

# ICPC Template Notebook

## Contents

### 1 Contest

1.1	template.cpp	1
1.2	.bashrc	1

### 2 Mathematics

### 3 DSA

### 4 Strings

### 5 Geometry

### A Common Formulas

A.1	Combinatorics	1
A.2	Probability	2
A.3	Graphs	2
A.4	Trigonometry	2

## Contest

### template.cpp

```
#include <bits/stdc++.h>
using namespace std;
```

```
using i64 = long long;
using i32 = int32_t;

i32 main() {
    cin.tie(0)->sync_with_stdio(0);
    return 0;
}
```

### .bashrc

```
com() {
    g++ "$1.cpp" -o "$1" -std=c++20
    ↪ -fsanitize=address,undefined,signed-integer-overflow -ggdb
}

coms() {
    g++ "$1.cpp" -o "$1" -std=c++20
}
```

## Mathematics

## DSA

## Strings

## Geometry

## Common Formulas

### Combinatorics

Catalan Numbers:

$$\frac{1}{n+1} \binom{2n}{n}$$

Generalized Catalan Numbers:

$$\frac{n-m+1}{n+1} \binom{n+m}{m}$$

## Probability

Expected number of trials before first success:

$$\frac{1}{p}$$

Probability of having exactly  $k$  successes after  $n$  trials:

$$\binom{n}{k} p^k (1-p)^{n-k}$$

## Graphs

## Trigonometry

Angle sum formulas:

$$\sin(a+b) = \sin(a)\cos(b) + \sin(b)\cos(a)$$

$$\cos(a+b) = \cos(a)\cos(b) - \sin(a)\sin(b)$$

$$\tan(a+b) = \frac{\tan(a) + \tan(b)}{1 - \tan(a)\tan(b)}$$