



RELATION COMPOSITES

Why

If x is related to y and y to z , then x and z are related.

Definition

Let R be a relation from X to Y and S a relation from Y to Z . The *composite relation* from X to Z contains the pair $(x, z) \in (X \times Z)$ if and only if there exists a $y \in Y$ such that $(x, y) \in R$ and $(y, z) \in S$. This composite relation is sometimes called the *relative product*.

Notation

We denote the composite relation of R and S by $R \circ S$ or RS .

Example

Let X be the set of people and let R be the relation in X “is a brother of” and S be the relation in X “is a father of”. Then RS is the relation “is an uncle of”.

Properties

Composition of relation is associative but not commutative.¹

¹A fuller account will appear in future editions.

