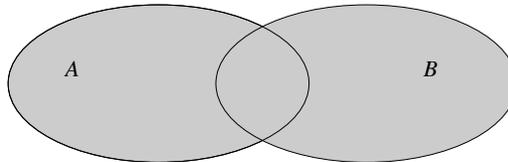


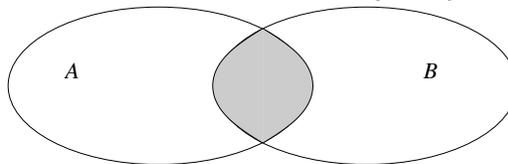
*Union*

$$A \cup B = \{ x \mid x \in A \text{ or } x \in B \}$$
$$\begin{aligned} \{1, 2, 3\} \cup \{2, 3, 4\} &= \{1, 2, 3, 4\} \\ \{1, 2\} \cup \{3, 4\} &= \{1, 2, 3, 4\} \\ \{1, 2\} \cup \{1, 2, 3\} &= \{1, 2, 3\} \end{aligned}$$



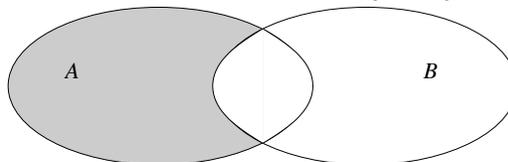
*Intersection*

$$A \cap B = \{ x \mid x \in A \text{ and } x \in B \}$$
$$\begin{aligned} \{1, 2, 3\} \cap \{2, 3, 4\} &= \{2, 3\} \\ \{1, 2\} \cap \{3, 4\} &= \emptyset \\ \{1, 2\} \cap \{1, 2, 3\} &= \{1, 2\} \end{aligned}$$



*Difference*

$$A - B = \{ x \mid x \in A \text{ or } x \notin B \}$$
$$\begin{aligned} \{1, 2, 3\} - \{2, 3, 4\} &= \{1\} \\ \{1, 2\} - \{3, 4\} &= \{1, 2\} \\ \{1, 2\} - \{1, 2, 3\} &= \emptyset \end{aligned}$$



(Exercises 1.4.(11–18).)

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

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

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

$$4 \in \mathbb{C}.$$

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

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

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

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