

**Kerala State Board
Class IX Mathematics
Sample Paper 2**

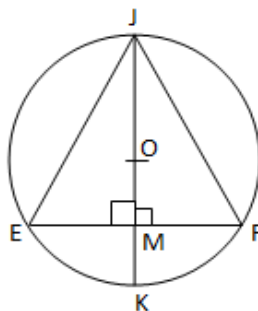
Time: 2 ½ hrs

Total Marks: 80

General Instructions:

- Answer the questions only after reading and understanding all questions.
- The first 15 minutes are given as cool-off time.
- Give the explanations leading to the answer, wherever necessary.
- If any two questions have an 'OR' in-between, only one of them needs to be answered.
- Unless otherwise specified, approximate values of numbers like π , $\sqrt{2}$, $\sqrt{3}$ and so on need not be used in the simplifications.

1. Find the mode of 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, and 18. [2]
2. Rene is 6 years older than her younger sister. After 10 years, the sum of their ages will be 50 years. Find their present ages. [2]
3. The altitude of an equilateral triangle is 12 cm. What is its area? [2]
4. A wire 66 cm long is bent into a circle. What is the area enclosed within it? [2]
5. If $\frac{x}{y} = \frac{3}{4}$, then find the value of $\frac{5x+2y}{5x-2y}$. [3]
6. Compute $\frac{10}{2+\sqrt{3}}$ upto two decimals. [3]
7. In the figure, O is the centre of the circle and JK is perpendicular to EF. Prove that $\triangle EKF$ is isosceles. [3]



8. In a right angled triangle, one of the acute angles exceeds the other by 10° . Find the measures of both the acute angles in the right-angled triangle. [3]

9. Compute: [3]

a) $\sqrt{28} \times \sqrt{7}$

b) $\sqrt{5} \times \sqrt{10} \times \sqrt{2}$

10. Does any polygon have the sum of its angles equal to 900° ? [3]

11. Three coins were tossed 30 times simultaneously. Each time the number of heads occurring was noted down as follows:

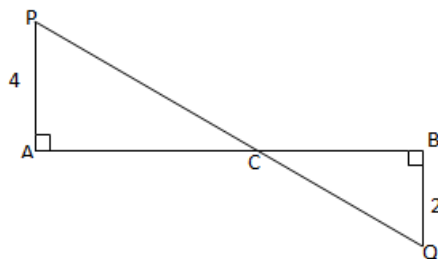
0	1	2	2	1	2	3	1	3	0	1	3
1	1	2	2	0	1	2	1	3	0	0	1
1	2	3	2	2	0						

Prepare a frequency distribution table for the data given above. [3]

12. For $p(x) = 3x^3 - x^2 + 6x - 5$, find $p(0)$, $p(1)$, $p(-1)$ and compute $\frac{p(0)+p(1)}{p(-1)}$ [3]

13. The taxi charges in a city consist of a fixed charge together with the charge for the distance covered. For a distance of 10 km, the charge paid is Rs. 105 and for a journey of 15 km, the charge paid is Rs. 155. What are the fixed charges and the charge per km? How much does a person have to pay for travelling a distance of 25 km? [4]

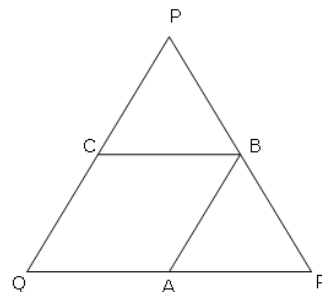
14. In the figure below, AP and BQ are perpendicular to AB. Suppose $AP = 4$ cm and $BQ = 2$ cm, prove that $AC : CB = 2 : 1$ [4]



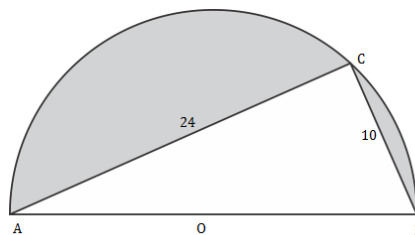
15. The ratio between the number of sides of two regular polygons is $3 : 4$ and the ratio between the sum of their interior angles is $2 : 3$. Find the number of sides in each polygon. [4]

16. A, B, and C are respectively the mid-points of sides QR, RP and PQ of $\triangle PQR$.

- a) Prove that quadrilateral QABC is a parallelogram.
b) Prove that $\triangle PQR$ and $\triangle PCB$ are similar.



17. Find the median of the following data: [4]
- a) 15, 6, 26, 8, 22, 21, 9, 18, 25
- b) 10, 75, 3, 15, 9, 47, 12, 48, 4, 81, 17, 27
18. Are there numbers x and y for which $|x + y| < |x| + |y|$? [4]
19. In the figure below, ACB is a semi-circle. Find the area of the shaded portion of the figure. [4]



20. Draw a rectangle $ABCD$ with $AB = 7$ cm and $BC = 3$ cm. Draw a triangle equal in area to the rectangle with AB as base [5]
21. The base of a prism is a right angled triangle with legs 6 cm, 8 cm and hypotenuse 10 cm. If the total surface area of the prism is 156 cm^2 , find its height and its lateral surface area. [5]
22. A square is inscribed in a circle whose radius is 4 cm. Find the area of the portion between the circle and the square. [5]
23. Draw a triangle whose perimeter is 13 cm and the lengths of its sides are in the ratio $2 : 3 : 4$. [5]