Getting used to Mathematical Thinking  $\mathbf{Exercises}^{st}$ 

INSTRUCTIONS: Answer the questions in this page by hand. Take a picture of it and upload it to Blackboard.

- 1. Using only empty sets (i.e. the only symbols you can use are left and right curly brackets) write a set with 3 elements in it.
- 2. Explain why  $\mathbb{Z}$  is not a group with respect to multiplication.
- 3. Create the multiplication table for  $\mathbb{Z}_4$ .
- 4. Explain why in  $\mathbb{Z}_n$ ,  $(n-1)_n + 1_n = 0_n$
- 5. Prove that In  $Z_5$ ,  $4_5 + x = 3_5$  has only one solution.
- 6. Explain the difference between a variable and a constant.

- 7. Explain why 2 \* x = 5 is an equation that has no solutions in Z.
- 8. Fractions were introduced as solutions of equations. By giving meaning to equation in plain English, fractions acquire concrete meaning and become an applications. Come up with an story whose plot would require the solution to the equation 6x = 3

9. Write below the names of Mathematicians in the video "Math Has a Fatal Flaw" and what they did.