

**Definition:** For nonempty sets  $A, B$ , we say that **the cardinality of  $A$  is no bigger than the cardinality of  $B$** , and write  $|A| \leq |B|$ , to mean there is a one-to-one function with domain  $A$  and codomain  $B$ . Also, we define  $|\emptyset| \leq |B|$  for all sets  $B$ .