



## BELONGINGS

### Why

We want to write about objects belonging to sets.

### Definition

Let  $A$  denote a set; in other words, an intangible object which has some objects as members. Let  $a$  denote an object. Recall that if two names refer to the same object, the names are equal. Similarly, if the object denoted by  $a$  is an element of the set denoted by  $A$ , then we say that the former name belongs to the latter name. We write that the name  $a$  belongs to the name  $A$  by  $a \in A$ .

We read this sequence of symbols aloud as “a in A.” The symbol  $\in$  is a stylized lower case Greek letter  $\varepsilon$ , which is a mnemonic for  $\varepsilon\sigma\tau\acute{\iota}$  which means “belongs” in ancient greek. Since in English,  $\varepsilon$  is read aloud “ehp-sih-lawn,”  $\in$  is also a mnemonic for “element of”. Of course, we must take care. The first name is not an element on the second name. Rather, the object denoted by the first name is an element of the set (object) denoted by the second name.

We tend to denote sets by upper case latin letters: for example,  $A$ ,  $B$ , and  $C$ . To aid our memory, we tend to use the lower case form of the letter for an element of the set. For example, let  $A$  and  $B$  denote nonempty sets. We tend to denote by  $a$  an object which is an element of  $A$ . And similarly, we tend to denote by  $b$  an object which is an element of  $B$ .



