

**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:

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