



BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

Class -9 Mathematics

POLYNOMIALS (Part – 2)

Guidelines :

Dear Students,

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

- **Solve the given questions in yellow register provided in the notebook set.**

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 .

Some algebraic identities useful in factorization:

- $(x + y)^2 = x^2 + 2xy + y^2$
- $(x - y)^2 = x^2 - 2xy + y^2$
- $x^2 - y^2 = (x + y)(x - y)$
- $(x + a)(x + b) = x^2 + (a + b)x + ab.$
- $(x + y + z)^2 = x^2 + y^2 + z^2 + 2xy + 2yz + 2zx.$

Problems on Algebraic Identities

Problem: Solve $(x + 4)^2$ by using suitable identities

Solution : $(x + 4)^2 = (x + 4)(x + 4)$; by the algebraic identity $(x + y)^2 = x^2 + y^2 + 2xy$
 $x^2 + 4^2 + 2x(4) = x^2 + 16 + 8x$

Problem: Solve $(x - 7)^2$ by using suitable identities

Solution : $(x - 7)^2 = (x - 7)(x - 7)$; by the algebraic identity $(x - y)^2 = x^2 - 2xy + y^2$

$x^2 + 7^2 - 2x(7) = x^2 + 49 - 14x$

Problem: Solve $(x + 3)(x - 3)$ using algebraic identities.

Solution: By the algebraic identity, $x^2 - y^2 = (x + y)(x - y)$, we can write the given expression as;

$$(x + 3)(x - 3) = x^2 - 3^2 = x^2 - 9$$

Problem: Solve $(x^2 - x + 1)^2$

Solution: Use the algebraic identity $(x + y + z)^2 = x^2 + y^2 + z^2 + 2xy + 2yz + 2zx$.

to solve this example:

$$\begin{aligned} &= (x^2)^2 + (-x)^2 + (1)^2 + 2 \cdot x^2 \cdot (-x) + 2 \cdot x^2 \cdot 1 + 2 \cdot (-x) \cdot 1 \\ &= x^4 + x^2 + 1 - 2x^3 + 2x^2 - 2x \end{aligned}$$

Problem: Solve $(x + 2)(x + 3)$

Use the algebraic identity $(x + a)(x + b) = x^2 + (a + b)x + ab$.

to solve this problem:

$$= x^2 + (2 + 3)(x) + (2)(3) = x^2 + 5x + 6$$

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. Visit <https://examfear.com/> for further reference

Following questions to be done in register :

Exercise 2.5 of NCERT :

Question 1: (ii) , (v)

Question 2 : (i)

Question 3 : (ii) , (iii)

Question 4: (v)

Question 5 : (ii)

ASSIGNMENT :-

Note : Following questions are for the practice only and should be done in a separate practice register/copy of math

Q1. Use suitable identities to find the following products:

(i) $(x + 5)(x - 8)$ (ii) $(5 - 9y)(5 - 9y)$ (iii) $(7m - 6)(7m + 8)$

Q2. Factorize :

(i) $9x^2 - 16y^2$ (ii) $x^3 - x$

Q3. Factorize following expressions.

(i) $x^2 + 9x + 18$

(ii) $x^2 - 4x - 21$

(iii) $x^2 - 9x + 18$

(iv) $x^2 - 19x + 78$

Q4. Calculate $(997)^2$ using algebraic identities.

Q5. Calculate 102×106 using algebraic identities.