

1. Suppose $G = \{e, a, b, c\}$ is the group defined by the following Cayley table.

$\cdot$	e	a	b	c
e	e	a	b	c
a	a	e	c	b
b	b	c	e	a
c	c	b	a	e

Let $H = \langle a \rangle$.

- (a) Find the left cosets of H in G .
 - (b) Find the right cosets of H in G .
 - (c) Determine $|G:H|$
2. Let A , B and C be groups. Suppose A is a proper subgroup of B and B is a proper subgroup of C . If $|A| = 30$ and $|C| = 900$, what are possible orders of B ? Explain your answer!
3. Let G be a group with $|G| = 95$. Let $x, y \in G$, where both x and y are nonidentity elements and $|x| \neq |y|$. Prove that the only subgroup of G that contains both x and y is G .