

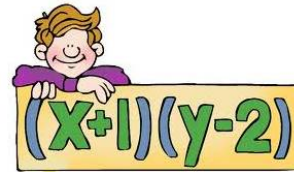
Algebraic Expressions

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Introduction

[Algebraic Expressions](#) are expressions which are obtained by performing a finite number of operations like addition, subtraction,

multiplication, rising to a power on symbols ([terms](#)) representing numbers.



Algebraic expressions contain variables and constants. A [variable](#)'s value is not fixed. On the other hand, a [constant](#) has a fixed value.

For Example: x^2 , $2y^2$, $3w + 4xy + 5$, $2x^2 + 5x - 7$

Classification of Expressions

We can classify expressions as follows:

- [Monomial](#)
- [Binomial](#)
- [Trinomial](#)
- [Polynomial](#)

Let's discuss each one of them:

Monomial

An expression with only one term is called a monomial.

For example: $2x$, $3xy$, $5x^2y$

Binomial

An expression with two unlike terms is called a binomial.

For example: $2x + 1$, $2x + 4y$, $7x^2y + 2x^4$

But $2x + 3x$ is not a binomial.

As, $2x + 3x = 5x$ which is monomial.

Trinomial

An expression which contains three terms is called a trinomial.

For example: $2x + y + z$, $x^2 + 2x + 2$

Polynomial

An expression with one or more terms is called a polynomial. A monomial, a binomial and a trinomial all are polynomials.

For example: $2x$, $x - 5$, $12x^2 - y$

Addition and Subtraction of Algebraic Expressions

We have two categories under addition and subtraction of algebraic expressions:

- Adding and subtracting like terms
- Adding and subtracting general algebraic expressions

We will learn the concept by taking examples:

Adding or subtracting like terms

(i) **Add:** $3y + 5y + 2y$

$$= (3 \times y) + (5 \times y) + (2 \times y)$$

$$= (3 + 5 + 2) y$$

$$= 10 y$$

(ii) **Subtract:** $14 ab - 12 ab$

$$= (14 - 12) ab$$

$$= 2 ab$$

So, from the above examples we conclude the following:

- The sum of two more like terms is a like term with a numerical coefficient equal to the sum of the numerical coefficient of all the like terms.
- The difference of two more like terms is a like term with a numerical coefficient equal to the difference of the numerical coefficient of all the like terms.

Adding or subtracting general algebraic expression

(i) **Add:** $13x + 7y + 2x + 6a$



In the given expression, we have $13x$ and $2x$ as like terms. So, we first add them.

$$= 15x + 7y + 6a$$

As there are no like terms left in the above expression, so we get the final answer as $15x + 7y + 6a$.

(ii) **Subtract:** $30xy - 10x - 16y$ from $15xy + 12y + 14x$.

First, we will write complete expression as

$$15xy + 12y + 14x - (30xy - 10x - 16y)$$

$$= 15xy + 12y + 14x - 30xy + 10x + 16y \dots(\text{Open the parenthesis})$$

$$= 15xy - 30xy + 12y + 16y + 14x + 10x \dots(\text{Writing like terms together})$$

$$= -15xy + 28y + 24x \dots(\text{Combining like terms})$$

As there are no like terms left in the above expression, so we get the final answer as $-15xy + 28y + 24x$

Now try it yourself! Should you still need any help, [click here](#) to schedule live online session with e Tutor!

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Reference Links:

- [http://en.wikipedia.org/wiki/Expression_\(mathematics\)](http://en.wikipedia.org/wiki/Expression_(mathematics))
- [http://en.wikipedia.org/wiki/Term_\(mathematics\)](http://en.wikipedia.org/wiki/Term_(mathematics))
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