Definition (Semigroup). A *semigroup* **S** is:

Constituents

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

Conditions

1. Associative law

$$(x \fatsemi y) \fatsemi z = x \fatsemi (y \fatsemi z)$$

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