Ordered Pairs and Products

- Ordered pairs:

  $\langle \mathtt{x}, \mathtt{y} \rangle$ `=` $\{\{\mathtt{x}\}, \{\mathtt{x},\mathtt{y}\}\}$

- $\langle \mathtt{x}_1, \mathtt{x}_2, \ldots, \mathtt{x}_{n-1}, \mathtt{x}_n \rangle$

  abbreviates

  $\langle \mathtt{x}_1, \langle \mathtt{x}_2, \ldots, \langle \mathtt{x}_{n-1}, \mathtt{x}_n \rangle \ldots \rangle \rangle$

- Cartesian products:

  $$\mathtt{X} \times \mathtt{Y} = \{\langle \mathtt{x1}, \mathtt{x2} \rangle \in \mathbb{P}(\mathbb{P}(\mathtt{X} \cup \mathtt{Y})) \mid \mathtt{x1} \in \mathtt{X} \wedge \mathtt{x2} \in \mathtt{Y}\}$$

- $\mathtt{x} \mapsto \mathtt{y}$ is a synonym for $\langle \mathtt{x}, \mathtt{y} \rangle$