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):

(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 $\neg$, $\land$, $\lor$, $\rightarrow$ and $\leftrightarrow$.

(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.