Auxiliary Notions (1)

- Empty set legitimates $\emptyset$ where:

  $\forall \mathtt{x}.\ \neg(\mathtt{x} \in \emptyset)$

- Union legitimates $\bigcup$ where:

  $\forall \mathtt{s}\ \mathtt{x}.\ \mathtt{x} \in \bigcup \mathtt{s} = (\exists \mathtt{u}.\ \mathtt{x} \in \mathtt{u} \wedge \mathtt{u} \in \mathtt{s})$

- Power sets makes use of $\subseteq$ where:

  $\mathtt{s} \subseteq \mathtt{t} = \forall \mathtt{x}.\ \mathtt{x} \in \mathtt{s} \Rightarrow \mathtt{x} \in \mathtt{t}$

  and legitimates $\mathbb{P}$ where:

  $\forall \mathtt{s}\ \mathtt{x}.\ \mathtt{x} \in \mathbb{P}\ \mathtt{s} = \mathtt{x} \subseteq \mathtt{s}$

- Separation legitimates the notations:
  - $\{\mathtt{x} \in \mathtt{s} \mid \mathtt{p[x]}\}$
  - $\{\mathtt{t}[x_1,\ldots,x_n] \in \mathtt{s} \mid \mathtt{p}[x_1,\ldots,x_n]\}$

  and $\cap$ (used in Foundation) where:

  $\mathtt{s} \cap \mathtt{t} = \{\mathtt{x} \in \mathtt{s} \mid \mathtt{x} \in \mathtt{t}\}$