Definition (Preorder). A *preorder* is a tuple $\langle \mathbf{P}, \leq_{\mathbf{P}} \rangle$, where $\mathbf{P}$ is a set (also called the *carrier set*), together with a relation $\leq_{\mathbf{P}}$ that is

1. *Reflexive*: For all $x \in \mathbf{P}$, $x \leq_{\mathbf{P}} x$.
2. *Transitive*: For all $x, y, z \in \mathbf{P}$, if $x \leq_{\mathbf{P}} y$ and $y \leq_{\mathbf{P}} z$, then $x \leq_{\mathbf{P}} z$.