



## QUANTIFIED STATEMENTS

### Why

We want symbols for talking about some object of a set or all objects of a set.

### Definition

#### Existential Quantifier

Consider the symbol  $\exists$ . We agree that it means “there exists an object”. We write  $\exists a \in A$ . We read this as “there exists an object in the set denoted by  $A$ , and denote that very same object by  $a$ ”. We call  $\exists$  the existential quantifier.

#### Universal Quantifier

Consider the symbol  $\forall$ . We agree that it means “for every object”. We write  $\forall a \in A$ . We read this as “for every object in the set denoted by  $A$ , and denote one such object by  $a$ ”.



Quantified Statements



Logical Statements



Statements



Identities

Sets



Objects