**1) Primes:**

24th = 89

101st = 547

251st = 1597

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

-24th prime number 89 is a Fibonacci number with position 11.

-the 101st prime number 547 is not a Fibonacci number.

-the 251st prime number 1597 is a Fibonacci number with position 17.

==> used method for checking: if 5N^2 + 4 or 5N^2 - 4 equals a perfect square number i.e. it has an integer square root. "N" is the number we are checking.

**3) Factorials**

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

100! = 93326215443944152681699238856266700490715968264381621468592963895217599993229915608941463976156518286253697920827223758251185210916864000000000000000000000000

171! = 1241018070217667823424840524103103992616605577501693185388951803611996075221691752992751978120487585576464959501670387052809889858690710767331242032218484364310473577889968548278290754541561964852153468318044293239598173696899657235903947616152278558180061176365108428800000000000000000000000000000000000000000

250! = 3232856260909107732320814552024368470994843717673780666747942427112823747555111209488817915371028199450928507353189432926730931712808990822791030279071281921676527240189264733218041186261006832925365133678939089569935713530175040513178760077247933065402339006164825552248819436572586057399222641254832982204849137721776650641276858807153128978777672951913990844377478702589172973255150283241787320658188482062478582659808848825548800000000000000000000000000000000000000000000000000000000000000

==> source: <http://www.calculatorsoup.com/calculators/discretemathematics/factorials.php>

**4) Calculate Hypotenuse:** You are given three right angled triangles. Find the length of their hypotenuses.

1. Catheti: 3 and 4 hypotenuses = 5 🡺 a^2 + b^2 = c^2
2. Catheti: 10 and 12 hypotenuses = 15.620499351813308788259445471518
3. Catheti 100 and 250 hypotenuses = 269.25824
4. 035672520156253552457702

**5) Numeral System Conversions:**

Convert 1234d to binary and hexadecimal numeral systems.

Convert 1100101b to decimal and hexadecimal numeral systems.

Convert ABChex to decimal and binary numeral systems.

1234d to binary = 10011010010 1100101b to decimal = 101 ABC to decimal = 2748

1234d to hexadecimal = 4D2 1100101b to hexadecimal = 65 ABC to binary = 101010111100

**6) Least Common Multiple:** Find LCM(1234, 3456).

LCM(1234, 3456) = (1234\*3456)/2 =2132352