1.Generalities about the importance of proofs. Induction.

2. Sets and maps $f : A \to B$ between sets [=functions], Id map, injective, surjective and bijective maps, the set $Maps(A, B)$.

3.The definition of composition $f \circ g \in Maps(A, C)$ for $f \in Maps(B, C), g \in Maps(A, B)$.

4. Associativity and the lack of the commutativity.

5.The definition of the inverse map $f^{-1} \in Maps(B, A)$ for $f : A \to B$, the uniqueness of f^{-1}, the formula for $(f \circ g)^{-1}$, the criterion for the existence of inverse.

6.Automorphisms of a set. The difference between a finite and infinite sets.[If A is finite and $f : A \to A$ is an injective then f is an isomorphism.]

7. The definition of the symmetric group S_n, a way to write elements of S_n, elementary transpositions $s_i \in S_n, 1 \leq i \leq n-1$, the notions of a length $l(\sigma)$ of a permutations $\sigma \in S_n$.

8. Theorem. a)Any permutation σ can be written as a composition of elementary transpositions.

b) The smallest number of transpositions needed for a presentations of σ is equal to the length of σ.