Definition (Power set as lattice)
Given a set $\mathbf{S}$, its power set $\mathscr{P}\,\mathbf{S}$ (the set of all subsets) is a lattice where, given $\mathbf{A}, \mathbf{B} \in \mathscr{P}\,\mathbf{S}$:

- Order is given by inclusion:

$$\mathbf{A} \preceq \mathbf{B} := \mathbf{A} \subseteq \mathbf{B};$$

- The join is given by the union of sets:

$$\mathbf{A} \vee \mathbf{B} := \mathbf{A} \cup \mathbf{B};$$

- The meet is given by the intersection of sets:

$$\mathbf{A} \wedge \mathbf{B} := \mathbf{A} \cap \mathbf{B};$$

- The top element is the set $\mathbf{S}$ itself:

$$\top = \mathbf{S};$$

- The bottom element is the empty set:

$$\bot = \emptyset.$$