ALLEN®

ALGEBRA

KEY POINTS

Variables

The height of growing child changes with time

Let us fill the empty boxes

$\square + 2 = 8$

Here the empty box $\square$ stands for an unknown number. Let us write these problems a little differently.

Cost of a chocolate + Rs. 2 is equal to Rs. 8.

Constants

The quantities with fixed numerical values are called constants.

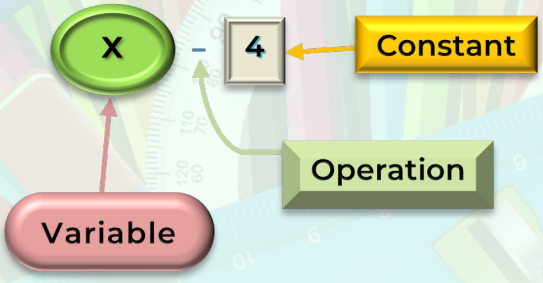
e.g., –3, 2, 217, 25, etc, ... are constants or numerals.

Coefficient

Any factor of a term of an algebraic expression is called the cœfficient of the remaining factor of the term.

Capacity of a given container is fixed

Framing of an algebraic expression



Addition of variables

The sum of x and 10 is (x + 10).

(i) More than
(ii) Added to
(iii) Increase

Subtraction of variables

If we are asked to subtract 9 from 13, we write it as 13 – 9.

(i) Decrease
(ii) Diminished
(iii) Less than
(iv) Subtract

Multiplication of variables

The product of two variables x and y is written as xy.

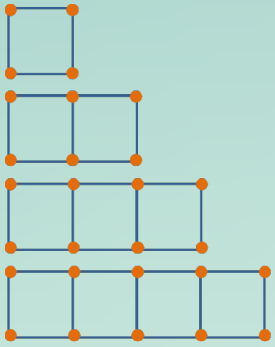
Algebraic expression

A combination of constants and variables connected by any one or more of the symbols +, –, × and ÷ is called an algebraic expression.
Eg 5x – 9y + 1

Some terms related to algebraic expressions

Algebra as generalisation

Look at the patterns of squares made with the matchsticks given.



Number of squares	1	2	3	4	5	n
Number of matchsticks	4	7	10	13	16	3n+1

Algebraic equations

An equation is a mathematical statement equating two quantities. The expression on either side of the equal sign (=) are called members of the equation.

e.g., $2x + 9 = 11$, $5x - 3 = 7$, $2y + 9 = 17$

Solving one equation using the principle of balance

To solve an equation is to determine the value(s) of the variable (or unknown) that will make the equation true.

(i) **Using addition :** If the same or equal quantity is added to both sides of an equation, the equation remains true.

(ii) **Using subtraction :** If the same number or equal quantity is subtracted on both sides of an equation, the equation remains true.

(iii) **Using multiplication :** If the same number or equal quantity is multiplied on both sides of an equation, the equation remains true.

(iv) **Using division :** If the same number or quantity divides both sides of an equation (except by zero), the equation holds true.