

**CBSE Class 7 Maths Notes Chapter 12 Algebraic Expressions:** The notes for CBSE Class 7 Maths Chapter 12 on Algebraic Expressions has been created by subject experts from Physics Wallah. These notes provide a comprehensive understanding of the topic, aiding students in grasping the fundamental concepts with clarity.

They explain each concept in a clear way, making it easier for students to understand algebraic expressions. With these notes, students can improve their math skills and do well in their studies.

## **CBSE Class 7 Maths Notes Chapter 12 Algebraic Expressions PDF**

To get subject-best grades, download the NCERT Solutions PDF and choose to cross-refer after answering questions. To help you review the entire syllabus and get better grades in your exams, you can also download the NCERT Solutions for Class 7 Maths. Here we have provided CBSE Class 7 Maths Notes Chapter 12 Algebraic Expressions PDF-

### **CBSE Class 7 Maths Notes Chapter 12 Algebraic Expressions PDF**

CBSE Class 7 Maths Notes Chapter 12 Algebraic Expressions

#### Introduction to Algebraic Expressions

Algebraic expressions are fundamental in mathematics, providing a way to represent relationships and patterns using symbols and variables. They consist of combinations of numbers, variables, and mathematical operations like addition, subtraction, multiplication, and division. These expressions help in solving problems, analyzing data, and making predictions in various fields such as science, engineering, finance, and more.

In algebraic expressions, variables represent unknown quantities or values that can change, while constants are fixed values. Terms are the building blocks of expressions, separated by mathematical operations. Coefficients are the numerical factors of terms, and like terms have the same variables raised to the same powers.

Understanding algebraic expressions is crucial for solving equations, simplifying expressions, and solving real-world problems. They provide a powerful tool for mathematical reasoning and problem-solving, making them an essential part of the study of mathematics at all levels.

#### Algebra as Patterns

Algebra plays a crucial role in understanding and describing patterns in mathematics. It provides a systematic way to identify, analyze, and represent patterns using symbols, variables, and equations. By recognizing patterns, mathematicians and scientists can make predictions, formulate theories, and solve complex problems in various fields.

In algebra, patterns can manifest in different forms, such as numerical sequences, geometric shapes, or functional relationships. Algebraic expressions and equations are used to describe these patterns and establish relationships between variables and constants.

For example, in a sequence of numbers, algebra can be used to find the rule or pattern governing the sequence, allowing us to predict the next term or term at any position. Similarly, in geometry, algebraic expressions can represent the relationships between the dimensions of geometric figures, allowing us to calculate areas, perimeters, volumes, and other properties.

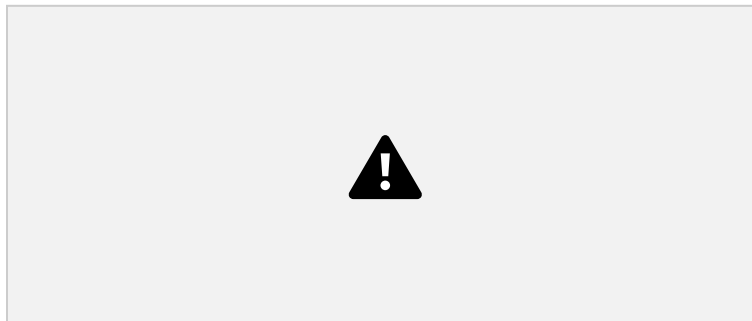
## Writing Number patterns and rules related to them

- If a natural number is denoted by  $n$ , its successor is  $(n + 1)$ .  
Example: Successor of  $n=10$  is  $n+1 = 11$ .
- If a natural number is denoted by  $n$ ,  $2n$  is an even number and  $(2n+1)$  an odd number.  
Example: If  $n=10$ , then  $2n = 20$  is an even number and  $2n+1 = 21$  is an odd number.

### Writing Patterns in Geometry

Geometry involves the study of shapes, sizes, and properties of objects in space. Algebraic expressions are often used to describe patterns and relationships in geometric figures.

**Example: Number of diagonals we can draw from one vertex of a polygon of  $n$  sides is  $(n - 3)$ .**



### Definition of Variables

In algebra, expressions can contain variables and constants. Here's a breakdown:

#### Variable:

- A variable is a quantity that can vary or change within a given context.
- Variables are typically represented by letters from the alphabet, such as  $a$ ,  $x$ ,  $p$  etc.
- These letters denote quantities whose values are not fixed and may change depending on the situation.
- For example, in the equation  $y = mx + b$ , both  $x$  and  $y$  are variables representing quantities that can vary.

### Constant:

- A constant is a quantity that has a fixed value and does not change.
- In algebraic expressions, constants are numerical values that remain the same throughout.
- For instance, in the expression  $5x+4$ , the constant is 4 since its value does not depend on any variable.
- The terms  $5x$  and 4 in the expression are also called terms of the expression.
- In the term  $5x$ , 5 is termed the coefficient of  $x$ , representing the numerical factor of the variable.
- Coefficients are essential in understanding how variables interact within an expression.

## Formation of Algebraic Expressions

- Variables and numbers are used to construct terms.
- These terms along with a combination of operators constitute an algebraic expression.
- The algebraic expression has a value that depends on the values of the variables.
- For example, let  $6p^2-3p+5$  be an algebraic expression with variable  $p$

The value of the expression when  $p=2$  is,

$$6(2)^2 - 3(2) + 5$$

$$\Rightarrow 6(4) - 6 + 5 = 23$$

The value of the expression when  $p=1$  is,

$$6(1)^2 - 3(1) + 5$$

$$\Rightarrow 6 - 3 + 5 = 8$$

## Like and Unlike Terms

### Like Terms:

- Like terms are terms that have the same variables raised to the same powers.
- These terms can differ only in their coefficients, which are the numerical factors.
- For example,  $3x$  and  $5x$  are like terms because they both have the variable  $x$  raised to the power of 1.

### Unlike Terms:

- Unlike terms are terms that either have different variables or have the same variables raised to different powers.
- Unlike terms cannot be combined by simply adding or subtracting them.
- Example:  $7xy$  and  $-3x$  are unlike terms.

## Monomial, Binomial, Trinomial and Polynomial Terms

**Monomial:**

- A monomial is an algebraic expression that consists of only one term.
- It can be a constant, a variable, or a product of constants and variables.
- Examples of monomials include  $7xy$ ,  $-5m$ , etc.

**Binomial:**

- A binomial is an algebraic expression that consists of two terms connected by addition or subtraction.
- Each term in a binomial can be a monomial.
- Examples of binomials include  $5mn+4$ ,  $x+y$ , etc.

**Trinomial:**

- A trinomial is an algebraic expression that consists of three terms connected by addition or subtraction.
- Each term in a trinomial can be a monomial.
- Examples of trinomials include  $x+y+5$ ,  $a+b+ab$ , etc.

**Polynomial:**

- A polynomial is an algebraic expression that consists of one or more terms connected by addition or subtraction.
- It can have any number of terms, making it a more general term that includes monomials, binomials, and trinomials.
- Examples of polynomials include  $x+y$ ,  $3xy+6+y$ , etc.