Set notation

Set Notation

Key idea

A set is a collection of distinct items, written in curly brackets, e.g. $A = \{1, 2, 3\}$. $x \in A$ means x is in A; $x \notin A$ means it is not.

Union and intersection

$A = \{1, 2, 3, 4\}$, $B = \{3, 4, 5\}$.
$A \cap B = \{3, 4\}$ (in both).
$A \cup B = \{1, 2, 3, 4, 5\}$ (in either).

Complement

$U = \{1, 2, 3, 4, 5, 6\}$, $A = \{2, 4, 6\}$.
$A' = \{1, 3, 5\}$: everything in U that is not in A.

Common mistake

A set does not count repeats: $\{1, 2, 2, 3\}$ and $\{1, 2, 3\}$ are the same set.

= copy this into your book. Boxes without a pencil are just to read.

Set notation

Subsets and Reading Notation

Key idea

$A \subset B$ means every element of A is also in B. $n(A)$ means the number of elements in A, and $\varnothing$ is the empty set.

Subset and difference

$A = \{2, 4\}$, $B = \{1, 2, 3, 4, 5\}$: $A \subset B$.
$B \setminus A = \{1, 3, 5\}$ (in B, not A).

Reading notation

$x \in A \cap B$: x is in both. $x \notin A \cup B$: x is in neither. Say each symbol as a short sentence.

Common mistake

Mixing up union and intersection – union combines, intersection keeps only the overlap.

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