5. What are the ways you can enter a function in Excel spreadsheet application?
6. What are the categories of functions do you know?
7. What are the statistical functions do you know?

Practical class № 6-7

Subject: «**Spreadsheet processor MS Excel. Data entry and editing. Logical functions»**

Description of the basic functions.

Category Math.

ABS (number) - the module number.

COS (number) - the cosine of a predetermined number.

EXP (number) - returns the number of e raised to the specified power.

LN (number) - returns the natural logarithm of a number.

SIN (number) - returns the sine of the given number.

TAN (number) - returns the tangent of the given number.

SQRT (number) - returns the positive square root.

PI () - Returns the number of [redacted] up to 15 digits.

POWER (number, power) - returns the result of the exponentiation;

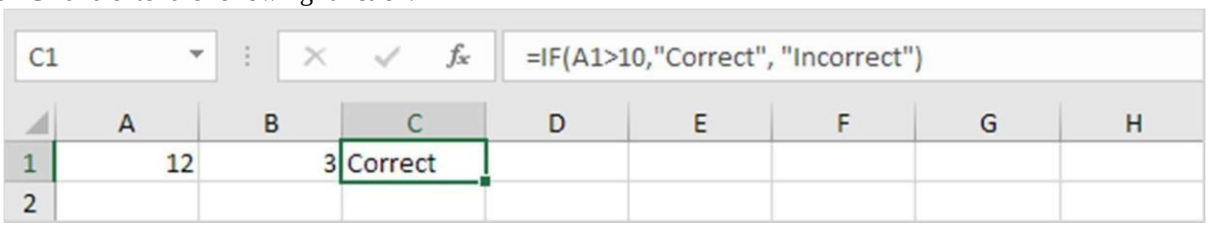
SUM (number1; number2; ...) - returns the sum of all the numbers included in the list of arguments;

Learn how to use Excel's logical functions such as the IF, AND and OR function.

If Function

The IF function checks whether a condition is met, and returns one value if TRUE and another value if FALSE.

1. Select cell C1 and enter the following function.

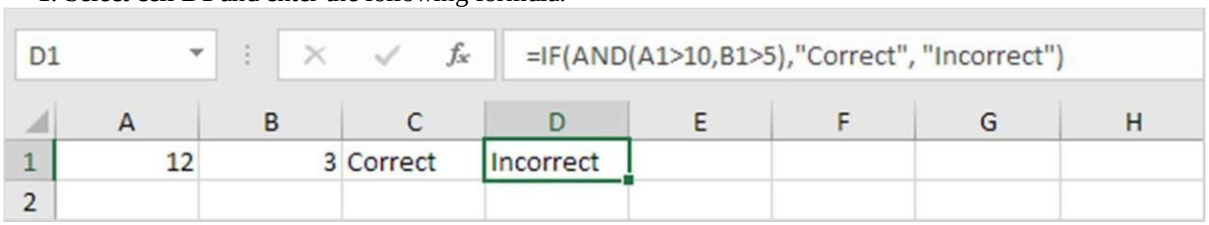


The IF function returns Correct because the value in cell A1 is higher than 10.

And Function

The AND Function returns TRUE if all conditions are true and returns FALSE if any of the conditions are false.

1. Select cell D1 and enter the following formula.

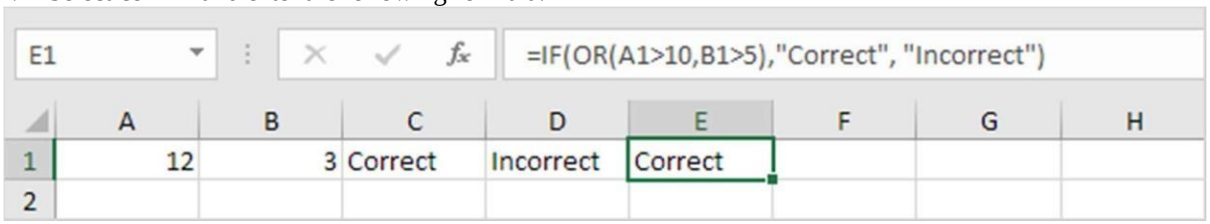


The AND function returns FALSE because the value in cell B1 is not higher than 5. As a result the IF function returns Incorrect.

Or Function

The OR function returns TRUE if any of the conditions are TRUE and returns FALSE if all conditions are false.

1. Select cell E1 and enter the following formula.



The OR function returns TRUE because the value in cell A1 is higher than 10. As a result the IF function returns Correct.

Exercise 1.

Createthe table that calculates the n-th term and the sum of the arithmetic progression. The formula of the n-th member of the arithmetic progression:$\mathbf{a_n=a_1+d(n-l)}$ and the sum formula of the first n terms of the arithmetic progression:$\mathbf{S_n=(a_1+a_n)*n/2}$, where a1 is the first term of the progression, a***d***is the difference of the arithmetic progression, using the absolute reference. The first term, which is equal to -2, and the difference is 0,725.

1. Click on Sheet1. Rename it to Exercize1.
2. Write down the formulas yourself.

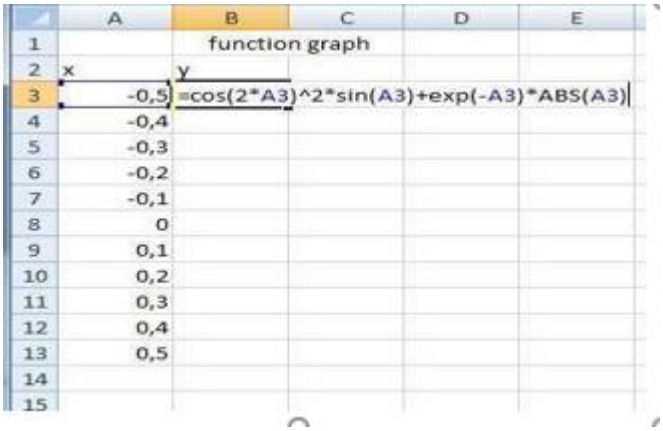
	A	B	C
1	d=	0,725	
2	**Calculation of the n-th term and the sum of the arithmetic progression**		
3	n	a_n	S_n
4	1	-2	
5	2		
6	3		

Exercise 2. Construct a graph of the function **y = cos2 (2x) sin (x) + e^{-x} | x |** for **x** in steps of **0.1.**

1. Create the following table on sheet 2: fill in the values of the variable x with the fill marker.

In cell B3 enter the formula: = cos (2 * A3) ^ 2 * sin (A3) + EXP (-A3) * ABS (A3), copy the formula to the remaining cells.

2. Select the values for the function and start the Chart Wizard.
3. Select the chart type - Graph.
4. In the Row tab, in the X-Axis signatures, select the range of X values.
5. Place the chart in this sheet and rename sheet 2 as the Function Graph.



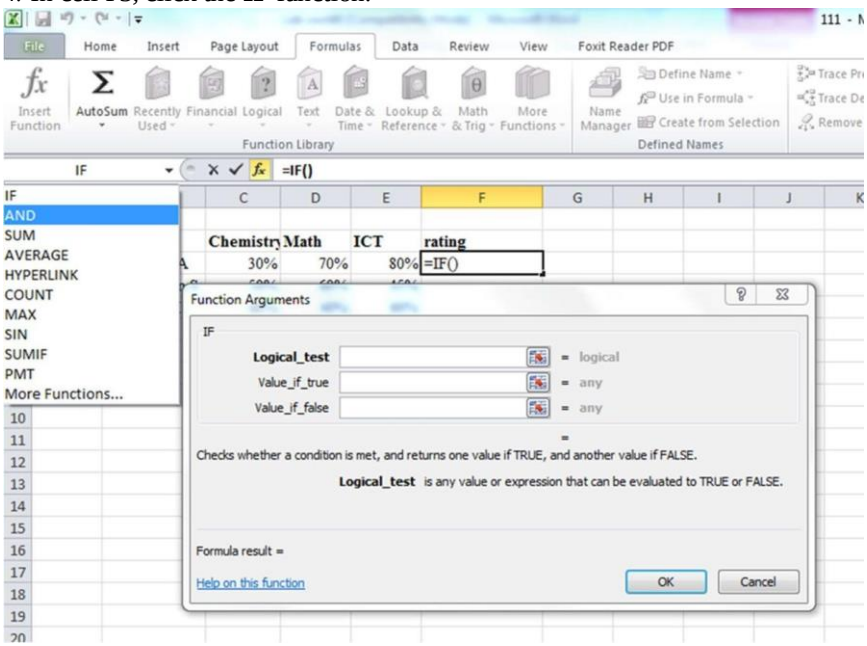
Exercise 3.

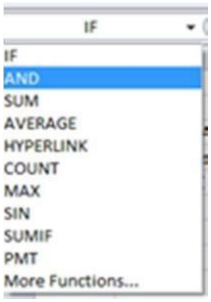
Attestation was conducted on 3 subjects and it is necessary to determine whether a student is certified in all subjects.

1. Go to Sheet3. Rename it to Ex3.
2. Fill the table according to the sample.

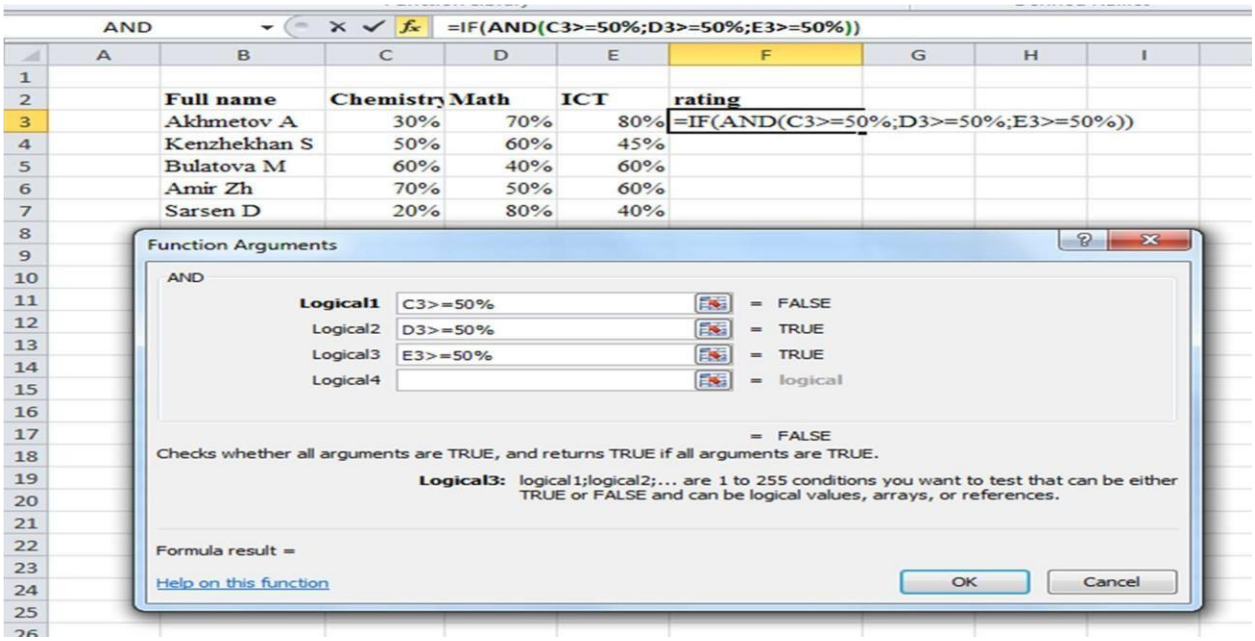
	Full name	Chemistry	Math	ICT	rating
3	Akhmetov A	0,3	0,7	0,8	
4	Kenzhekhan S	0,5	0,6	0,45	
5	Bulatova M	0,6	0,4	0,6	
6	Amir Zh	0,7	0,5	0,6	
7	Sarsen D	0,2	0,8	0,4	

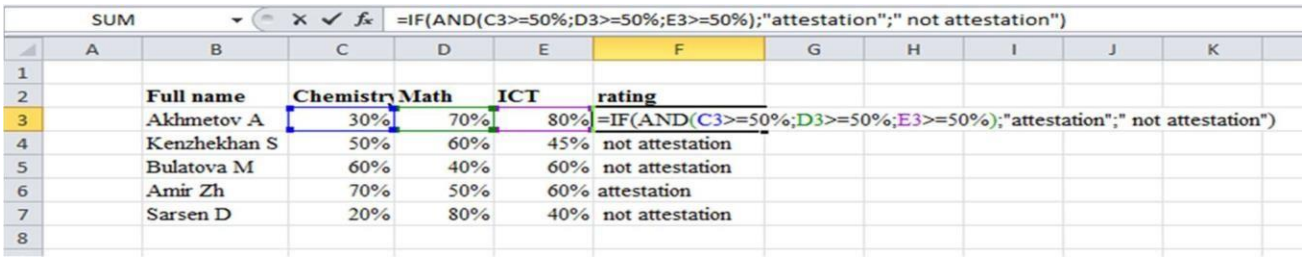
3. The values must be written in percentages. For this: Select the range B3: D7. Clickl the **context menu → Format cells**.Go to the **Numbers** tab. Number format select **Percentage**, Set the number of decimal places to **0**.
4. In cell F3, click the **IF** function.





5. At the level of the formula line on the left side, click on
6. In the list, select Other functions, in the Logical category, select the function **AND.**
7. In the field Logical_value1: B3> = 50%, Logical_value2: C3> = 50%, Logical_value3: D3> = 50%.
8. Click in the formula bar on the **IF**.
9. In the field Value if true, type the words: "attestation"
10. In the Value field, if you want to type words: "not attestation"
11. Click on OK
12. The result should be stretched for other cells.





Exercise 4Building 3D Surface Plots

$$x,y \in [-1;1]$$

$$z = 3x^2 - 2\sin^2(y)\,y^2$$

Create a work page called Ex_4.

1. Enter the values of X in 0.2 steps in the form of a column, starting from cell A2;
2. Enter the values of y in 0.2 steps as a string starting from cell B1;
3. in cell B2 write the Formula: =3*A2^2 – 2* SIN(B1)^2*B1^2;

After writing the formula, try to observe the correct change in addresses when copying it to the rest of the cells, draw a conclusion: the values of X should be in Column A all the time, so that the column does not change, the sign of the absolute address is placed in front of it, that is, A, and according to the values of Y, the address of the first row changes to 1 1.

4. in accordance with this, we bring the formula in cell B2 to the form: =3*$A2^2 – 2* SIN(B 1 1)^2*B 1 1^2;
5. extract the remaining values of z using the fill marker;
6.to do this, mark the range B2:B12 and stretch the fill marker until the corresponding rectangle is filled;.

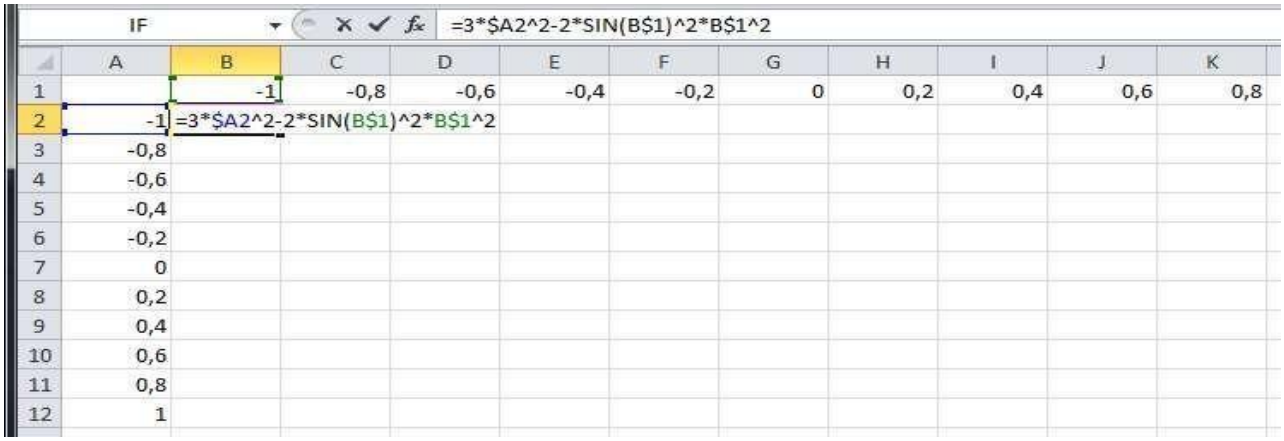
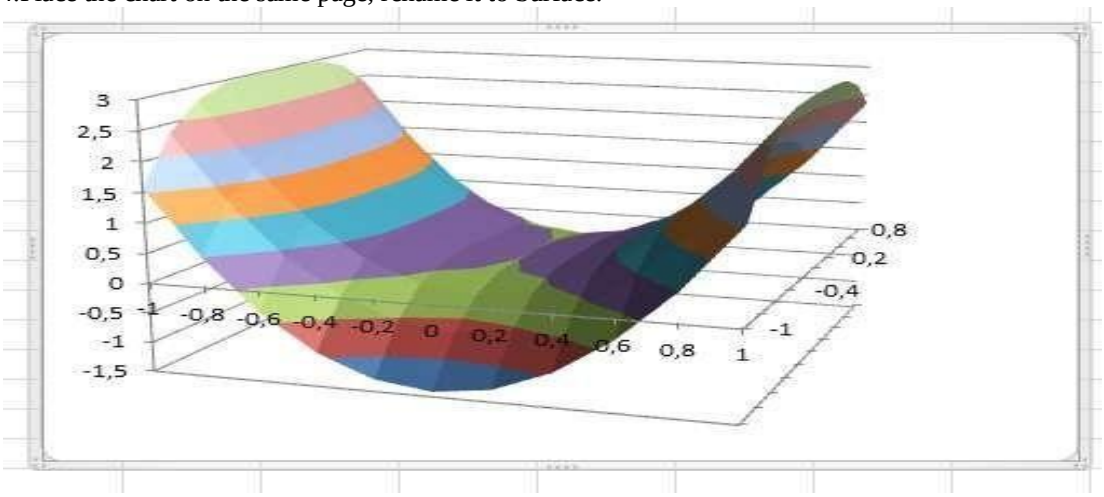


Figure 9

1. embroidery, Y, Z. mark with values;
2. call the chart Wizard (Charts), select the chart type (1st type);
3. change the chart parameters;
4.Place the chart on the same page, rename it to Surface.



Tasks for independent work:

You should build **x, y =[-1;1], Z=** surface according to the following tasks

Variant	Tasks
1	$Z=5x^2\cos^2(y)-2y^2e^y$
2	$Z=2x^2\cos^2(x)-2y^2$
3	$Z=2e^{0.2x}x^2-2y^4$
4	$Z=x^2-2e^{0.2y}y^2$
5	$Z=3x^2\sin^2(x)-5e^{2y}y$

Control questions:

1. What is a spreadsheet?
2. What types of addressing you know? How do they difference from each other?
3. What is a chart?
4. How can you create charts? Could you tell about the types of charts?
5. What kind of ways can you enter a function in Excel?
6. What categories of functions do you know?
7. Give me examples of statistical functions, which you know
8. Give me examples of math functions, which you know
9. Give me examples of logical functions, which you know