



### Why

We can give the same object two different names.

### Definition

An object *is* itself. If the object denoted by one name is the same as the object denoted by a second name, then we say that the two names are *equal*. The object associated with a *name* is the *identity* of the name.

Let  $A$  denote an object and let  $B$  denote an object. Here we are using  $A$  and  $B$  as placeholders. They are names for objects, but we do not know—or care—which objects. We say “ $A$  equals  $B$ ” as a shorthand for “the object denoted by  $A$  is the same as the object denoted by  $B$ .” In other words,  $A$  and  $B$  are two names for the same object.

### Symmetry

Let  $A$  denote an object and let  $B$  denote an object. “ $A$  equals  $B$ ” means the same as “ $B$  equals  $A$ ”. The identity of the names is not dependent on the order in which the names are given. We call this the *symmetry of identity*. It means we can switch the spots of  $A$  and  $B$  and say the same thing. In other words, there are two ways to make the statement.

### Reflexivity

Let  $A$  denote an object. Since every object is the same as itself, the object denoted by  $A$  is the same as the object denoted by  $A$ . We say “ $A$  equals  $A$ ”. In other words, every name equals itself. This fact is called the *reflexivity of identity*. A name is equal to itself because an object is itself.

