Notations:

$\mathbb{Z}$ → the set of all integers

$\mathbb{Q}$ → the set of all rational numbers

$\mathbb{R}$ → the set of all real numbers

$\mathbb{R}^+$ → the set of all positive real numbers

$\mathbb{Q}^+$ → the set of all positive rational numbers

$\mathbb{C}$ → the set of all complex numbers.

Semigroup:

If a non empty set S together with the binary operation (*) satisfying the following properties.

i). closure property

ii). Associative property, is called semigroup

Monoid:

A non empty set M together with the binary operation (*) satisfying the following properties.

i). closure

ii). Associative

iii). Identity, is called monoid.

Examples:

1]. (Z, -) is the example of quasi group. (closure)

2]. (N, +) → semigroup [closure & Associative]

3]. since '0' is not a natural no., here '0' is the identity.

3]. (N, *) → monoid [closure, Associative & Identity]

since fraction does not exists in Natural Nos.

4]. (Z, +) → Group & Abelian group [closure, Associative, Identity, Inverse & Commutative]

Order of a group:

The number of elements in a group G is called the order of a group & is denoted by O(G)

i). If O(G) is finite, then G is said to be finite group.

ii). If O(G) is infinite, then G is said to be infinite group.