

Topic: Equations and Identities

Objectives: Students are able to:

1. tell the difference between an equation and an identity,
2. prove whether a given equation is an identity or not,
3. find the unknowns in a given identity,
4. use the identities

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(a - b)^2 = a^2 - 2ab + b^2$$

$$(a + b)(a - b) = a^2 - b^2$$

in expanding and factorizing different expressions.

No. of periods: 8

Period 1

1. List two equations:

i. $2x + 4 = x + 6$

ii. $2x + 10 = 2(x + 5)$

2. Ask students to find solutions.

3. The solution of (i) is $x = 2$ but solution of (ii) can not be found.

4. Substitute different values of x into equation (i) to find that it can be satisfied only when $x = 2$.

5. Substitute different values of x into equation (ii) to find that it can be satisfied by many values of x .

6. Define identity in x which is the equation satisfied by all values of x .

7. Introduce the identity symbol ' \equiv '.

8. Use examples to show the proof for identities:

i. $5(x - 3) - 3(x - 1) = 2(x - 6)$

ii. $4(2x - 1) - 3(x + 2) = 5(2 - x)$

9. Give classwork.