



## IDENTITY

### Why

We can give the same object two different names.

### Definition

An object *is* itself. If the object that two names refer to is the same, then we say that the first name *equals* the second name.

### Notation

We denote that the object named  $a$  and the object named  $b$  refer to the same object by  $a = b$ . We read this notation aloud as: "a is b" or "a equals b". We denote that the object  $a$  and  $b$  refer to different objects by  $a \neq b$ . We read this aloud as "a is not b" or "a does not equal b".

Other English readings of  $a = b$  include: "a is the same as b", "a is equivalent to b", "a refers to the same object as b."

### Properties

Given an object  $a$ ,  $a = a$  is true. We say that equivalence is *reflexive*. Given objects  $a$  and  $b$ ,  $a = b$  implies  $b = a$ . We say that equality is *symmetric*. Given objects  $a$ ,  $b$ , and  $c$ ,  $a = b$  and  $b = c$  implies  $a = c$ . We say that equality is *transitive*.



Identity



Objects