variables in C must be declared as a particular type (integers, floating-point numbers, or characters)

Integers:
- short
- int
- long
- unsigned short
- unsigned
- unsigned long

Floating Point:
- float
- double
- long double

Characters:
- char

Variables should be defined at the beginning of a function

Example:

```
#include <stdio.h>

int main ()
{
    int an_int = 100;
    float a_float = 0.1;

    a_float = a_float * 100.5;
    an_int = an_int / 7;
    printf("%d %d %.1f\n", an_int, a_float);

    return 0;
}
```
- printf: prints to screen desired output
  
  printf(“0/0/0 the “, an - int, a - float);
  
  printf integer ↑ ↑ specific integer ↑
  printf float ↓ ↓ specific float
  new line

- end every line with complete instruction with a ;
- return 0; for success
- \n: new line
- compile program with:
  
  g++ -Wall -O -o programname programname

- different variables require different amounts of space,
  must match variable type with desired use
  (ex. no decimals in integer)
- use "sizeof" to find number of bytes used
  (ex. sizeof(double) returns &)
- always initialize defined variables
- casting: conversion of one variable type to another
  - downward casting creates lower precision
  - upward casting creates higher precision

- preprocessor directive: private directions to compiler
  (ex. #include <stdio.h>), can #include or #define