

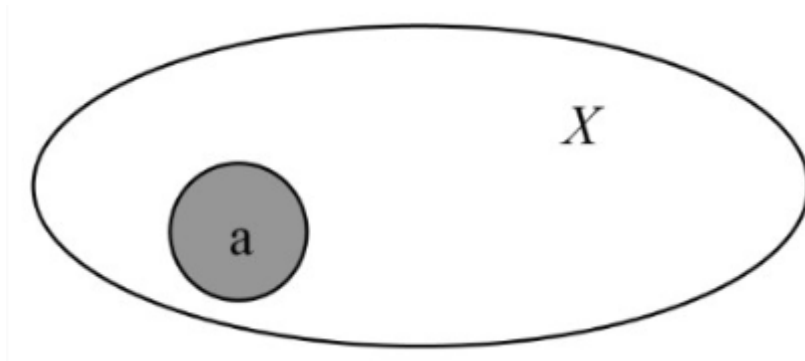
The mathematical set is the totality of well-defined objects.

The objects which belong to the set are called the 'elements'.

This state of belonging to a given set is called relation, which has the following sign:  $a \in X$

You may read the given relation like this: "the elements of X set", or "X set contains the following elements".

The elements of a set:



The number of the elements which belong to a give set is called the cardinality of the set. This cardinal may be finite or infinite.

The elements (which belong to a given set) can be defined by enumeration or by giving an exact principle of how they belong to that set.

For example:

The set of natural numbers:

$Z = \{1, 2, 3, 4, 5, \dots\}$  you may define the elements by writing them

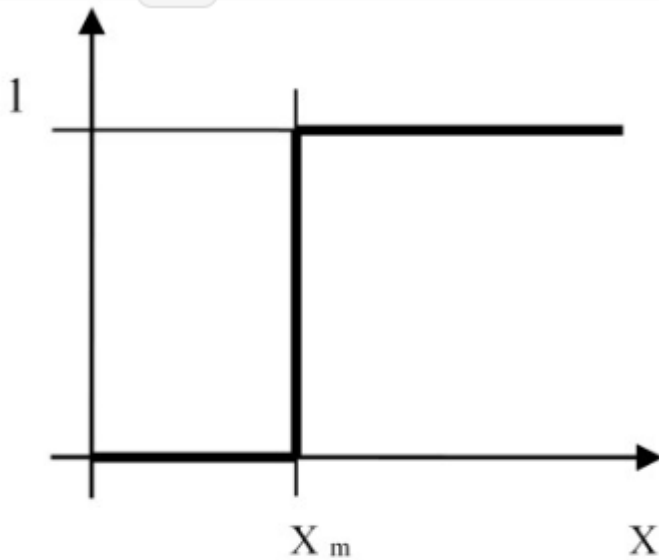
List the natural, odd integers from one to ten:

$H = \{1, 3, 5, 7, 9\}$

or

$H = \{n : n \text{ positive, odd number and } n < 10\}$

The sets (and their belongings) are usually set in a sharp way.



$$X \geq X_m$$

In information technology it is possible to use sets which contain fuzzy elements as well.

In these cases the value of how an element is connected to a given set is defined by a 'membership function'  $\mu_m(x)$

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