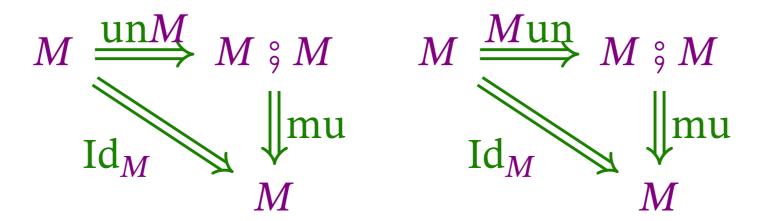
Definition (Monad). Let **C** be a category. A *monad* on **C** consists of:

- 1. A functor $M: \mathbb{C} \to \mathbb{C}$.
- 2. A natural transformation un : $Id_{\mathbb{C}} \Rightarrow M$ called *unit*.
- 3. A natural transformation mu : $M \, ; M \Rightarrow M$ called *composition* or *multiplication*.

The constituents must satisfy left and right unitality



and associativity

$$\begin{array}{ccc}
M & \stackrel{\circ}{\circ} M & \stackrel{\circ}{\circ} M & \stackrel{M}{\Longrightarrow} M & \stackrel{\circ}{\circ} M \\
\downarrow & & & & & & & & & & & & \\
\downarrow & & & & & & & & & & & \\
M & \stackrel{\circ}{\circ} M & & & & & & & & & \\
M & \stackrel{\circ}{\circ} M & & & & & & & & & \\
\end{array}$$

$$\begin{array}{cccc}
M & \stackrel{\circ}{\circ} M & & & & & & & & \\
M & & & & & & & & & \\
\end{array}$$