***This is my homework for lecture Math for Developers:***

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| *Problem 1. Some Primes:* | |
| 24 | 89 |
| 101 | [547](http://en.wikipedia.org/wiki/547_(number)) |
| 251 | 1597 |

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| *Problem 2. Some Fibonacci Primes* | |
| 24 | 11 - Fibonacci number; |
| 101 | not a Fibonacci number; |
| 251 | 17 - Fibonacci number; |

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| *Problem 3. Some Factorials* | | |
| 100! | 9.332622 E+157 | 93326215443944152681699238856266700490715968264381621468592963895217599993229915608941463976156518286253697920827223758251185210916864000000000000000000000000 |
| 171! | 1.24101807 E+309 | 1241018070217667823424840524103103992616605577501693185388951803611996075221691752992751978120487585576464959501670387052809889858690710767331242032218484364310473577889968548278290754541561964852153468318044293239598173696899657235903947616152278558180061176365108428800000000000000000000000000000000000000000 |
| 250! | 3.23285626 E+492 | 3232856260909107732320814552024368470994843717673780666747942427112823747555111209488817915371028199450928507353189432926730931712808990822791030279071281921676527240189264733218041186261006832925365133678939089569935713530175040513178760077247933065402339006164825552248819436572586057399222641254832982204849137721776650641276858807153128978777672951913990844377478702589172973255150283241787320658188482062478582659808848825548800000000000000000000000000000000000000000000000000000000000000 |

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| *Problem 4. Calculate Hypotenuse* | | |
| a=3, b=4, c=? | c^2 = 3^2 + 4^2 | c=5 |
| a=10, b=12, c=? | c^2 = 10^2 + 12^2 | C = 2√61 ≈ 15.62… (real) |
| a=100, b=250, c=? | c^2 = 100^2 + 250^2 | C = 50√29 ≈ 269.26... (real) |

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| *Problem 5. Numeral System Conversions* | | |
| 1234d | 1234/2 = 617 (0)  617/2 = 308 (1)  308/2 = 154 (0)  154/2 = 77 (0)  77/2 = 38 (1)  38/2 = 19 (0)  19/2 = 9 (1)  9/2 = 4 (1)  4/2 = 2 (0)  2/2 = 1 (0)  1/2 = 0  **10011010010b** | 1234/16 = 77 (2)  77/16 = 4 (13)  4  **4d2hex** |
| 1100101b | 1\*2^6 + 1\*2^5 + 0\*2^4 + 0\*2^3 + 1\*2^2 + 0\*2^1 + 1\*2^0 = 64 + 32 +0 +0 + 4 + 0 + 1 = **101d** | 101/16 = 6 (5)  **65hex** |
| ABChex | 10\*16^2 + 11\*16^1 + 12\*16^0 = 2560 + 176 + 12 = **2748d** | 2748/2 = 1374 (0)  1374/2 = 687 (0)  687/2 = 343 (1)  343/2 = 171 (1)  171/2 = 85 (1)  85/2 = 42 (1)  42/2 = 21 (0)  21/2 = 10 (1)  10/2 = 5 (0)  5/2 = 2 (1)  2/2 = 1 (0)  1/2 = 0  **101010111100b** |

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| *Problem 6. Least common multiple* | |
| a = 1234 , b = 3456 | Step 1: Find the GCD (Greatest Common Divisor ) of 1234 and 3456 which is **2;**  1234 = 1 , 2 , 617 , 1234;  3456 = 1 , 2 , 3 , 4 , 6 , 8 , 9 , 12 , 16 , 18 , 24 , 27 , 32 , 36 , 48 , 54 , 64 , 72 , 96 , 108 , 128 , 144 , 192 , 216 , 288 , 384 , 432 , 576 , 864 , 1152 , 1728 , 3456;  Step 2: Multiply the numbers 1234 and 3456 together ( 1234 \* 3456 = **4264704** );  Step 3: Divide the 4264704 with 2. (4264704/2 = **2132352**);  OR  (a\*b) / GCD (a, b) = (1234\*3456) / GCD (1234, 3456) = 4264704 / 2 = **2132352** |