Types

Why

- Common sets
- Inferences of the data

Why (programming)

- Optimization
- Precision

Common Types

- Numbers
- Characters
- Booleans
- Sets

Numbers

- $\mathbb{N}, \mathbb{R}, \ldots$
- $\{5,12,7,14\}$

Characters

- English Letters
- Greek Letters
- Symbols

Booleans

- Binary
- On/Off
- True / False

Sets

- Arrays
- Vectors
- Other...

"The basic problem of enumerative combinatorics is that of counting the number of elements of a finite set."

-Richard P. Stanley

C++ Types

Numeric

- Int ← $\mathbb{Z}$
- Float ← $\mathbb{R}$

Characters

- Char ← Ascii

Boolean

- bool ← false (int 0) / true (int 1)

Sets

- Array ← ordered set of some Type
- Vector ← ordered set of some Type

"As the proof is obvious it will be left to the reader."

-Graduate Math texts...

Intro to C++

Every program

- Some text file with extension ".cpp"
- Some entrypoint

Usually

- Some "head" files
- Library inclusions
- Build system (GNU Make)

Lab

- Github repo CSCI20-FA25 setup
- C++ hello world working example