IN-CLASS EXERCISES
(without grade)

EXERCISE 1: Given the sets under (1) and assuming that the universe of the discourse is \( \cup \{ A, B, C, D, E, F, G \} \), list the members of the sets in (2). Recall what the following symbols stands for:

- difference
- \( \cap \) intersection
- \( \cup \) union
- ' complement set
- \( \wp \) power set

(1)
- A = \{1, 2, 3, 4\}
- B = \{a, b, c, d, e, f\}
- C = \{1, 2\}
- D = \{1, 3, 4, a, b\}
- E = \{ \{1\}, 2, \{a, 1\} \}
- F = \{1, c, d\}
- G = \{d, e, 2, 3\}

(2)
- a. C – D =
- b. A \cap F =
- c. A \cap B =
- d. C' \cap F' =
- e. E \cap C =
- f. (C \cup D) – (C \cap D) =
- g. F \cup C =
- h. G' \cap C =
- i. A \cap E =
- j. (E \cup B) \cup D =
- k. \wp (C) =
EXERCISE 2: Express the natural language sentences in (3) in Propositional Logic, using the propositional key in (4) and the connectives \( \neg \) (negation), \( \land \) (conjunction), \( \lor \) (disjunction), \( \rightarrow \) (conditional), and \( \leftrightarrow \) (biconditional).

(3)     a. There was a party and Claudi went on the excursion.
        b. If Claudi went on the excursion and Simone went on the excursion too, Mat did not win the bet.
        c. There was a party only if Mat won the bet.

(4)     Key:
        \( p = \) There was a party.
        \( c = \) Claudi went on the excursion.
        \( s = \) Simone went on the excursion.
        \( m = \) Mat won the bet.

EXERCISE 3: Take the statements in (3a,b,c) as true. Does it follow from them that Simone went to the excursion or that she didn’t, or neither? Explain why.