groups of small order[*]

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Below is a list of all possible groups per order up to isomorphism.

Groups of prime order:

- All groups of prime order are isomorphic to a cyclic group of that order.

Groups of prime square order:

- All groups of order p^2, where p is a prime, are isomorphic to one of the following:

    - C_{p^2} *(Abelian)*: cyclic group of order p^2.
    - $C_p \times C_p$ *(Abelian)*: elementary abelian group of order p^2.

Groups of order 1:

- trivial group *(i.e. $\{e\}$)*.

Groups of order 6:

- C_6 *(Abelian)*: cyclic group of order 6.

- S_3 *(non-Abelian)*: symmetric group where $n = 3$.

Groups of order 8:

- C_8 *(Abelian)*: cyclic group of order 8.

- $C_4 \times C_2$ *(Abelian)*: direct product of two groups of a cyclic group of order 4 and a cyclic group of order 2.

- $C_2 \times C_2 \times C_2$ *(Abelian)*: direct product of three groups of a cyclic group of order 2.

- D_4 *(non-Abelian)*: octic group; dihedral group of degree 4.

- Q_8 *(non-Abelian)*: quaternion group.

Groups of order 10:

- C_{10} *(Abelian)*: cyclic group of order 10.

- D_5 *(non-Abelian)*: dihedral group of degree 5.

Groups of order 12:

- C_{12} *(Abelian)*: cyclic group of order 12.

- $C_2 \times C_6$ *(Abelian)*.

- A_4 *(non-Abelian)*: alternating group of degree 4.

- D_6 *(non-Abelian)*: dihedral group of degree 6.

- $\mathrm{Dic}(C_6)$ *(non-Abelian)*: dicyclic group of order 12. This is a generalized quaternion group Q_{12}.

Groups of order 14:

- C_{14} *(Abelian)*: cyclic group of order 14.

- D_7 *(non-Abelian)*: dihedral group of degree 7.

Groups of order 15:

- C_{15} *(Abelian)*: cyclic group of order 15.

References

[PJ] Pedersen, John: Groups of small order. http://www.math.usf.edu/ eclark/algctlg/small$_g$roups.html