

Math Around Us Erasmus+ Partnership



SHORT TERM-EXCHANGE FOR STUDENTS

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Students: Denisa Safta

Antonia Marchis

Roxana Gorcea

“Ana Aslan” Technical College – Cluj-Napoca, Romania



Erasmus+

Project Activities December-January:

- 1 Teaching the Math in IT materials from Hungary**
- 2 Blended Mobility - Graphical representation of functions in xl microsoft program**
- 3 Blended Mobility - Work in Powtoon**

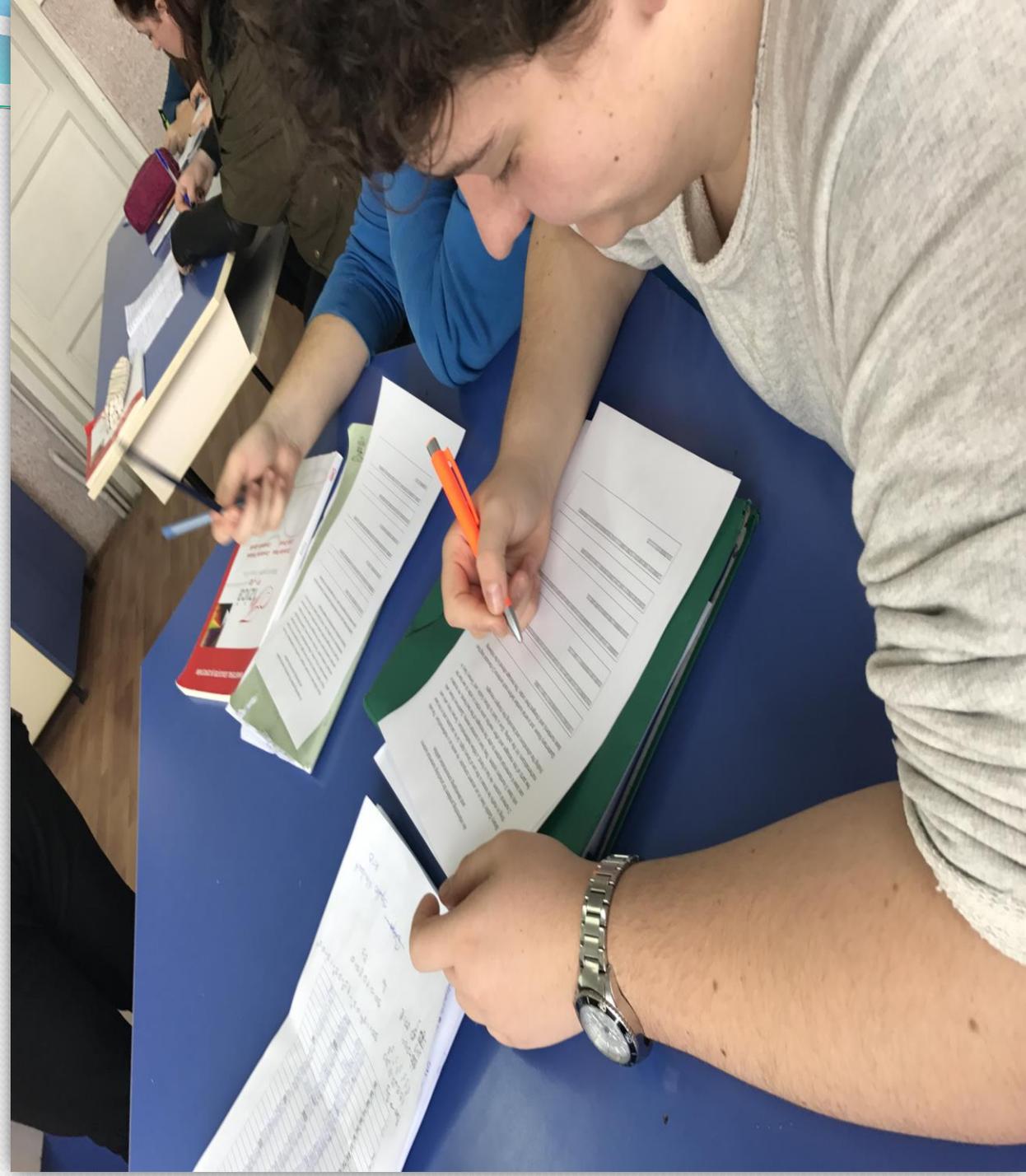


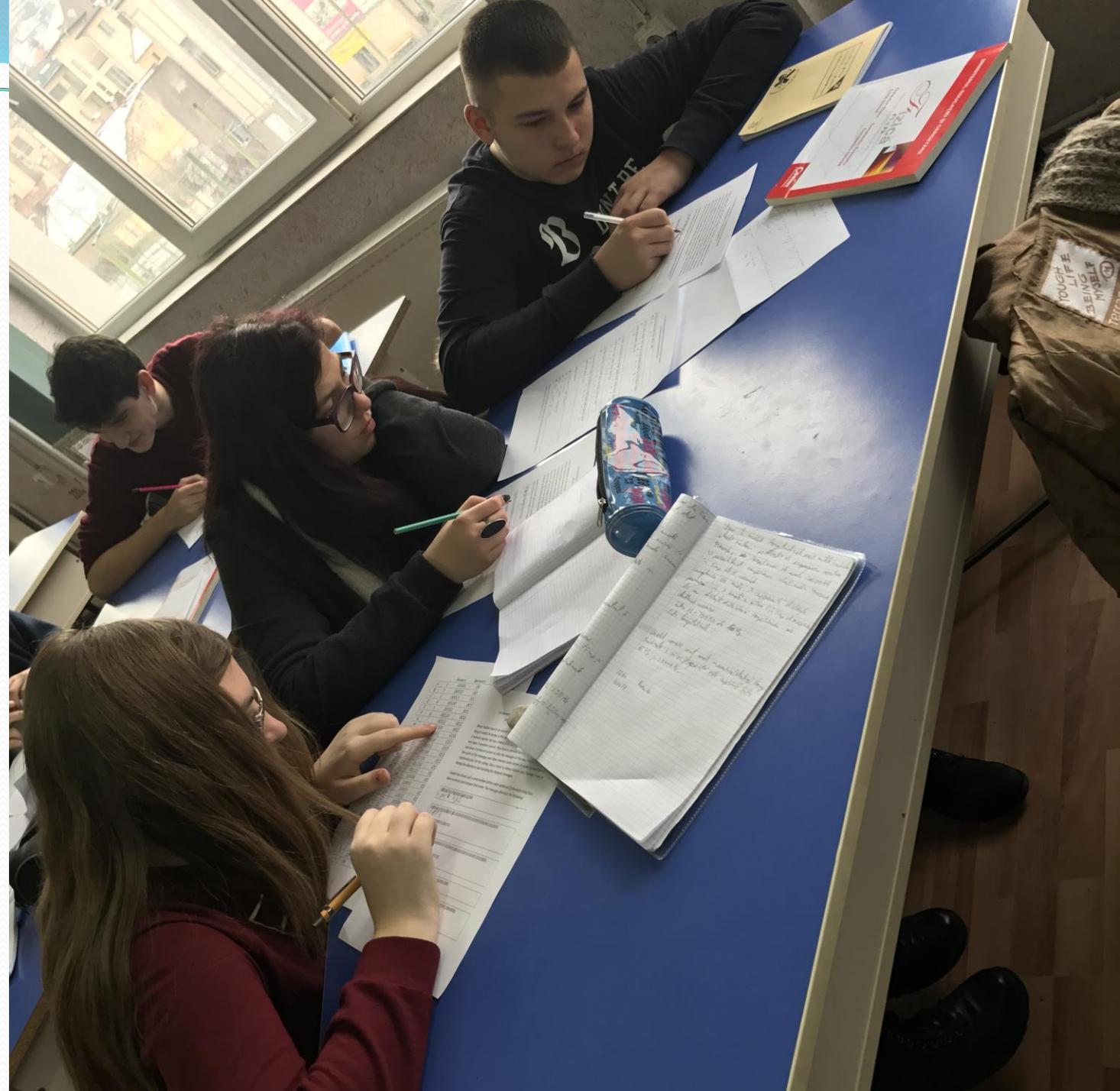
Activity 1

**Teaching the Math in IT materials
from Hungary
(grades: 11 B, 10A)**

A large projection screen in a classroom displays a table of character encodings. The table lists characters from A to X, their corresponding decimal values (1-24), and their representations in binary, ternary, and quaternary systems. The screen also shows a Windows taskbar at the bottom with several open applications.

		binary	ternary	quaternary
A	1			
B	2	00001		
C	3	00010	0001	001
D	4	00011	0002	002
E	5	00100	0010	003
F	6	00101	0011	010
G	7	00110	0012	011
H	8	00111	0020	012
I	9	01000	0021	013
J	10	01001	0022	020
K	11	01010	0100	021
L	12	01011	0101	022
M	13	01100	0102	023
N	14	01101	0110	030
O	15	01110	0111	031
P	16	01111	0112	032
Q	17	10000	0120	033
R	18	10001	0121	100
S	19	10010	0122	101
T	20	10011	0200	102
U	21	10100	0201	103
V	22	10101	0202	110
W	23	10110	0210	111
X	24	10111	0211	112
		11000	0212	113
			0220	120







Activity 2

**Blended Mobility:
Graphical representation of
functions in Microsoft Excel
(grades: 11 A, 11 B)**

Graphic representation of mathematical functions using Microsoft Excel

**Lesson by Mrs Alina Anton, ICT teacher
@Ana Aslan Technical College**

First degree function

REVISION OF MATHEMATICAL CONCEPTS

General formula of the first degree function:

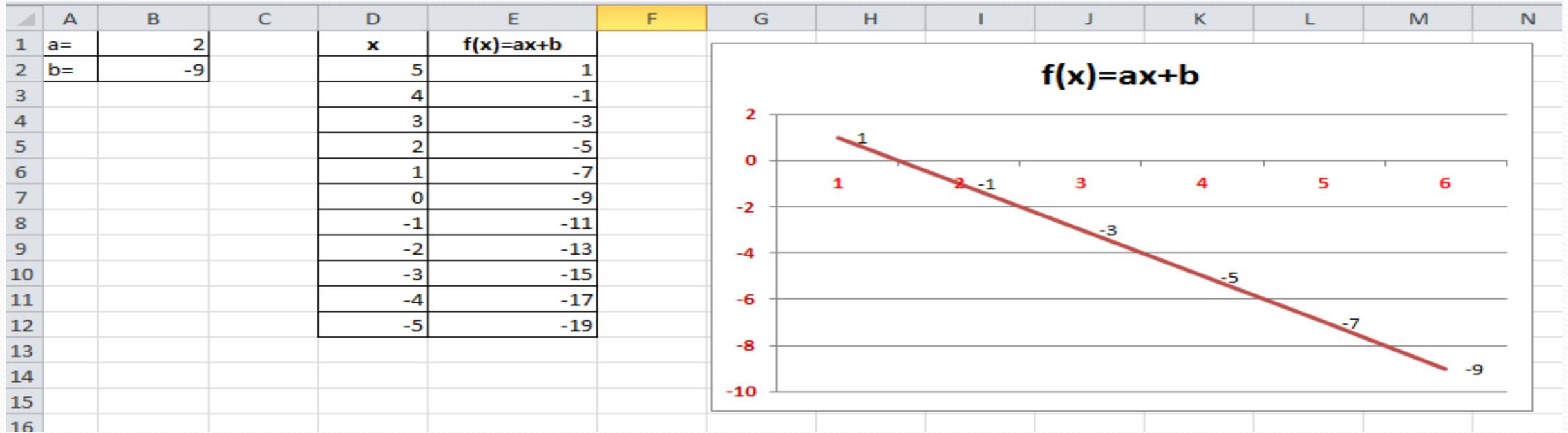
$$f(x)=ax+b \text{ where } a,b \in \mathbb{R} \text{ and } f: \mathbb{R} \rightarrow \mathbb{R}$$

If $a \neq 0$, then the function f is called function of first degree with coefficients a and b ; ax is called first term-degree, and b is the free term of the function.

If $a=0$, and then f is called **constant function**; in this case $f(x)=b, \forall x \in \mathbb{R}$.

The graph of the first degree function of is a **right line**.

Graphic representation of FIRST DEGREE FUNCTION using Microsoft Office Excel



We insert in the domain A1:B2 the values of a and b which will appear in the formula (column E) with absolute reference

We insert in the domain D2:D12 the values of x. It will appear with relative reference.

In the column E we calculate f(x) after the formula = $\$B\1 *D2+ $\$B\2 , after which the graph will be made.

Second degree function

REVISION OF MATHEMATICAL CONCEPTS

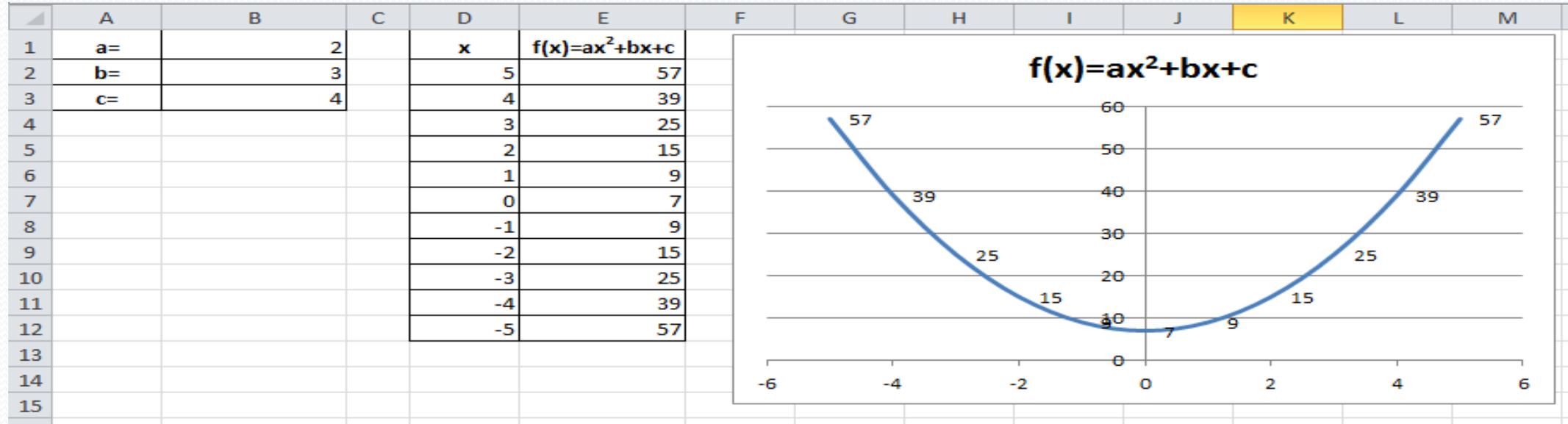
General formula of the second degree function: $f(x)=ax^2+bx+c$, where $a \neq 0$ and $f: \mathbb{R} \rightarrow \mathbb{R}$

If $a=0$ then $f(x)$ and it is transformed in a first degree function, $f(x)=bx+c$.

If $b=0$ then will have a second degree function, with form $f(x)=ax^2+c$.

If $c=0$ will have a second degree function with the form $f(x)=ax^2+bx$.

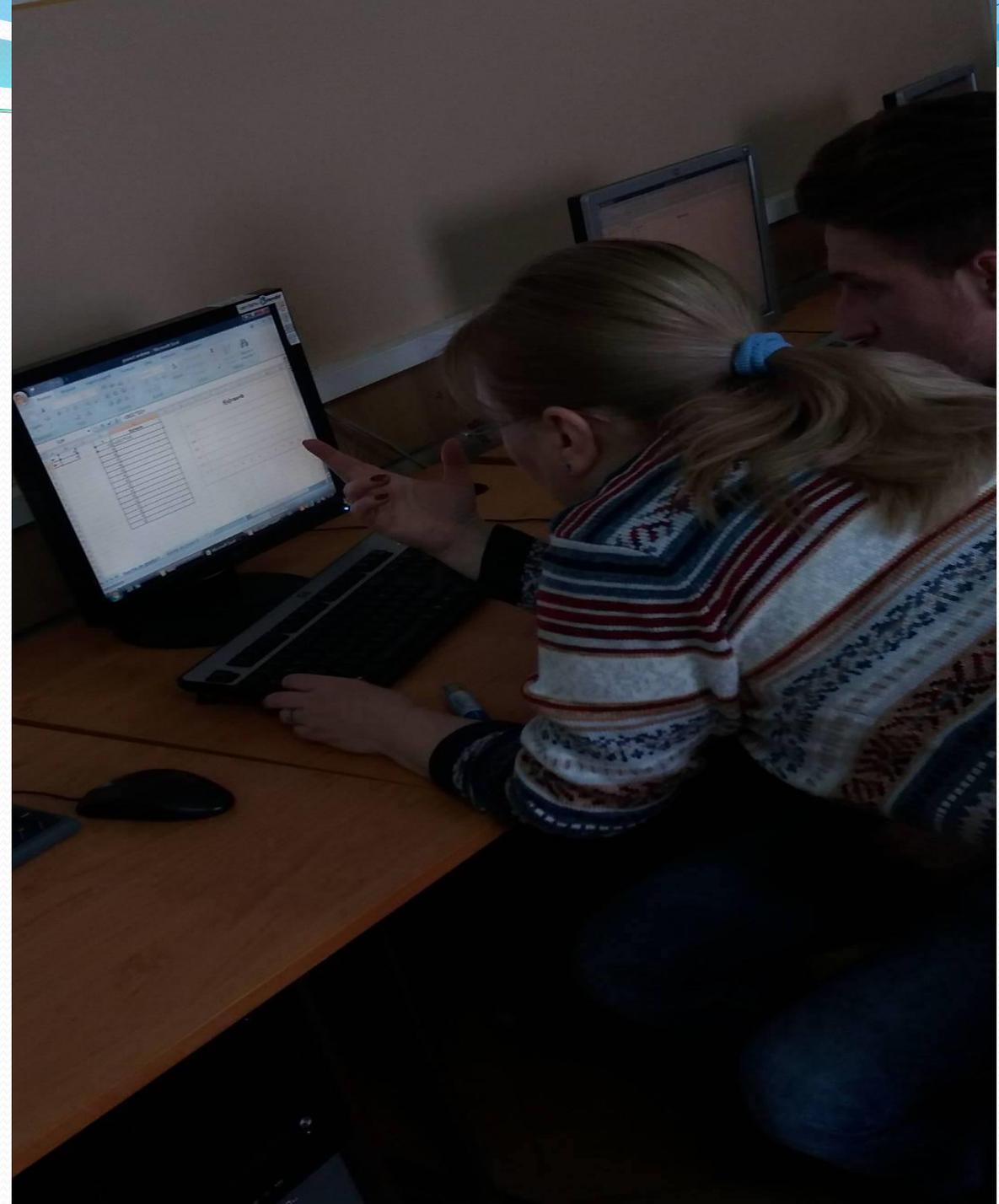
Graphic representation of SECOND DEGREE FUNCTION using Microsoft Excel

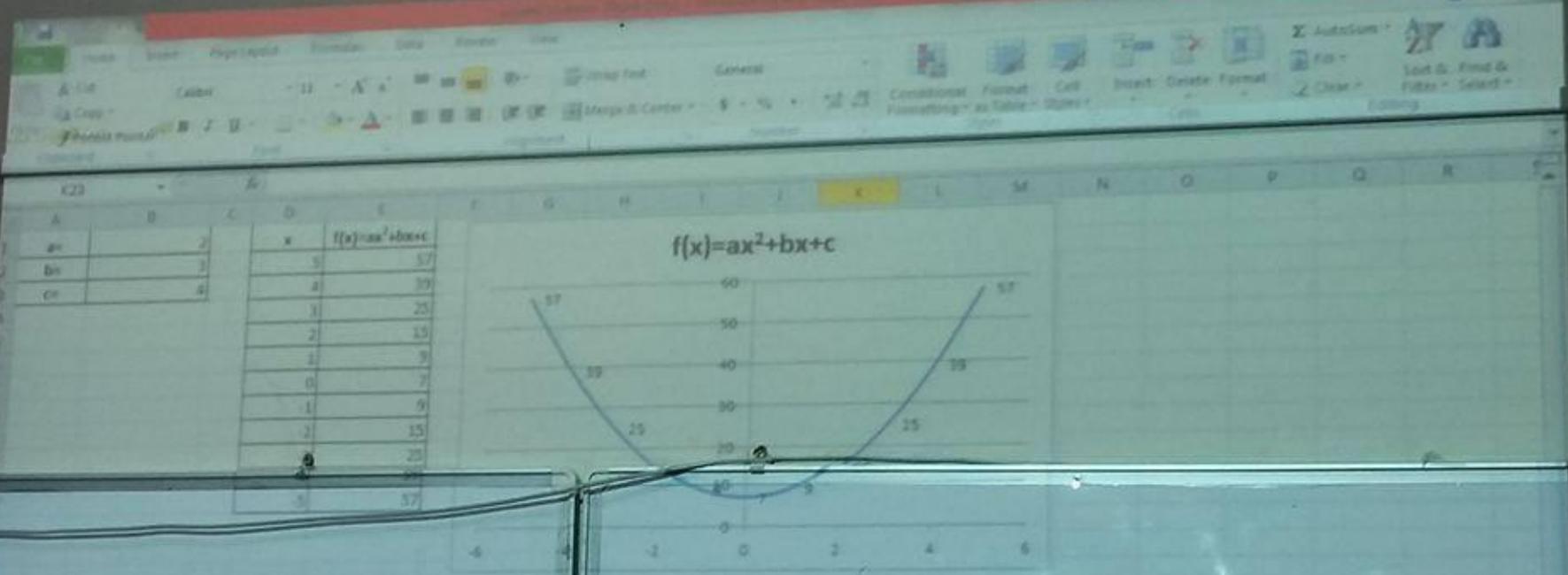


We insert in the domain A1:B4 the values of a, b and c which will appear in the formula (column E) with absolute reference.

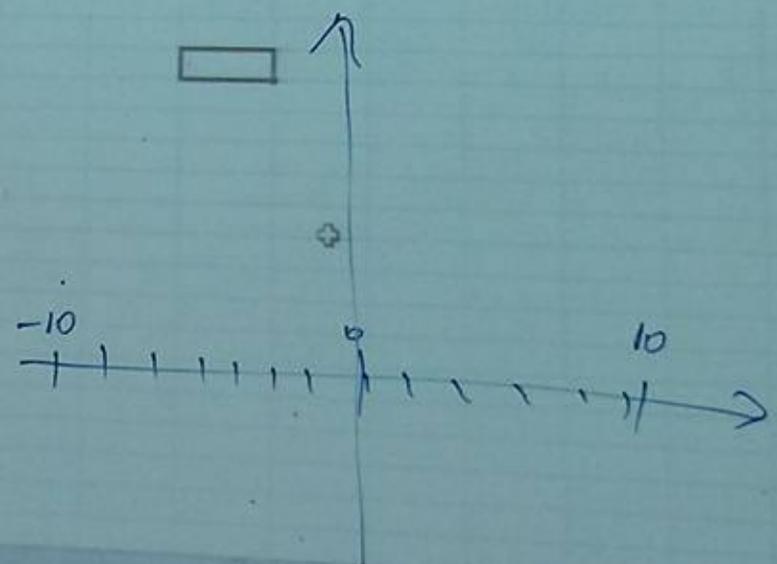
In the domain D2:D12 we insert the values of x. . It will appear with relative reference.

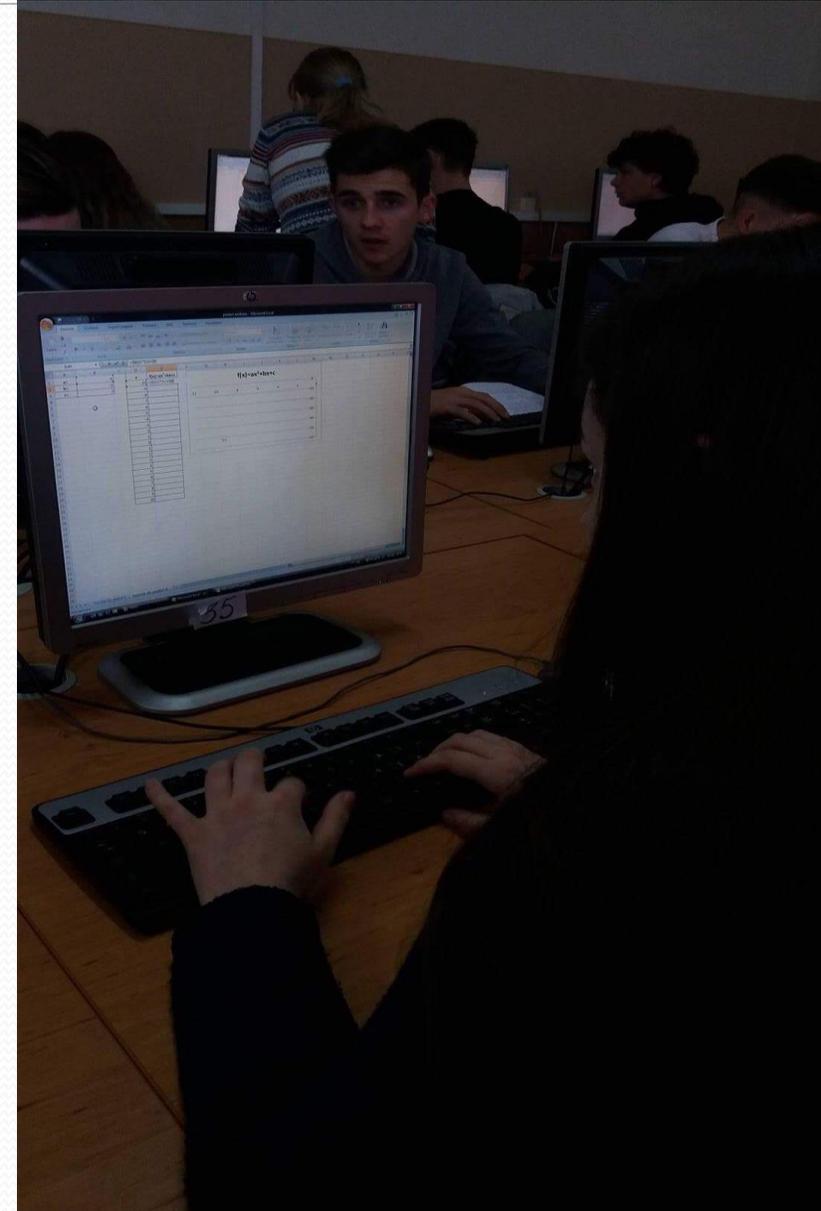
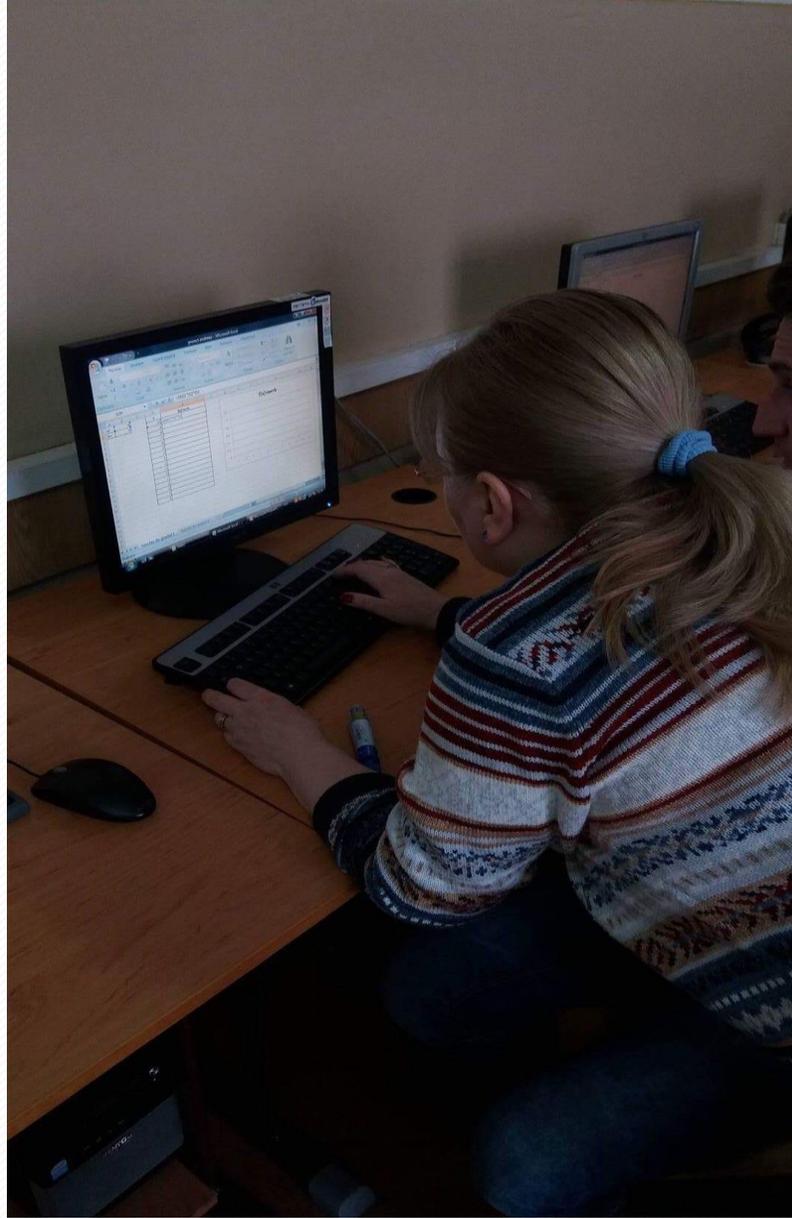
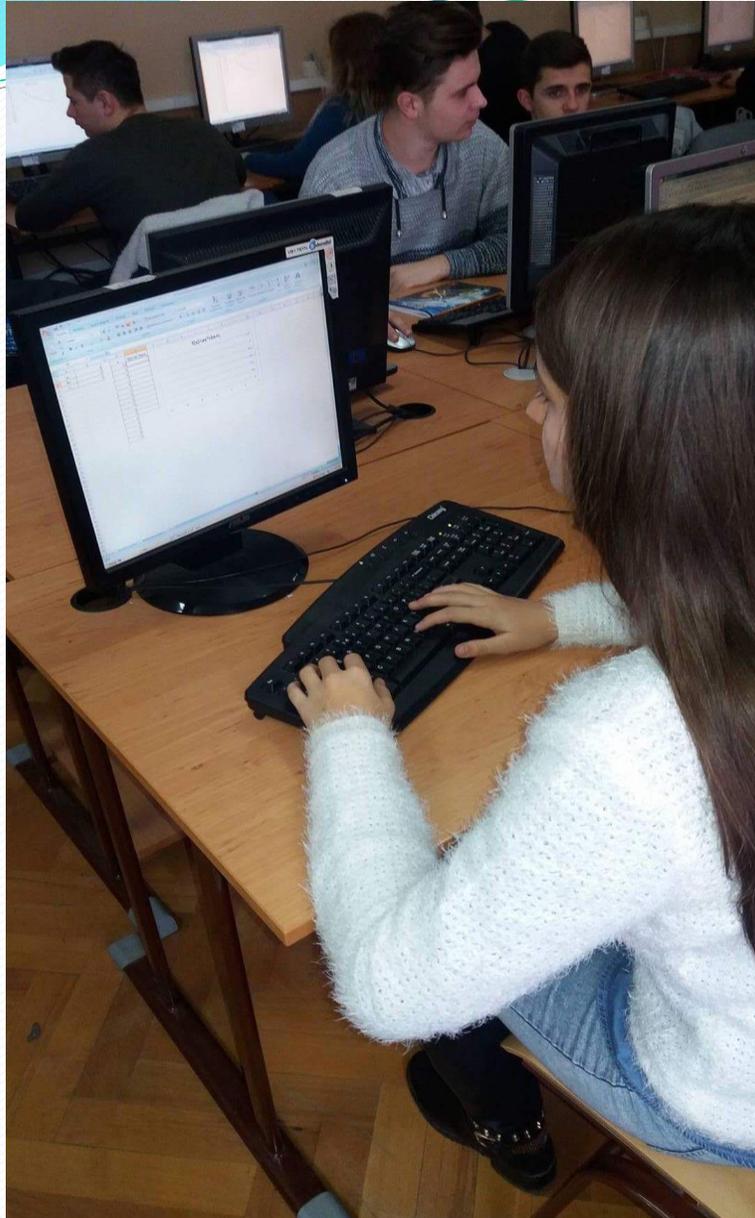
In the column E, f(x) will be calculated, using the formula= $=\$B\$1*D2*D2+\$B\$2*D2+\$B\3 , after which the graph XY (Scatter with Smooth Lines) will be drawn.

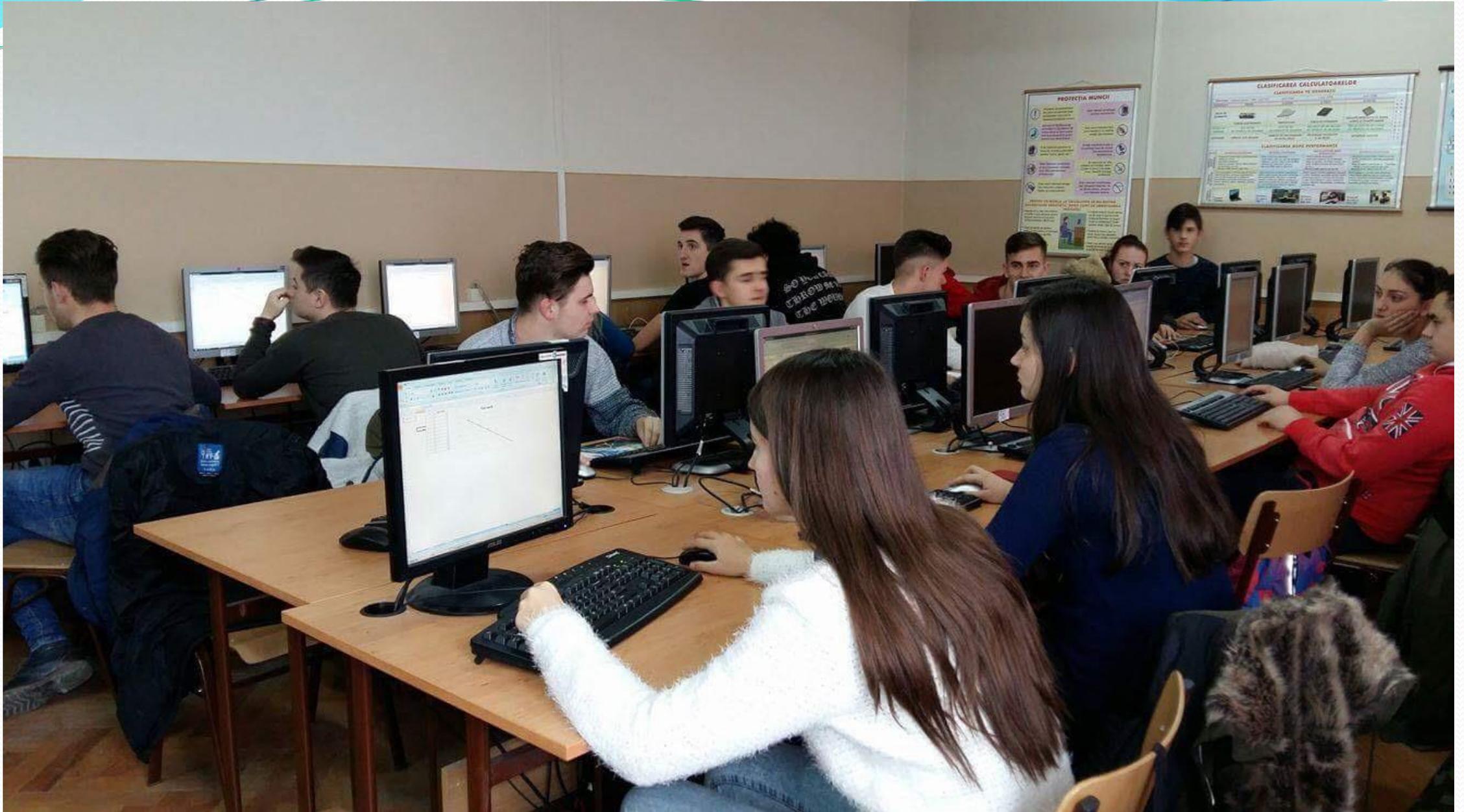




$$\begin{array}{l}
 a = 5 \quad | \quad -9 \quad | \quad 0 \quad | \quad 2 \quad | \quad 0 \quad | \quad 0 \quad | \quad 3 \\
 b = -3 \quad | \quad 4 \quad | \quad 2 \quad | \quad 0 \quad | \quad 0 \quad | \quad 4 \quad | \quad 0 \\
 c = 7 \quad | \quad -4 \quad | \quad 3 \quad | \quad 5 \quad | \quad 1 \quad | \quad 0 \quad | \quad 0
 \end{array}$$







Activity 3

**Blended Mobility : Work in Powtoon
(grade: 9B,10B)
Powtoon movie**

Students Powtoon Animations are available on the MAU
Facebook and eTwinning Page

Questions for the mobile app:

Q1

The octal representation of the decimal number 864 is:

104

1542

6012

1540

Questions for the mobile app:

Q2

The decimal representation of the binary number 111011 is:

59

61

58

27

Questions for the mobile app:

Q3

Maria sends on Monday to **10** of her Facebook friends the following message : *"It is the International Week of Smile 😊 I am sending this message to remind you that you have a wonderful smile that you can share with the people around you. Send this message to your friends tomorrow!"*

Supposing that each person has at least 10 friends that are not mutual friends and they all re-send this message, what is the minimum number of people that will receive the message by Thursday?

Questions for the mobile app:

Q3

Solution: Maria sends on Monday 10 messages. On Tuesday, each of the 10 friends send to another 10 friends: 10^2

.... On Wednesday 10^3

.... On Thursday 10^4

40

10000

1000

400

Thank you 😊