1. Define a set, the elements of a set and the cardinality of a set
2. Explain the concept of Venn diagrams and how they are used to represent and compare different set expressions.
3. Describe and prove De Morgan's law using membership tables.
4. Define the concepts of the union, intersection, set difference and symmetric difference, and the concept of a membership table.
5. Define the concepts of the universal set and the complement of a set, and the difference between a set and a powerset of a set.

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1 . Define a set, the elements of a set and the cardinality of a set

A set is simply a collection of distinct objects, like a list of your favorite colors or the numbers 1,2 and 3. The elements of a set are the individual objects in it. So, in a set of your favorite colors, each color is an element. The cardinality of a set is the total count of elements in that set.

▶ 1.1 Understanding Sets and Elements:

Think of a set as a container, like a lunchbox. The items you put inside your lunchbox are the elements of that set. The only rule is that each element in the set must be unique.

In mathematics, we write sets using curly braces {}.

For example, if we have a set of primary colors, lets call it C, we would write it like this: C = {red, yellow, blue}

To say that an element belongs to a set, we use the symbol $\in$, which looks like a curvy "E". It means "is an element of". So, we can say: red $\in$ C (Read as: "red is an element of set C") yellow $\in$ C blue $\in$ C But, green is not in our set, so we would write green $\notin$ C.