Semi Group : Let G be a non-empty set and ‘*’ be a binary operation on G. Then G with ‘*’ denoted by (G,*) is called a semi group if and only if the following condition satisfies :

- ⇨ Closure, if a, b $\in$ G then a*b $\in$ G.
- ⇨ Associativity, if a, b, c $\in$ G then a*(b*c) = (a*b)*c

SOME EAXMPLES

1. Prove that (z,+) is an abelian group.

Proof :- Z is a set of integers, we can write it as

$$Z = (-\infty \ldots\ldots\ldots\ldots\ldots, -3, -2, -1, 0, 1, 2, 3, \ldots\ldots\ldots\ldots\ldots \infty)$$

Now, $\forall$ a, b, c $\in$ Z

In order to show whether the set of integers under addition operation is Abelian or not, we will check its condition

Now, checking the conditions,

- ⇨ a+b $\in$ Z { This shows closure property}
  As the addition of two integers will always gives an integer, therefore this is closed.
- ⇨ a+(b+c) = (a+b)+c {This shows associative property}