

ISOMORPHISM CLASSES, Finite groups up to order 7

Order 1:- Z_1 , the trivial group.

Order 2:- Z_2 , the cyclic group of order 2.

	0	1
0	0	1
1	1	0

Order 3:- Z_3 , the cyclic group of order 3.

	0	1	2
0	0	1	2
1	1	2	0
2	2	0	1

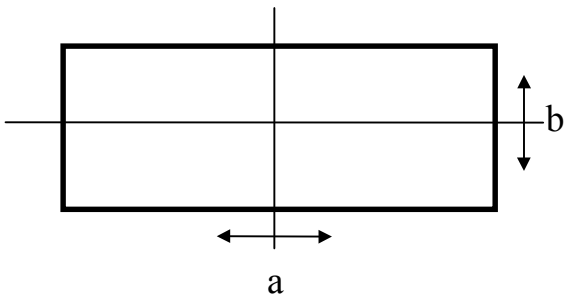
Order 4:- a) Z_4 , the cyclic group of order 4.

	0	1	2	3
0	0	1	2	3
1	1	2	3	0
2	2	3	0	1
3	3	0	1	2

b) $S(R)$, the symmetry group of the rectangle.

-The Klein four group,

$\{a, b / a^2 = b^2 = e, ab = ba\}$.



	e	a	b	r
e	e	a	b	r
a	a	e	r	b
b	b	r	e	a
r	r	b	a	e

Order 5:- Z_5 , the cyclic group of order 5.

	0	1	2	3	4
0	0	1	2	3	4
1	1	2	3	4	0
2	2	3	4	0	1
3	3	4	0	1	2
4	4	0	1	2	3

Order 6:- a) $-Z_6$, the cyclic group of order 6,
 $-\{a, b / a^3 = b^2 = e, ab = ba\}$.

	0	1	2	3	4	5
0	0	1	2	3	4	5
1	1	2	3	4	5	0
2	2	3	4	5	0	1
3	3	4	5	0	1	2
4	4	5	0	1	2	3
5	5	0	1	2	3	4

b) $-D_3$, the dihedral group of order 6 (symmetry group of an equilateral triangle),
 $-S_3$, the permutation group of $\{1, 2, 3\}$.

	e	r	s	a	b	c
e	e	r	s	a	b	c
r	r	s	e	b	c	a
s	s	e	r	c	a	b
a	a	c	b	e	s	r
b	b	a	c	r	e	s
c	c	b	a	s	r	e

a, b, c are the reflections through the respective medians,
r = rotate through 120° clockwise,
s = rotate through 240° clockwise.

Order 7:- Z_7 , the cyclic group of order 7.