

# Try a few of your own

Decide whether each of these relations are Reflexive, symmetric, antisymmetric, and transitive.

$\subseteq$  on  $\mathcal{P}(\mathcal{U})$

$\geq$  on  $\mathbb{Z}$

$>$  on  $\mathbb{R}$

$|$  on  $\mathbb{Z}^+$

$|$  on  $\mathbb{Z}$

$\equiv (\text{mod } 3)$  on  $\mathbb{Z}$

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Symmetry: for all  $a, b \in S$ ,  $[(a, b) \in R \rightarrow (b, a) \in R]$

Antisymmetry: for all  $a, b \in S$ ,  $[(a, b) \in R \wedge a \neq b \rightarrow (b, a) \notin R]$

Transitivity: for all  $a, b, c \in S$ ,  $[(a, b) \in R \wedge (b, c) \in R \rightarrow (a, c) \in R]$

Reflexivity: for all  $a \in S$ ,  $[(a, a) \in R]$