

M0 Categories

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1 Categories

Definition 1 (Category). A *category* consists of:

- a collection of *objects*.
- for any objects A and B , a collection of *maps* from A to B . We write $f : A \rightarrow B$ iff f is a map from A to B .
- for any object A , an *identity map* $1_A : A \rightarrow A$
- for any maps $f : A \rightarrow B$ and $g : B \rightarrow C$, a map $g \circ f : A \rightarrow C$

such that:

Identity Laws For any map $f : A \rightarrow B$, we have $1_B \circ f = f \circ 1_A = f : A \rightarrow B$

Associative Law For any maps $f : A \rightarrow B$, $g : B \rightarrow C$ and $h : C \rightarrow D$, we have $h \circ (g \circ f) = (h \circ g) \circ f : A \rightarrow D$