Class 9
Important Formulas

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Chapter 1 - Number System

S.no	Type of Numbers	Description
1	Natural Numbers	N = {1,2,3,4,5…….} It is the counting numbers
2	Whole number	W= {0,1,2,3,4,5……..} It is the counting numbers + zero
3	Integers	Z={…-7,-6,-5,-4,-3,-2,-1,0,1,2,3,4,5,6…}
4	Positive integers	Z_+= {1,2,3,4,5……..}
5	Negative integers	Z_-={…-7,-6,-5,-4,-3,-2,-1}
6	Rational Number	A number is called rational if it can be expressed in the form p/q where p and q are integers (q> 0). Example : ½ , 4/3 ,5/7 ,1 etc.
7	Irrational Number	A number is called rational if it cannot be expressed in the form p/q where p and q are integers (q> 0). Example : $\sqrt{2},\sqrt{3},\pi$ etc
8.	Real Numbers:	All rational and all irrational number makes the collection of real number. It is denoted by the letter R
9	What is zero	Zero number definition Zero is a number used in mathematics to describe no quantity or null quantity.It is also used as placeholder digit in many numbers The modern 0 symbol was invented in India in the 6-th century, used later by the Persians and

Arabs and later in Europe.

Important facts about zero

1) Zero is a number but it is neither positive nor negative number.

So it is not included in the set of positive number nor negative numbers.

But it is included in the set of non-negative numbers

2) Zero is an even number

3) Zero is not a prime nor a composite number. It cannot be prime because it has an infinite number of factors and cannot be composite

because it cannot be expressed by multiplying prime numbers (0 must always be one of the factors)

Law of exponents

$$1) a^p . a^q = a^{p+q}$$

$$2) \frac{a^p}{a^q} = a^{p-q}$$

$$3) \left(a^p\right)^q = a^{pq}$$

$$4) a^p . b^p = ab^p$$

$$5) a^{-p} = \frac{1}{a^p}$$

$$6) a^0 = 1$$

$$7) a^1 = a$$