



## Equivalence Relations

### 1 Why

We want to handle at once all the objects of a set which are indistinguishable or equivalent in some aspect. We want to generalize the key properties of identity.

### 2 Definition

An *equivalence relation* is a reflexive, symmetric, and transitive relation.

#### 2.1 Notation

If  $R$  is an equivalence relation on a set  $A$ , we use the symbol  $\sim$ . When alone,  $\sim$  is read aloud as "sim," but we still read  $a \sim b$  aloud as "a equivalent to b."