# Homework: Math for Developers

This document defines homework assignments from the [“C# Basics“ Course @ Software University](http://softuni.bg/courses/csharp-basics/). Please submit as homework a single txt/doc/docx file holding the answers of all below described problems.

## Some Primes

Find the 24th, 101st and 251st prime number.

The 24th prime number is 89

The 101st prime number is 547

The 251st prime number is 1597

## Some Fibonacci Primes

Check if the 24th, 101st and 251st prime numbers are part of the base Fibonacci number set. What is their position?

The 24th prime number (89) is part of the base Fibonacci number set. It is the 12th Fibonacci number\*.

The 101st prime number is (547) is NOT part of the Fibonacci number set.

The 251st prime number (1597) is part of the base Fibonacci number set. It is the 18th Fibonacci number\*.

\*Provided that the first Fibonacci number is 0

## Some Factorials

Find 100!, 171! and 250! Give all digits.

100! = 9.3326215443944152681699238856267e+157 = 9.332622\*10^157 =

=93326215443944152681699238856267000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000

171! = 1.2410180702176678234248405241031e+309 = 1.241018\*10^309 =

=1241018070217667823424840524103100000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000

250! = 3.2328562609091077323208145520244e+492 = 3.232856\*10^492 =

=3232856260909107732320814552024400000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000

## Calculate Hypotenuse

You are given three right angled triangles. Find the length of their hypotenuses.

1. Catheti: 3 and 4

3^2 + 4^2 = X^2;

X^2 = 25;

1. Catheti: 10 and 12

10^2 + 12^2 = X^2

X^2 = 244

X = 15.620499351813308788259445471518

1. Catheti 100 and 250

100^2 + 250^2 = X^2

X^2 = 72500

X = 269.2582403567252

## Numeral System Conversions

Convert 1234d to binary and hexadecimal numeral systems.

1234d = 10011010010b = 4D2hex

Convert 1100101b to decimal and hexadecimal numeral systems.

1100101b = 101d = 65hex

Convert ABChex to decimal and binary numeral systems.

ABChex = 2748d = 101010111100b

## Least Common Multiple

Find LCM(1234, 3456).

LCM(1234, 3456) =

GCD (1234, 3456) using the Euclidean algorithm:

3456 = 1234 \* 2 + 988

1234 = 988 \* 1 + 246

988 = 246 \* 4 + 4

**246 = 4 \* 61 + 2**

4 = 2 \* 2 + 0

* GCD (1234, 3456) = 2
* LMC (1234, 3456) = = 2 132 352