Definition (Semigroup)

A *semigroup* **S** is:

Constituents

1. A set **S**;
2. A binary operation $\mathbin{\overset{\circ}{,}} : \mathbf{S} \times \mathbf{S} \to \mathbf{S}$ called *composition*

Conditions

1. Associative law

$$(x \mathbin{\overset{\circ}{,}} y) \mathbin{\overset{\circ}{,}} z = x \mathbin{\overset{\circ}{,}} (y \mathbin{\overset{\circ}{,}} z),$$

for all $x, y, z \in \mathbf{S}$.