

1) $A = \{x \in \mathbb{R} \mid 42 \leq x < 50\}$ → $2 \times A \mid 2 \times \in$
 $B \hat{=} \text{alle durch 7 teilbaren nat\u00fcrlichen Zahlen kleiner 45}$

a) $A \cap B$ b) $A \cup B$ c) $A \setminus B$ d) $B \setminus A$

2) $A = \{x \in \mathbb{R} \mid 1 \leq x \leq 6\}$
 $B = \{0; 1; 2; 3; 4; 5\}$
 $C = \{x \in \mathbb{N} \mid x \geq 2\}$
 $D = \{x \in \mathbb{R} \mid x < 6\}$

a) $A \cap B$ d) $C \setminus A$
b) $A \setminus D$ e) $B \cap C$
c) $A \cap C$ f) $B \cup C$
g) $A \setminus C$

3) $A = \{1; 10\}$
 $B = \{x \in \mathbb{N} \mid 1 \leq x \leq 10\}$
 $C = \{x \in \mathbb{Z} \mid x > 1 \wedge x < 10\}$

$\begin{matrix} \uparrow & & \uparrow \\ \mathbb{I} & & \cup \mathbb{D} \end{matrix}$

a) $A \setminus C$
b) $B \setminus (A \cup C)$
c) $B \cup C$
d) $B \cap C$

$$1) a) A \cap B = \{42\}$$

$$b) \{x \in \mathbb{R} \mid 42 \leq x < 50\} \cup \{7; 14; 21; 28; 35\}$$

$$A \cup B = \{x \in \mathbb{R} \mid 42 \leq x < 50 \cup x \in \{7; 14; 21; 28; 35\}\}$$

$$A \cup B = \{x \in \mathbb{R} \mid 42 \leq x < 50 \cup (x \bmod 7 = 0 \wedge (x > 0 \wedge x < 42))\}$$

$$A \cup B = \{x \in \mathbb{R} \mid 42 \leq x < 50 \cup \underbrace{\{x \in \mathbb{N} \mid x \bmod 7 = 0\}}_{\substack{\wedge \\ \vee}} \underbrace{\{x < 45\}}_{\wedge}\}$$

$$2) a) A \cap B = \{1; 2; 3; 4; 5\}$$

$$b) A \cap D = \{6\}$$

$$c) A \cap C = \{2; 3; 4; 5; 6\}$$

$$d) C \setminus A = \{x \in \mathbb{N} \mid x > 6\}$$

$$e) B \cap C = \{2; 3; 4; 5\}$$

$$f) B \subset C = \{x \in \mathbb{Z} \mid x \geq 0\} \quad \mathbb{N}_0 \quad x \in \mathbb{N} \cup x \in \{0\}$$

$$g) A \setminus C = \{x \in \mathbb{R} \setminus \{2; 3; 4; 5; 6\} \mid 1 \leq x \leq 6\}$$

$$1) c) A \cap B = \{x \in \mathbb{R} \mid 47 < x < 50\}$$

$$d) B \setminus A = \{7; 14; 21; 28; 35\}$$

$$3) \text{ a) } A \setminus C = \{-1; 10\}$$

$$A \setminus B = \{\}$$

$$\text{b) } B \setminus (A \cup C) = \{\}$$

$$\text{c) } B \cup C = B$$

$$\text{d) } \mathbb{Z} \cap C = \mathbb{Z}$$

$A \hat{=} \text{ durch } 5 \text{ teilbare}$
ganze Zahlen

$$B = \{-10; -9; \dots; 9; 10\}$$

$$\text{a) } A \cap B$$

$$\text{b) } A \cup B$$

$$\text{c) } A \setminus B$$

$$\text{d) } B \setminus A$$

$$A \cap B = \{-10; -5; 0; 5; 10\}$$

$$A \cup B = \{x \in \mathbb{Z} \mid x \bmod 5 = 0 \vee -9 \leq x \leq 9\}$$

$$A \setminus B = \{x \in \mathbb{Z} \setminus \{-10; -5; 0; 5; 10\} \mid x \bmod 5 = 0\}$$

$$B \setminus A = \{\pm 9; \pm 8; \pm 7; \pm 6; \pm 4; \pm 3; \pm 2; \pm 1\}$$