

Definition

Let A, B be sets. A **(binary) relation from A to B** is a subset

$$\mathcal{R} \subseteq A \times B.$$

- If $(x, y) \in \mathcal{R}$, we also write $x\mathcal{R}y$ and say “ x relates to y ”.
- If $(x, y) \notin \mathcal{R}$, we also write $x\not\mathcal{R}y$ and say “ x does not relate to y ”.
- If $A = B$, then $\mathcal{R} \subseteq A \times A$ and we say \mathcal{R} is a **relation on A** .