(Exercises 1.3.(1–10).)

$-12 \in \mathbb{N}$.

$-12 \in \mathbb{W}$.

$-12 \in \mathbb{Z}$.

$-12 \in \mathbb{Q}$.

$-12 \in \mathbb{R}$.

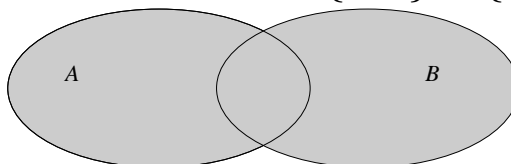$\frac{1}{56} \in \mathbb{N}$.

$\frac{1}{56} \in \mathbb{W}$.

$\frac{1}{56} \in \mathbb{Z}$.

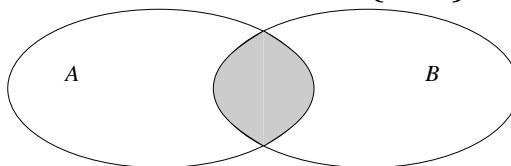$\frac{1}{56} \in \mathbb{Q}$.

$\frac{1}{56} \in \mathbb{R}$.

Union

$$A \cup B = \{ \; x \mid x \in A \text{ or } x \in B \}$$

$$\{1,2,3\} \cup \{2,3,4\} \;=\; \{1,2,3,4\}$$
$$\{1,2\} \cup \{3,4\} \;=\; \{1,2,3,4\}$$
$$\{1,2\} \cup \{1,2,3\} \;=\; \{1,2,3\}$$

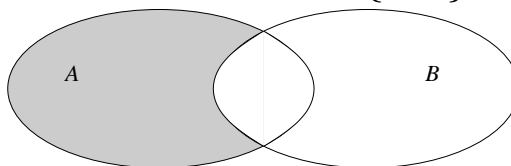## Intersection

$$A \cap B = \{ \; x \mid x \in A \text{ and } x \in B \}$$

$$\{1,2,3\} \cap \{2,3,4\} \;=\; \{2,3\}$$
$$\{1,2\} \cap \{3,4\} \;=\; \emptyset$$
$$\{1,2\} \cap \{1,2,3\} \;=\; \{1,2\}$$

Difference

$$A - B = \{ \; x \mid x \in A \text{ and } x \notin B \}$$

$$\{1,2,3\} - \{2,3,4\} \;=\; \{1\}$$
$$\{1,2\} - \{3,4\} \;=\; \{1,2\}$$
$$\{1,2\} - \{1,2,3\} \;=\; \emptyset$$

(Exercises 1.4.(11–18).)

$-12 \in \mathbb{R}^-$.

$\mathbb{A} \subseteq \mathbb{C}$.

$\mathbb{R} \subseteq \mathbb{C} \cap \mathbb{R}^-$

$4 \in \mathbb{C}$.

$\mathbb{Q} \cap \mathbb{T} = \emptyset$.

$\frac{1}{63} \in \mathbb{Q} - \mathbb{R}$.

$\mathbb{Z} - \mathbb{R}^- = \mathbb{W}$.

$\mathbb{T} \cup \mathbb{Z} \subseteq \mathbb{A}$.