



BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

Class -9 Mathematics

POLYNOMIALS (Part – 3)

Guidelines :

Dear Students

Kindly read the content given below and view the links shared for better understanding.

- Solve the given questions in the **yellow register** provided in the notebook set.
- Make an index in the beginning with the following columns : S. no , Topic ,Date , Signature.
- If you couldn't buy the notebook set , you may do the work in any new notebook or old maths notebook of class VIII till the school reopens .

Link for the chapter : <http://ncert.nic.in/textbook/textbook.htm?jemh1=3-15>

Introduction:

You may recall that an algebraic identity is an algebraic equation that is true for all values of the variables occurring in it. In continuation of algebraic identities which we did earlier, some more useful identities are as follows :

- $(x + y)^3 = x^3 + y^3 + 3xy(x + y)$
- $(x - y)^3 = x^3 - y^3 - 3xy(x - y)$
- $x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$

Problems on Algebraic Identities

Problem: Solve $(x + 7)^3$ by using suitable identities

- **Solution :** $(x + 7)^3 = (x + 7)(x + 7)(x + 7)$; by the algebraic identity $(x + y)^3 = x^3 + y^3 + 3xy(x + y)$

$$X^3 + 7^3 + 3x(7)(x + 7) = x^3 + 343 + 21x(x + 7) = x^3 + 343 + 21x^2 + 147x$$

Problem: Solve $(2x - 3)^3$ by using suitable identities

Solution : By the algebraic identity $(x - y)^3 = x^3 - y^3 - 3xy(x - y)$

$$(2x - 3)^3 = (2x)^3 - (3)^3 - 3(2x)(3)(2x - 3) = 8x^3 - 27 - 36x^2 + 54x$$

Problem: Factorise : $8x^3 + y^3 + 27z^3 - 18xyz$

Solution: Here we have , $8x^3 + y^3 + 27z^3 - 18xyz$; we can write the given expression as;

$$= (2x)^3 + (y)^3 + (3z)^3 - 3(2x)(y)(3z)$$

By the algebraic identity ; $x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$

$$= (2x + y + 3z) [(2x)^2 + (y)^2 + (3z)^2 - (2x)y - y(3z) - (3z)(2x)]$$

$$= (2x + y + 3z) (4x^2 + y^2 + 9z^2 - 2xy - 3yz - 6xz)$$

Key points and important links for reference:

1. Refer to this link to enhance your knowledge
<https://www.youtube.com/watch?v=QcekBOd7aqA>
2. Examples of Identities :-<https://youtu.be/UqEF1x-5JiM>
3. Question 12 of Exercise 2.5 https://www.youtube.com/watch?v=pA5sA0_u9Jg
4. Question 13 of Exercise 2.5
<https://www.youtube.com/watch?v=vLmU4mNQwU4>
5. Visit <https://examfear.com/> for further reference

Following questions are to be done in the register:

Exercise 2.5 of NCERT :

Question 6: (iv)

Question 7 : (iii)

Question 8 : (i) , (v)

Question 11

Question 14 : (ii)

Question 15 : (ii)

ASSIGNMENT :-

Q1. Expand : (i) $(4a + 5b)^3$ (ii) $(5x - 3y)^3$

Q2. Evaluate (i) $(95)^3$ (ii) $(106)^3$

Q3. Factorize

(i) $x^3 + 64$ (ii) $27x^3 + 125y^3$

(iii) $8a^3 - 27b^3$ (iv) $1 - 64a^3$

Q4. Factorize : $x^3 - 8y^3 + 64z^3 + 24xyz$