MATHEMATICS MOCK TEST

Class: IX | Set: 30

Time: 1 Hour 30 Minutes | Written Marks: 35 | Viva: 5 | Total: 40 Marks

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. State Euclid's Axiom 4 regarding things that coincide with one another.
2. What is the formula for the surface area of a sphere of radius r?
3. If two lines intersect, then the sum of four angles so formed is _____.
4. Find the class mark of the class interval $0 - 50$.
5. Find the coordinates of a point which lies on the y-axis at a distance of 3 units from the x-axis in the negative direction.

SECTION B

(2 Marks Each)

6. In the given figure, if $AC = BD$, then prove that $AB = CD$. (Assume A, B, C, D are collinear in that order).
7. Find the area of a triangle whose sides are 8 cm, 11 cm and 13 cm using Heron's formula.
8. The radius of a spherical balloon increases from 7 cm to 14 cm as air is being pumped into it. Find the ratio of surface areas of the balloon in the two cases.
9. In $\triangle ABC$, if $\angle A + \angle B = 125^\circ$ and $\angle A + \angle C = 113^\circ$, find $\angle A, \angle B$ and $\angle C$.
10. Find the mean of the first six multiples of 3.

SECTION C

(3 Marks Each)

11. Prove that if two lines intersect each other, then the vertically opposite angles are equal.
12. An umbrella is made by stitching 10 triangular pieces of cloth of two different colours, each piece measuring 20 cm, 50 cm and 50 cm. How much cloth of each colour is required for the umbrella?
13. A chord of a circle is equal to the radius of the circle. Find the angle subtended by the chord at a point on the minor arc and also at a point on the major arc.
14. Represent the following frequency distribution using a histogram:

Class Interval	10–20	20–30	30–40	40–50	50–60
Frequency	5	10	15	8	12

SECTION D

(4 Marks Each)

15. **Question 15:** A hemispherical bowl is made of steel, 0.25 cm thick. The inner radius of the bowl is 5 cm. Find the outer curved surface area of the bowl and the volume of steel used in making the bowl.

16. **Question 16:** In the given figure, $AB \parallel CD$ and $CD \parallel EF$. Also $EA \perp AB$. If $\angle BEF = 55^\circ$, find the values of x, y and z. (Provide a step-by-step geometric proof).

VIVA VOCE

(5 Marks)

- **Geometry:** State the Playfair's Axiom (equivalent to Euclid's fifth postulate).
- **Statistics:** What is the difference between a Bar Graph and a Histogram?
- **Mensuration:** What is the volume of a hemisphere of radius r?
- **Lines:** What are 'Co-interior angles' and what is their sum if lines are parallel?
- **Heron:** Can we find the area of a square using Heron's formula?