2]



24. If O is the centre of the circle, find the value of x in given figure: [2]



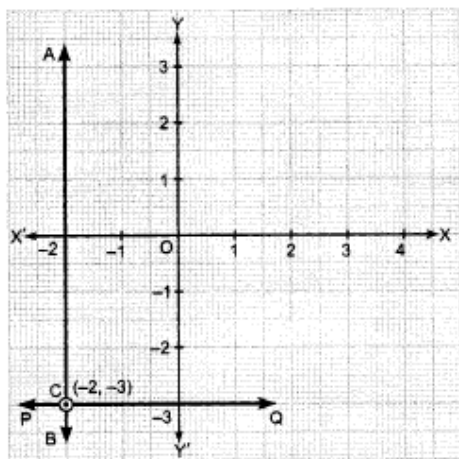
OR

An equilateral triangle of side 9 cm is inscribed in a circle. Find the radius of the circle.

25. Give the equations of two lines passing through $(2, 14)$. How many more such lines are there, and why? [2]

OR

Write the linear equation represented by line AB and PQ. Also find the co-ordinate of intersection of line AB and PQ.

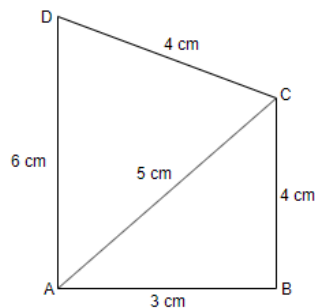


Section C

26. Rationalize the denominator of $\frac{1}{\sqrt{7}-\sqrt{6}}$ [3]
27. Factorise: $8a^3 - b^3 - 12a^2b + 6ab^2$ [3]
28. Find the cost of laying grass in a triangular field of sides 50 m, 65 m and 65 m at the rate of Rs7 per m^2 . [3]

OR

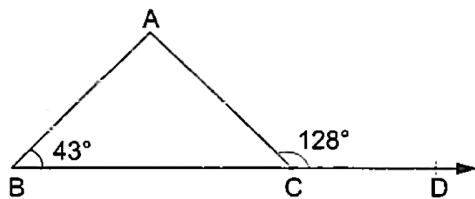
Find the area of a quadrilateral ABCD in which $AB = 3$ cm, $BC = 4$ cm, $CD = 4$ cm, $DA = 5$ cm and $AC = 5$ cm.



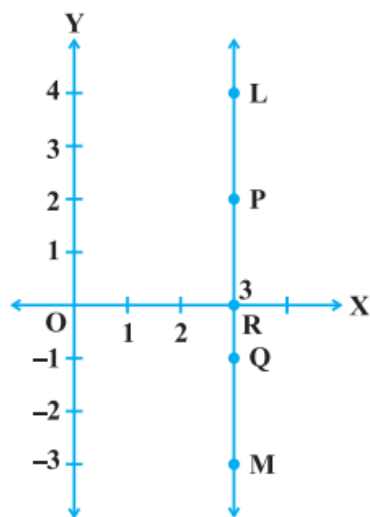
29. A hemispherical bowl made of brass has inner diameter 10.5 cm. Find the cost of tinplating it on the inside at the rate of Rs. 4 per 100 cm^2 . [3]
30. If $\triangle ABC$ is an isosceles triangle with $AB = AC$. Prove that the perpendiculars from the vertices B and C to their opposite sides are equal. [3]

OR

In the given figure, side BC of $\triangle ABC$ is produced to D. If $\angle ACD = 128^\circ$ and $\angle ABC = 43^\circ$, find $\angle BAC$ and $\angle ACB$.



31. In Figure, LM is a line parallel to the y-axis at a distance of 3 units. [3]



- i. What are the coordinates of the points P, R and Q?
- ii. What is the difference between the abscissa of the points L and M?

Section D

32. Simplify: $\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} - \frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}} - \frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}}$. [5]

OR

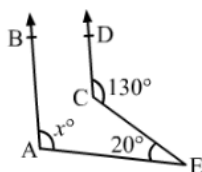
If $a = 3 - 2\sqrt{2}$, find the value of $a^2 - \frac{1}{a^2}$.

33. Read the following statements which are taken as axioms: [5]

- i. If a transversal intersects two parallel lines, then corresponding angles are not necessarily equal.
- ii. If a transversal intersect two parallel lines, then alternate interior angles are equal.

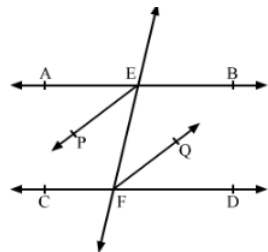
Is this system of axioms consistent? Justify your answer.

34. In the given figure, $AB \parallel CD$. Find the value of x° [5]



OR

In the given figure, $AB \parallel CD$ and a transversal t cuts them at E and F respectively. If EP and FQ are the bisectors of $\angle AEF$ and $\angle EFD$ respectively, prove that $EP \parallel FQ$.



35. The daily pocket expenses of 150 students in a school are given below: [5]

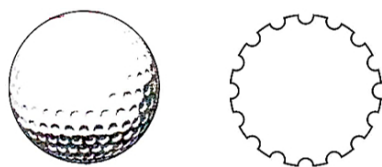
Pocket expenses (in ₹)	50-60	60-70	70-80	80-90	90- 100	100- 110	110- 120
Number of students (Frequency)	12	16	25	20	32	27	18

Construct frequency polygon representing the above data.

Section E

36. **Read the following text carefully and answer the questions that follow:** [4]

A golf ball is spherical with about 300 - 500 dimples that help increase its velocity while in play. Golf balls are traditionally white but available in colours also. In the given figure, a golf ball has diameter 4.2 cm and the surface has 315 dimples (hemi-spherical) of radius 2 mm.



- Find the surface area of one such dimple. (1)
- Find the volume of the material dug out to make one dimple. (1)
- Find the total surface area exposed to the surroundings. (2)

OR

Find the volume of the golf ball. (2)

37. **Read the following text carefully and answer the questions that follow:** [4]

Reeta was studying in the class 9th C of St. Surya Public school, Mehrauli, New Delhi-110030

Once Ranjeet and his daughter Reeta were returning after attending teachers' parent meeting at Reeta's school.

As the home of Ranjeet was close to the school so they were coming by walking.

Reeta asked her father, "Daddy how old are you?"

Ranjeet said, "Sum of ages of both of us is 55 years, After 10 years my age will be double of you."



- What is the second equation formed? (1)
- What is the present age of Reeta in years? (1)
- What is the present age of Ranjeet in years? (2)

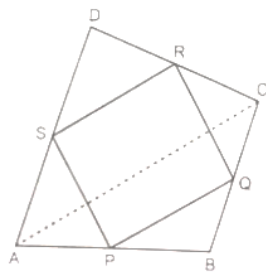
OR

If the ratio of age of Reeta and her mother is 3 : 7 then what is the age of Reeta's mother in years? (2)

38. **Read the following text carefully and answer the questions that follow:** [4]

Modern curricula include several problem-solving strategies. Teachers model the process, and students work independently to copy it. Sheela Maths teacher of class 9th wants to explain the properties of parallelograms in a creative way, so she gave students colored paper in the shape of a quadrilateral and then ask the students to make

a parallelogram from it by using paper folding.



- i. How can a parallelogram be formed by using paper folding? (1)
- ii. If $\angle RSP = 30^\circ$, then find $\angle RQP$. (1)
- iii. If $\angle RSP = 50^\circ$, then find $\angle SPQ$? (2)

OR

If $SP = 3$ cm, Find the RQ . (2)