

**Army Public School Kota**  
**Worksheet For Class-IX**  
**Subject: Mathematics**

**Instructions: Read the questions carefully and answer them. There are four sections. Section A has 3 questions of 1 mark each, Section –B has 3 questions of 2 Marks each, Section C has 5 questions of 3 Marks each and Section D has 4 questions of 4 Marks each.**

**Section-A**

1. Find two rational numbers between  $\frac{3}{5}$  and  $\frac{5}{6}$ .
2. Give one example each of a binomial of degree 6 and a monomial of degree 66.
3. There are an infinite number of lines which pass through two distinct points. Give reason why this statement is false.

**Section-B**

4. Represent  $\sqrt{3}$  on number line
5. Find the value of the polynomial  $5x - 4x^2 + 3$  at  $x = 1$

OR

Verify whether 2 and 0 are zeroes of the polynomial  $x^2 = 2x$

6. If a point C lies between two points A and B such that  $AC = BC$ , then prove that  $AC = \frac{1}{2} AB$ . Explain by drawing figure.

**Section-C**

7. In triangle ABC if X and Y are mid points of AC and BC and  $AX = CY$  show that  $AC = BC$
8. Factorise (i)  $4x^2 + 8x + 3$  (ii)  $x^2 + 4x - 21$

OR

Factorise  $4x^2 + 9y^2 + 16z^2 + 12xy - 24yz - 16xz$

9. If  $a^2 + b^2 + c^2 = 155$  and  $a + b + c = 31$  find  $ab + bc + ca$ .
10. If  $x = \frac{1}{\sqrt{5}-2}$  then find the value of  $x^2 + \frac{1}{x^2}$

11. Express  $\overline{0.247}$  in the form  $\frac{p}{q}$

**Section-D**

12. If  $x, y, z$  are positive real numbers than prove that

$$\sqrt{xy^{-1}} \sqrt{yz^{-1}} \sqrt{zx^{-1}} = 1$$

Or

Prove that  $\frac{a^{-1}}{a^{-1}+b^{-1}} - \frac{a^{-1}}{a^{-1}-b^{-1}} = \frac{2ab}{a^2+b^2}$

13. Factorize  $x^3 + 13x^2 + 31x - 45$

14. Verify that

$$x^3 + y^3 + z^3 - 3xyz = \frac{1}{2} (x+y+z) [(x-y)^2 + (y-z)^2 + (z-x)^2]$$

15. If  $x+y+z=0$ , show that  $x^3 + y^3 + z^3 = 3xyz$ . Also without actual calculating cubes find the value of  $(28)^3 + (-15)^3 + (-13)^3$ .