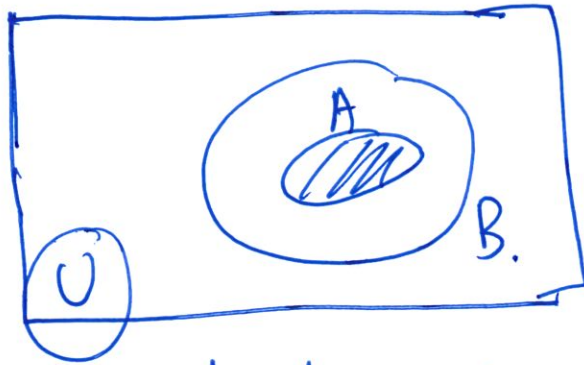


Subsets

①

What does subset mean?



Subset - all the elements of A must be in B .

A is contained in B .

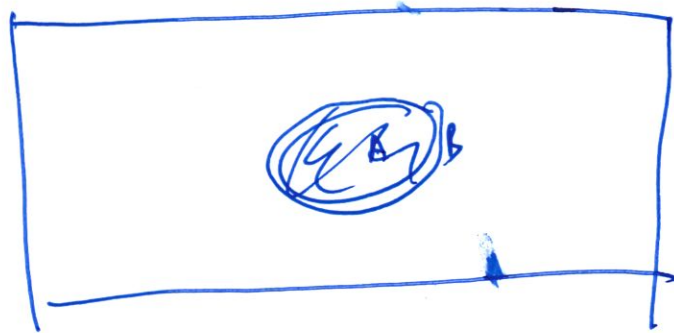
The notation is $A \subseteq B$.

$$B \subseteq U$$

$$\emptyset \subseteq A$$

The empty set is subset of every set.

$$A \subseteq A.$$

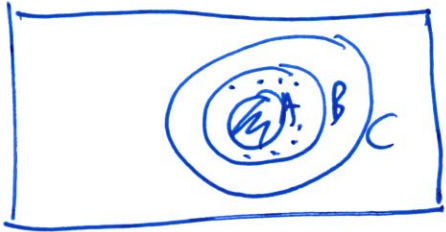


$$a \leq b$$
$$a < b.$$

$A \subset B$ A is proper subset of B

$A \subseteq B$ A is a subset of B

$$A \subseteq B \subseteq C$$



Ex: $A = \mathbb{N}$ & $B = \mathbb{Z}$.

Soln: $A = \{1, 2, 3, 4, \dots\}$

$B = \{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$

$A \subseteq B$.

$A = \mathbb{Z}$ & $B = \mathbb{Q}$ rational nos.

$B = \{-\frac{1}{2}, \frac{1}{2}, \frac{1}{3}, \frac{6}{5}, \frac{3}{4}, \dots, 1000, \dots\}$

$A \subseteq B$.

$A = \mathbb{Q}$ & $B = \mathbb{R}$.

$A \subseteq B$

(d) ~~$A = \mathbb{Q}, B = \mathbb{R}$~~
 $A = \mathbb{C}, B = \mathbb{R}. \quad B \subseteq A.$

$$A = \{x \in \mathbb{Z} \mid -5 \leq x \leq 5\}$$

(3)

$$B = \{x \in \mathbb{Z} \mid x^2 - 1 = 0\}$$

$$C = \{x \in \mathbb{R} \mid 2x^2 - x = 0\}$$

$$D = \{x \in \mathbb{Q} \mid 0 \leq x \leq 1\}$$

$$A = \{-5, -4, \dots, -1, 0, 1, \dots, 5\}$$

$$B = \{-1, 1\}$$

$$B \subseteq A.$$

$$C = \left\{0, \frac{1}{2}\right\}$$

$$C \not\subseteq A$$

$$C \not\subseteq B$$

$$D = \left\{0, \frac{1}{10}, \dots, 1\right\}$$

$$D \not\subseteq C$$

$$C \subseteq D$$