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# Introduction To Algebra

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# What is Algebra?



The branch of mathematics that deals with general statements of relations, utilizing letters and other symbols to represent specific sets of numbers, values, vectors, etc., in the description of such relations.

Now, we will learn about the basic terms related to algebra:

## Variable

A variable is a symbol/letter used to represent an unknown quantity. A variable could represent any number or thing, depending on the context. A variable is a value that may change within the scope of a given problem or set of operations.

For Example: In the given equation, x + 2 = 6. What is the variable?

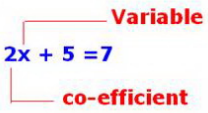
Solution: x is the variable.

We can represent situation using variables:

For Example: Nick has 26 trading cards. Nathaniel has T more trading cards than Nick. Write the expression that shows how many trading cards Nathaniel has.

Solution:

Nick has 26 trading cards
Nathaniel has T more trading cards than Nick
So, Nathaniel has 26 + T cards
Here T is variable.




# Coefficient

A coefficient is a multiplicative factor in some term of an expression (or of a series); it is usually a number.

Acoefficient is a number before a variable.

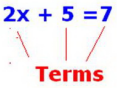
**For Example:** Find the coefficient in following expressions:

i) 3x
i) The coefficient of the x is 3
ii) 4x – 7 = 5
ii) The coefficient of the x is 4
iii) $x^2$ - 10x + 25
iii) The coefficient of the $x^2$ is 1 and the coefficient of the x is -10.

# Constants

Aconstant is a value that never changes; this is different from a variable where the value varies like x.

**For example:** In the expression 5 x, 5 is a constant and x is a variable.




# Like and unlike terms

A Term is either a single number or a variable, or numbers and variables multiplied together.

Now, we will discuss about like and unlike terms, to relate this concept to real life we can say that persons having same surnames are like terms and those with different surnames are unlike terms.

**For example:**
Alan Solis and Brandon Solis are like terms.
Whereas
Alan Solis and Tiffany Sherrod are unlike terms.
Let’s discuss them mathematically now:

## Like terms

"Like terms" are terms whose variables and their exponents are the same. Only the coefficients of like terms are different.

**For example:**

i) 2x,-4x, 6x are the like terms
ii) $3x^3$, $7x^3$, and $-10x^3$ are like terms
We can add or subtract like terms (only) together to make one term.

**For Example:**
i) 3x + x
We can add these two terms 3 x and x as they are like terms
3x + x = 4x

ii) $3x^2 - 7 + 4x^3 - x^2 + 2+2x^3$
First we will combine like terms:
Here; $3x^2$, $- x^2$ are like terms
Similarly, $4x^3$, $2x^3$ are like terms
And -7, 2 are like terms
So we can write the above expression as:
$4x^3 + 2x^3 + 3x^2 - x^2 - 7+ 2$
$6x^3 + x^2 -5$

## Unlike terms

Terms which are different or if the terms are not like terms, they are called "Unlike Terms"
For example: $x^2$, $x^3$, x, are unlike terms as they have different power (exponent).

We cannot add or subtract unlike terms.

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/Algebra
- http://en.wikipedia.org/wiki/Variable_(mathematics)
- http://en.wikipedia.org/wiki/Term_(mathematics)
- http://en.wikipedia.org/wiki/Expression_(mathematics)
- http://en.wikipedia.org/wiki/Series_(mathematics)
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