

## Definition: Partition

*A partition of a set  $X$  is a set  $P$  of non-empty subsets of  $X$  such that every element  $x \in X$  is in exactly one of these subsets.  
In other words,  $P$  satisfies the following properties*

- $\emptyset \notin P$
- $\bigcup_{A \in P} A = X$
- $\forall A, B \in P, A \neq B \implies A \cap B = \emptyset$