

### NUMBERS

Natural Numbers (N)

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### SET THEORY

**POLYNOMIALS**

A **monomial** is an expression made up of a number, a variable, or the product of a number and one or more variables.  
 Examples: 14    a     $-6x^2y^3$

A **polynomial** is a monomial or the sum or difference of two or more terms.  
 Examples:  $5x - 2$      $9x^2 + 3x - 2$      $y^3 - 6y + 4$

The degree of a monomial is the sum of the exponents of the variables.  
 Examples:  $2x$  degree = 1     $8x^2y^2$  degree = 5     $-8$  degree = 0

In standard form, the degrees of a polynomial's terms decrease from left to right.  
 Example:  $4x^4 + 5x^2 - 3x + 6$

**Multiplying Polynomials**  
 FOIL is a way to use the distributive property to find the product of two binomials.  
 first terms    inner terms  
**FOIL**  
 outer terms    last terms  
 Ex:  $(6x - 4)(3x + 5)$   
 First    Outer    Inner    Last  
 $(6x)(3x) + (6x)(5) + (-4)(3x) + (-4)(5)$   
 $18x^2 + 30x - 12x - 20$   
 $18x^2 + 18x - 20$

**Adding Polynomials**  
 Ex:  $(10x^2 + 2) + (4x^2 + 5x - 6)$   
 $10x^2 + 2 + 4x^2 + 5x - 6$   
 $10x^2 + 4x^2 + 5x + 2 - 6$   
 $14x^2 + 5x - 4$

**Subtracting Polynomials**  
 To subtract a polynomial, change the subtraction sign to an addition sign then change the signs of all the terms that were being subtracted.  
 Ex:  $(3x^2 - 4x^2) - (x^2 - 8)$   
 $3x^2 - 4x^2 + -x^2 + 8$   
 $3x^2 - x^2 - 4x^2 + 8$   
 $2x^2 - 4x^2 + 8$

### Types of Sets in Maths

Empty Set  $\phi$ : The set is empty! This means that there are no elements in the set. This set is represented by  $\phi$  or  $\{\}$ .

it is known as an empty set or null set or void set. For e.g. consider the set,  $P = \{x : x \text{ is a leap year between } 1904 \text{ and } 1908\}$

Between 1904 and 1908, there is no leap year. So,  $P = \phi$ .



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Not published yet.

Last updated 9th July, 2022.

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