

Lösungen: Mengenlehre

1. a) $\{R, E, C, H, N\}$ b) $\{Z, I, F, E, R\}$ c) $\{E, L, M, N, T\}$
2. a) $A = \{2, 3, 4\}$ e) $E = \{-4, -3, -2, -1\}$
b) $B = \{-1, 0, 1, 2, 3, 4\}$ f) $F = \{-3, -2\}$
c) $C = \{0, 1, 2\}$ g) $G = \{0, 1, 2, 3\}$
d) $D = \{-2, -1, 0, 1, 2, 3\}$ h) $H = \{5, 6\}$
3. a) $A = \{x \in \mathbb{N} \mid 4 \leq x \leq 6\}$ d) $D = \mathbb{N}$
b) $B = \{x \in \mathbb{Z} \mid -1 \leq x \leq 1\}$ e) $E = \{x \in \mathbb{Z} \mid x \leq -1\}$
c) $C = \{x \in \mathbb{N} \mid x \geq 5\}$ f) $F = \{x \in \mathbb{Z} \mid -2 \leq x \leq 2\}$
4. a) $A \cup B = \{1, 2, 3, 4\}$, $A \cap B = \{2\}$, $A \setminus B = \{1\}$, $B \setminus A = \{3, 4\}$
b) $A \cup B = \{4, 5, 6\}$, $A \cap B = \{4, 5, 6\}$, $A \setminus B = \emptyset$, $B \setminus A = \emptyset$
c) $A \cup B = \{x \in \mathbb{Z} \mid x \geq -3\}$, $A \cap B = \{0, 1, 2\}$, $A \setminus B = \{-3, -2, -1\}$, $B \setminus A = \{x \in \mathbb{N} \mid x \geq 3\}$
d) $A \cup B = \{-1, 0, 1, 2, 3, 4\}$, $A \cap B = \emptyset$, $A \setminus B = A$, $B \setminus A = B$
5. a) $C_A B = \{1, 2, 5\}$ c) $C_A B = \{x \in \mathbb{Z} \mid x \leq -1\}$
b) $C_A B = \{0, 2, 4, 6, 8, 9, 10\}$ d) $C_A B = \emptyset$
6. siehe Unterlagen
7. a) falsch c) falsch e) falsch
b) wahr d) wahr f) wahr
8. a) $A \cup B = \{1, 2, 3, 4\}$ f) $(A \cup B) \cup C = \{1, 2, 3, 4, 5\}$
b) $B \cup C = \{2, 3, 4, 5\}$ g) $(A \cap B) \cap C = \emptyset$
c) $A \cap B = \{2\}$ h) $(A \cup B) \cap C = \{4\}$
d) $A \cap C = \{4\}$ i) $(A \cap B) \cup C = \{2, 5\}$
e) $A \setminus B = \{1, 4\}$