# Brute Force

| Name | Efficiency | Notes |
|---|---|---|
| Towers of Hanoi | $O(2^n)$ | |
| Selection Sort | $O(n^2)$ | |
| Bubble Sort | $O(n^2)$ | |
| String Matching | O(m * n) | m = text, n = pattern |
| Closest Pair | $O(n^2)$ | |
| Convex Hull | $O(n^3)$ | |
| Travelling Salesman Problem | O(n!) | |
| Cheapest Job Assignment | O(n!) | |
| Knapsack | $O(2^n)$ | |
| Matrix Multiplication | $O(n^3)$ | |
| Polynomial Evaluation | $O(n^2)$ | |

# Decrease and Conquer

| Name | Efficiency | Notes |
|---|---|---|
| Insertion Sort | $O(n^2$ | Decrease by constant |
| Fake Coin Problem | O(logn) | Decrease by constant factor |
| Euclid's GCD | O(logn) | Variable size decrease |
| Interpolation Sort | O(loglogn+1) average, O(n) worst | |

# Divide & Conquer

| Name | Efficiency | Notes |
|---|---|---|
| Matrix Multiplication | $O(n^3)$ | |
| Strassen Method | $O(n^{2.8})$ | $7T(n/2) + n^2$ recurrence |
| Closest Pair | O(nlogn) | Presorting is O(logn), every other step is O(n) |

| Name | Efficiency | Notes |
|---|---|---|
| Convex Hull | O(nlogn) average, $O(n^2)$ worst | |
| Binomial Coefficient | $O(2^n)$ | |

# Transform & Conquer

| Name | Efficiency | Notes |
|---|---|---|
| Horner's Rule | O(n) | Polynomial evaluation |

# Space Time & DP

| Type | Worst Case | Best Case | Notes |
|---|---|---|---|
| Horspool | O(nm) | Θ(n) | Faster on average than brute-force, often at least as efficient as Boyer-Moore |
| Binomial Coefficient | $O(n^2)$ | O(n * k) | |
| Warshall | $O(n^3)$ | $O(n^3)$ | The space complexity can possibly be $O(n^2)$ |
| Floyd | $O(n^3)$ | $O(n^3)$ | |