

Definition (Partially ordered set)

A pre-ordered set $\mathbf{P} = \langle \mathbf{P}, \leq_{\mathbf{P}} \rangle$ is a *partially-ordered set (poset)* if the relation $\leq_{\mathbf{P}}$ is *antisymmetric*. In other words, if:

$$\frac{p \leq_{\mathbf{P}} q \quad q \leq_{\mathbf{P}} p}{p = q}.$$