

SET NUMBERS

Why

We want to count the number of elements in a set.

Defining result

Proposition 1. A set can be equivalent to at most one natural number.¹

The number (or size) of a finite set is the unique natural number equivalent to it.

Notation

We denote the number of a set by |A|. Equally good notation, which we will not use in these sheets, is #(A).

Restriction to a finite set

If we restrict $E \mapsto |E|$ to the domain $\mathcal{P}(X)$ of some set X then $|\cdot|$: $\mathcal{P}(X) \to \omega$ is a function.²

Properties

Proposition 2. $A \subset B \longrightarrow |A| \leq |B|$

 $^{^{1}\}mathrm{A}$ proof will appear in future editions.

²Future editions will clarify this point.

