Functions Inherited from C

As C++ evolved from C, many of the functions have been passed down to the new language. We'll discuss them in this lesson.

C++ inherited many numeric functions from C. They need the header < cmath >. The table below shows the names of these functions.

pow	sin	tanh	asinh	fabs
exp	cos	asin	aconsh	fmod
sqrt	tan	acos	atanh	frexp
log	sinh	atan	ceil	ldexp
log10	cosh	atan2	floor	modf

mathematical functions in the cmath library

Additionally, C++ inherits further mathematical functions from C. They are defined in the header < cstdlib >. Once more, the names.

abs	llabs	ldiv	srand
labs	div	lldiv	rand

Mathematical functions in < cstdlib >

All functions for integers are available for the types `int`, `long` and `long long`; all functions for floating point numbers are available for the types `float`, `double` and `long double`.

The numeric functions need to be qualified with the namespace `std`.

```cpp
#include <cmath>
#include <ctime>
#include <cstdlib>
#include <iostream>

int main(){

  std::cout << std::endl;

  std::cout << "cmath" << std::endl;

  std::cout << "std::pow(2, 10): " << std::pow(2, 10) << std::endl;
  std::cout << "std::pow(2, 0.5): " << std::pow(2, 0.5) << std::endl;
  std::cout << "std::exp(1): " << std::exp(1) << std::endl;
  std::cout << "std::ceil(5.5): " << std::ceil(5.5) << std::endl;
  std::cout << "std::floor(5.5): " << std::floor(5.5) << std::endl;
  std::cout << "std::fmod(5.5, 2): " << std::fmod(5.5, 2) << std::endl;
  double intPart;
  auto fracPart= std::modf(5.7, &intPart);
  std::cout << "fmod(5.7, &intPart): " << intPart << " + " << fracPart << std::endl;

  std::cout << "\ncstdlib: " << "\n\n";
  std::div_t divresult= std::div(14, 5);
  std::cout << "std::div(14, 5): " << divresult.quot << " reminder: " << divresult.rem << std

  // seed
  std::srand(time(nullptr));
  for ( int i=0; i <= 10; ++i){
    std::cout << "Dice: " << (rand()%6 + 1) << std::endl;
  }

  std::cout << std::endl;

}
```

Mathematic functions