

- Chapter 1
 - Given a map, check whether it is, injective, surjective or bijective (1.3).
 - The symmetric group S_n : group operation, number of elements (1.4). Also see Chapter 3.
 - Logical operations, proof methods (covered in class).
 - Mathematical induction (1.6).

- Chapter 2
 - Given a set and a binary operation, check if this is a group (2.1, 2.2).
 - Given a group G and a subset H of G , check whether H is a subgroup of G (2.3).
 - General examples of subgroups: centralizer, center, conjugate and cyclic subgroups (2.3), normal subgroups (homework 2).
 - Given a binary relation, check if this is an equivalence relation (homework 1, also see 2.4).
 - Given a group G and an element $x \in G$, find $o(x)$, the order of x (done examples in class, also see 2.4).

- Chapter 3: The symmetric group S_n (also see 1.4)
 - Notation for permutations: 1-line, 2-line, cycle.
 - Cycles and cycle decomposition. Transpositions. Given a permutation, decompose it into a product of disjoint cycles. (3.2)
 - Given two permutations, find their product. Given a permutation, find its inverse. (3.1)
 - Representation of groups as subgroups of S_n : group of symmetries of a regular polygon with n vertices, D_n ; group of symmetries of a non-square rectangle, V (Klein's 4-group). (3.2)
 - Even and odd permutations. The alternating group A_n , its order, properties and subgroups. (3.3)