A binary relation is called **reduction** and is denoted by $\rightarrow$. Let A be a set of elements:

- $\xrightarrow{0} := \{(x,x) | x \in A\}$ identity
- $\xrightarrow{i+1} := \xrightarrow{i} \circ \rightarrow$ $(i+1)$-fold composition, $i \geq 0$
- $\xrightarrow{+} := \bigcup_{i>0} \xrightarrow{i}$ transitive closure
- $\xrightarrow{=} := \rightarrow \cup \xrightarrow{0}$ reflexive closure
- $\xrightarrow{-1} := \{(y,x) | x \rightarrow y\}$ inverse
- $\leftarrow := \xrightarrow{-1}$
- $\leftrightarrow := \leftarrow \cup \rightarrow$ symmetric closure

- $\xleftrightarrow{+}$ symmetric, transitive closure

- $\xleftrightarrow{*}$ reflexive, symmetric, transitive closure

- x is reducible iff there is y such that $x \rightarrow y$

- x is in normal form (irreducible) iff it is not reducible

- y is a normal form of x iff $x \xrightarrow{*} y$ and y is in normal form

- if y is the unique normal form of x, we denote it $x \downarrow$

- x and y are joinable if there is a z such that $x \xrightarrow{*} z \xleftarrow{*} y$, we write $x \downarrow y$.