# INDIAN SCHOOL NIZWA - WORKSHEET

**MATHEMATICS**

**2. POLYNOMIALS**

**Name: _____** **Date: 12-5-25** **Class: IX Sec: ___**

1. In $\frac{\pi x^2}{2} + x + 10$, the coefficient of $x^2$ is :
   a) $\frac{\pi}{2}$ b) 1 c) $-\frac{\pi}{2}$ d) $-1$

2. The degree of $5t - 7$ is :
   a) 0 b) 1 c) 2 d) 3

3. The value of $p(x) = 5x - 4x^2 + 3$ for $x = -1$ is
   a) 6 b) $-6$ c)3 d)$-3$

4. The zero of $p(x) = 2x - 7$ is:
   a) $\frac{7}{2}$ b) $\frac{2}{7}$ c) $-\frac{2}{7}$ d) $-\frac{7}{2}$

5. Which are the zeros of $p(x) = x^2 - 1$:
   a) $1, -1$ b) $-1,2$ c) $-2,2$ d) $-3,3$

6. On dividing $x^3 + 3x^2 + 3x + 1$ by $5 + 2x$ we get the remainder:
   a) $\frac{8}{27}$ b) $\frac{27}{8}$ c) $-\frac{27}{8}$ d) $-\frac{8}{27}$

7. If $x - 2$ is a factor of $x^3 - 2ax^2 + ax - 1$ then the value of a is
   a) $\frac{7}{6}$ b) $-\frac{7}{6}$ c) $\frac{6}{7}$ d) $-\frac{6}{7}$

8. Zeros of the polynomial $p(x) = (x-2)^2 - (x+2)^2$ are
   a) $2, -2$ b) $2x$ c) $0, -2$ d) 0

9. $(x - 2y)^3 + (2y - 3z)^3 + (3z - x)^3$ is equal to
   (a) $(x - 2y)(2y - 3z)(3z - x)$ (b) $2(x - 2y)(2y - 3z)(3z - x)$
   (c) $3(x - 2y)(2y - 3z)(3z - x)$ (d) $3(x - 2y)(3z - x)$

10. The coefficient of x in the expansion of $(x + 3)^3$ is
    (a) 1 (b) 9 (c) 18 (d) 27

11. **Assertion (A):** The value of $(28)^3 + (-15)^3 + (-13)^3$ is 16380.
    **Reason (R ):** If $a + b + c = 0, then\ a^2 + b^2 + c^2 = 3abc$.

12. **Assertion (A):** The factors of $x^6 - 64$ is $(x + 2)(x - 2)(x^4 + x^2 + 16)$.
    **Reason (R):** $x^3 - y^3 = (x - y)(x^2 + y^2 + xy)$.

13. If $36x^2 - b = (6x + \frac{1}{5})(6x - \frac{1}{5})$, then find the value of b.

14. Examine whether $x - 1$ is a factor of the following polynomials:
    (i) $4x^3 + 3x^2 - 4x - 3$ (ii) $x^3 - 3x^2 - 9x + 5$

15. Using suitable identity, evaluate $(-32)^3 + (18)^3 + (14)^3$

16. Factorise the following: (i) $x^2 - \frac{y^2}{9}$ (ii) $2x^2 - 7x - 15$ (iii) $6x^2 + 5x - 6$

17. Expand using sutiable identity $(2x - 3y + z)^2$.

18. Factorise: $49a^2 + b^2 + 25c^2 - 14ab - 10bc + 70ac$.

19. Factorise : $125x^3 + 8y^3 + z^3 - 30xyz$.

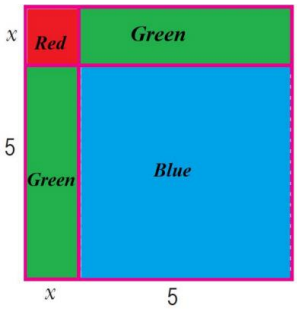
20. If $2x + 3y = 13$ and $xy = 6$, find the value of $8x^3 + 27y^3$.

21. If $x^2 + y^2 = 49$ *and* $x - y = 3$, then find the value of $x^3 - y^3$.

22. If $x + y + z = 8$ and $xy + yz + zx = 20$, find the value of $x^3 + y^3 + z^3 - 3xyz$.

23. If $x + 2a$ is a factor of $x^5 - 4a^2x^3 + 2x + 2a + 3$, find a.

24. ***CASE STUDY:***
Mahesh formed a square using four pieces of origami, as shown in the figure.




Based on the above information answer the following questions:
a) Write the polynomial which describes the area of the given square.
b) What is the degree of the polynomial obtained.
c) Find the zero/s of the above polynomial.
d) Find the side of the full square.

25. ***CASE STUDY:***
Nari Niketan is an organisation to help the women and child having distress. Swathi donated some amount to this organisation for betterment. The amount of donation is represented by the expression ₹ $4x^2 + \frac{1}{4x^2}$. She also discussed her friends about this organisation. Some of her friends wanted to know the amount of donation, but she did not disclose this amount to anyone. Some how her friend got to know that she gave amount having expression $\left(2x + \frac{1}{2x}\right)$, whose value is ₹ 90.
Based on the above information , answer the following :
i) The amount donated by Swathi in the expression for is :
a) Linear polynomial b) quadratic polynomial c) algebraic expression
d) constant polynomial
ii) If $x = \sqrt{2}$, then find the amount donated by Swathi.
iii) The value of $\left(2x + \frac{1}{2x}\right)^2$ is _____.
iv) The amount donated by Swathi is _____.
v) If $x = 5$, then find the value of donated expression?

26. ***Revision :***
1. $43458 \div 47$, then $434.58 \div 4.7$ ( give answer upto two decimal places)
2. $50km =$ ____$m$
3. $1m =$ _____cm
4. $\frac{2}{5} + \frac{3}{4} + \frac{1}{2} =$ ____
5. $3.5 \div 1000 =$ _____
6. $20.34 + 2.3 + 4 =$ _____