Modern Maths

Set Concepts

The number of elements in a set is called its **cardinalnumber** and is written as n(A). A set with cardinal number 0 is called a null set while that with cardinal number ∞ is called an infinite set.

Set A is said to be a **subset** of Set B if each and every element of Set A is also contained in Set B. Set A is said to be a **proper** subset of Set B if Set B has at least one element that is not contained in Set A. A set with 'n' elements will have 2n subsets (2n – 1 proper subsets)

The **Universal set** is defined as the set of all possible objects under consideration.

Union of two sets is represented as A B and consists of elements that are present in either Set A or Set B or both.

Intersection of two sets is represented as A B and consists of elements that are present in both Set A and Set B. $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

Venn Diagram: A venn diagram is used to visually represent the relationship between various sets. What do each of the areas in the figure represent?



I – only A; II – A and B but not C; III – Only B; IV – A and C but not B; V – A and B and C; VI – B and C but not A; VII – Only C

$n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cap B) - n(A \cap C) - n(B \cap C) + n(A \cap B \cap C)$

Concept: Any set is a subset of itself, but not a proper subset.

The empty set, denoted by ϕ , is also a subset of any given set X. The empty set is always a proper subset, except of itself.

Every other set is then a subset of the universal set.