Number System

A **numeral system** (or **system of numeration**) is a writing system for expressing numbers; that is, a mathematical notation for representing numbers of a given set, using digits or other symbols in a consistent manner.

Real Number

Real number are those number which can be represent on number line For Example - - Infinity <Real Number< + Infinity

Complex Number

A **complex number** is a number that can be expressed in the form $a + bi$, where a and b are real numbers, and i is a solution of the equation $x^2 = -1$. Because no real number satisfies this equation, i is called an imaginary number. For the complex number $a + bi$, a is called the **real part**, and b is called the **imaginary part**. Despite the historical nomenclature "imaginary", complex numbers are regarded i

Rational Number

Rational Number are those number which can be written as form of p/q q should not be equal to Zero. p,q are integer number

Irrational Number

irrational numbers are all the real numbers which are not rational numbers

Integer Number

All Negative and Positive whole Number are called the Integer Number ..,..,-2,-1,0,1,2,..,..,..

Negative Odd Integer

Which Negative number not divisible by 2

…,…,-5,-3,-1

Negative Even Integer

Which Negative number divisible by 2

…,…,-4,-2,

Positive Odd Integer

Which positive number not divisible by 2

…,…,5,3,1

Positive Even Integer

Which Positive number divisible by 2

…,…,4,2,0

Whole Number

The Number which starts from 0 and countable number 0,1,2,3,4,5, 6, 7,..,..,..,..,

Natural Number

All countable Number are called the Natural Number 1,2,3,4,..,..,..,..,..

Unit Number

Only 1 is Unit Number 1 is not Prime number not Composite number

Prime Number

The prime numbers are the natural numbers greater than one that are not products of two smaller numbers. 2,3.5,7,..,..,

Composite Number

A **composite number** is a natural number that can be formed by multiplying two smaller number Equivalently, it is a positive integer that has at least one divisor other than 1 and itself.

4,6,8,9,..,..,..

$(a + b)^2 = a^2+b^2+2ab$

$(a - b)^2 = a^2+b^2-2ab$

$a^2 - b^2 = (a - b)(a + b)$

$a^2+b^2 = (a + b)^2 - 2ab = (a - b)^2 + 2ab$

$(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ac$

$(a + b)^3 = a^3 + b^3 + 3ab(a + b)$

$(a - b)^3 = a^3 - b^3 - 3ab(a - b)$

$a^3 + b^3 = (a + b)^3 - 3ab(a + b) = (a + b)(a^2 + b^2 - ab)$

$a^3 - b^3 = (a - b)^3 + 3ab(a - b) = (a - b)(a^2 + b^2 + ab)$

$a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 +b^2 + c^2 - ab - bc - ac)$

$a^4 - b^4 = (a - b)(a + b)(a^2 + b^2)$

$\sin\theta$	$\cos\theta$	$\tan\theta$
$\frac{Perpendicular}{Hypotenuse}$	$\frac{Base}{Hypotenuse}$	$\frac{Perpendicular}{Base}$
$\operatorname{cosec}\theta$	$\sec\theta$	$\cot\theta$

$$\sin\theta = \frac{Perpendicular}{Hypotenuse} = \frac{1}{\operatorname{cosec}\theta} = \sqrt{1-\cos^2\theta}$$

$$\cos\theta = \frac{Base}{Hypotenuse} = \frac{1}{\sec\theta} = \sqrt{1-\sin^2\theta}$$

$$\tan\theta = \frac{Perpendicular}{Base} = \frac{\sin\theta}{\cos\theta} = \frac{1}{\cot\theta} = \sqrt{\sec^2\theta - 1}$$

$$\cot\theta = \frac{Base}{Perpendicular} = \frac{\cos\theta}{\sin\theta} = \frac{1}{\tan\theta} = \sqrt{\operatorname{cosec}^2\theta - 1}$$

$$\operatorname{cosec}\theta = \frac{Hypotenuse}{Perpendicular} = \frac{1}{\sin\theta} = \sqrt{1+\cot^2\theta}$$

$$\sec\theta = \frac{Hypotenuse}{Base} = \frac{1}{\cos\theta} = \sqrt{1+\tan^2\theta}$$

$$\sin^2\theta + \cos^2\theta = 1 \qquad \sin^2\theta = 1 - \cos^2\theta$$

$$\cos^2\theta = 1 - \sin^2\theta \qquad \operatorname{cosec}^2\theta - \cot^2\theta = 1$$

$$\operatorname{cosec}^2\theta = 1 + \cot^2\theta \qquad \cot^2\theta = \operatorname{cosec}^2\theta - 1$$

$$\sec^2\theta - \tan^2\theta = 1 \qquad \sec^2\theta = 1 + \tan^2\theta$$

$$\tan^2\theta = \sec^2\theta - 1$$