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.

1. Some Primes

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

89, 547, 1597

1. Some Fibonacci Primes

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

None of them is part of the Fibonacci number set

1. Some Factorials

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

100! = 9.3326215444\*10157 = 93326215443944152681699238856266700490715968264381621468592963895217599993229915608941463976156518286253697920827223758251185210916864000000000000000000000000

171! = 1.24101807 \*10309 = 1241018070217667823424840524103103992616605577501693185388951803611996075221691752992751978120487585576464959501670387052809889858690710767331242032218484364310473577889968548278290754541561964852153468318044293239598173696899657235903947616152278558180061176365108428800000000000000000000000000000000000000000

250! = 3.23285626 \*10492 = 3232856260909107732320814552024368470994843717673780666747942427112823747555111209488817915371028199450928507353189432926730931712808990822791030279071281921676527240189264733218041186261006832925365133678939089569935713530175040513178760077247933065402339006164825552248819436572586057399222641254832982204849137721776650641276858807153128978777672951913990844377478702589172973255150283241787320658188482062478582659808848825548800000000000000000000000000000000000000000000000000000000000000

1. Calculate Hypotenuse

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

1. Catheti: 3 and 4
2. Catheti: 10 and 12
3. Catheti 100 and 250

Triagle 1 – Hypotenuse is 5

Triagle 2 – Hypotenuse is 15.62

Triagle 3 – Hypotenuse is 269.26

1. Numeral System Conversions

Convert 1234d to binary and hexadecimal numeral systems.

1234 / 16 = 77 (2)

77 / 16 = 4 (D) 1234d = 0x4D2

4 / 16 = 0 (4)

1234 / 2 = 617 (0)

617 / 2 = 308 (1)

308 / 2 = 154 (0)

154 / 2 = 77 (0)

77 / 2 = 38 (1)

38 / 2 = 19 (0) 1234d = ‭0100 1101 0010‬b

19 / 2 = 9 (1)

9 / 2 = 4 (1)

4 / 2 = 2 (0)

2 / 2 = 1 (0)

1 / 2 = 0 (1)

Convert 1100101b to decimal and hexadecimal numeral systems.

1100101b = 1\*26 + 1\*25 + 1\*22 + 1\*20 = 64 + 32 + 4 + 1 = 101d

0110 0101b = 0x65

Convert ABChex to decimal and binary numeral systems.

0xABC = 1010 1011 1100b

0xABC = 10\*162 + 11\*161 + 13\*160 = 10\*256 + 11\*16 + 12\*1 = 2560 + 176 + 12 =

= 2748d

1. Least Common Multiple

Find LCM(1234, 3456).

|  |  |
| --- | --- |
| 1234, 3456  617, 1728  617, 864  617, 432  617, 216  617, 108  617, 54  617, 27  617, 9  617, 3  617, 1  1, 1 | 2  2  2  2  2  2  2  3  3  3  617 |
| LCM | 2132352 |