2 individual task in discrete math:

Edited at 4pm 24.4.2017.

s is your student number. k = s mod 10000. T = s mod 100. m = s mod 35. a = s mod 25.

L = s mod 10. $d\_{2}=\frac{T-L}{10}$. e = s mod 8. m7 = s mod 7. m6 = s mod 6. m4 = s mod 4. m3 = s mod 3.

m2 = s mod 2.

1. How many subsets are there in a set of m elements?

2. Prove $\sum\_{i=0}^{T}b^{i}=\frac{1-b^{T+1}}{1-b}$.

3. Prove the Triangular Number expression $\sum\_{c=0}^{j}c= \frac{j(j+1)}{2}$.

4. Prove the expression for $\sum\_{c=1}^{j}c^{L}$

5. Binary relation R on the set {1 to e+2} is defined so that *a*R*b* holds if and only if

 *a* divides *b*, with remainder. Find the matrix and draw the graph.

 Is it reflexive, symmetric, anti-symmetric, transitive, composite?

6. Binary relation R on the set {1 to e+2} is defined so that *a*R*b* holds if and only if

 *a* divides *b*, with NO remainder. Find the matrix and draw the graph.

 Is it reflexive, symmetric, anti-symmetric, transitive, composite?

7. Find Highest Common Divisor and Lowest Common Multiple of e+4 and L+4.

8. Convert T to e+2 and L+2 counting systems.

9. Calculate the largest prime number you can using your own computer code.

10. Give prime factorization of s.

11. Calculate C(9,e) and P(7,e). Give all the options for C(e+3,e).

12. In how many ways can you answer an exam with m+1 questions

 each of which has e+1 options for the answer?

13. Draw the histogram of tossing L+2 fair coins. Draw the histogram of the first e+3 digits of π.

14. Give the histogram of Benford of the first digit of e+2 the most populated countries.

Deadline: 30.4.2017 Sunday.