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`.

```
#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