**Mathematics**

* Prime finding(sieve)
* Prime factorization
* GCD, LCM
* Factorial
* Fibonacci
* Counting, Permutation, combination
* Exponentiation
* Modular Arithmetic
* Euclid, Extended Euclid
* Multiplicated Modular inverse
* Bitwise sieve
* Derangement

**Data Structure**

* Disjoint Set, Union Find
* Binary Search Tree
* Trie
* Segmented Tree
* Binary Indexed Tree(BIT)
* Heavy light Decomposition
* Range minimum Query
* Lowest Common Ancestor
* Orthogonal range search
* Suffix Array

**Searching**

* Binary Search
* Ternary Search

**String**

* Rabin karp Algo
* Finite Automata
* Knuth-Marris-Pratt Algo
* Aho korasick's Algo
* Zed Algorithm

**Dynamic Programming**

* Maximum Sum (1D, 2D)
* Coin Change
* Longest Common Subsequence
* Longest Increasing subsequence, Longest Decreasing Subsequence
* Matrix Chain multiplication
* Edit Distance
* Knapsack problem, 0-1 Knapsack
* Bitmask DP
* Traveling Salesman problem
* Digit DP
* Rock Climbing

**Greedy Algorithm**

* Activity selection/Task scheduling problem
* Huffman coding

**Graph Theory**

* Breadth First Search(BFS)
* Depth First Search(DFS)
* Topological Sort
* Strongly Connected Component(SCC) (Kosaraju)
* Minimum Spanning Tree(kruskal)
* All pair's shortest path(Floyd Warshall)
* Djkastra algorithm
* Bellman Ford Algorithm (Negative cycle)
* Bipartite Matching
* Max-Flow, Min-cost max-flow
* Cayley's Theorem
* Articulation Point, Bridge
* Euler tour/path
* Hamiltonian Cycle
* Stable Marriage problem
* Chinese Postman problem

**Number Theory**

* Josephus Problem
* Farey Sequence
* Euler's phi
* Catalan numbers
* Burnside's lemma/circular permutation
* Modular inverse
* Probability
* Chinese Remainder Theorem
* Gaussian Elimination method
* Dilworth's Theorem
* Matrix Exponentiation
* Determinant of a matrix
* RSA public key crypto System
* GCD
* LCM
* Euler Totient Function

**Computational Geometry**

* Pick's Theorem
* Convex hull
* Line Intersection
* Point in a polygon
* Area of a polygon
* Line Sweeping
* Polygon intersection
* Closest Pair

**Game Theory**

* Nim
* Sprague-grundy Number