

Lecture -5

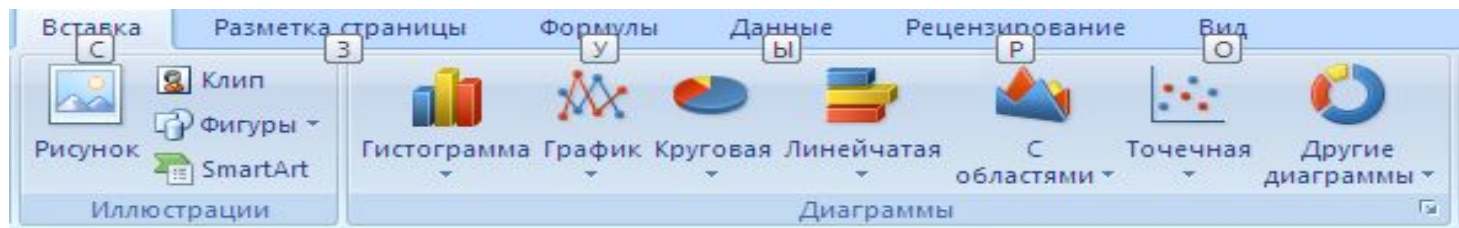
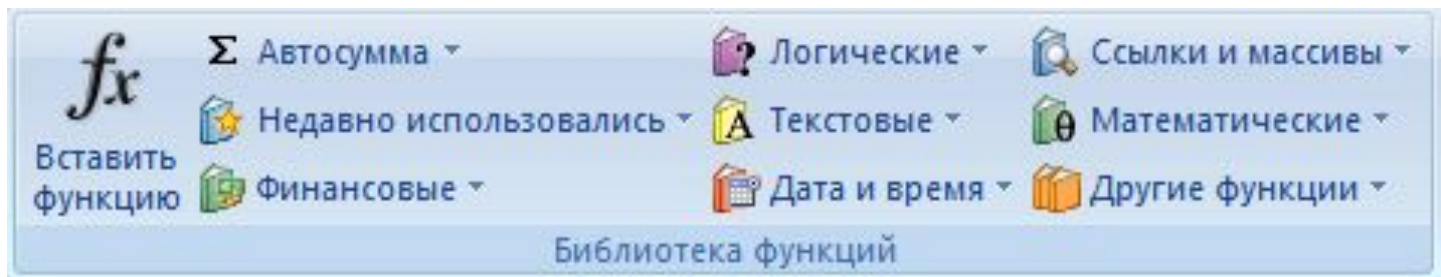
**Theme: Spreadsheet MS Excel.
Engineering and technological
calculations tasks in Microsoft Excel
spreadsheet**



**Тема: ЭТ MS Excel. Решение
инженерные и технологических
задач в Microsoft Excel**

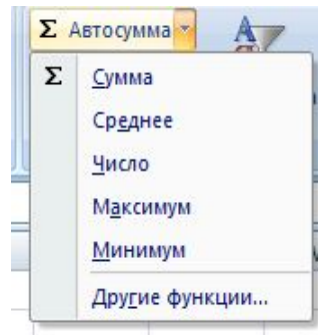
Microsoft Office Excel is a powerful program which used to create engineering and technological calculations of many different tasks.

Spreadsheet MS Excel has some facility for solving this problems. Main capabilities in Spreadsheet MS Excel are the functions and the diagrams masters.



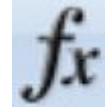
Simple function is the AutoSum

Σ AutoSum button allows you to quickly insert the **SUM function**. It is located in two places on the ribbon: on the right end of the “Home” tab in the editing section, and on the far left of the “Formula” tab.



Select the cell where you want to put the total and then click on the AutoSum button. MS Excel will insert the SUM function and take a guess as to what cell range you'd like to sum by listing the first and last cell in the sum, separated by a colon. Check to make sure the cell range is correct, then press enter to accept the function.

Functions



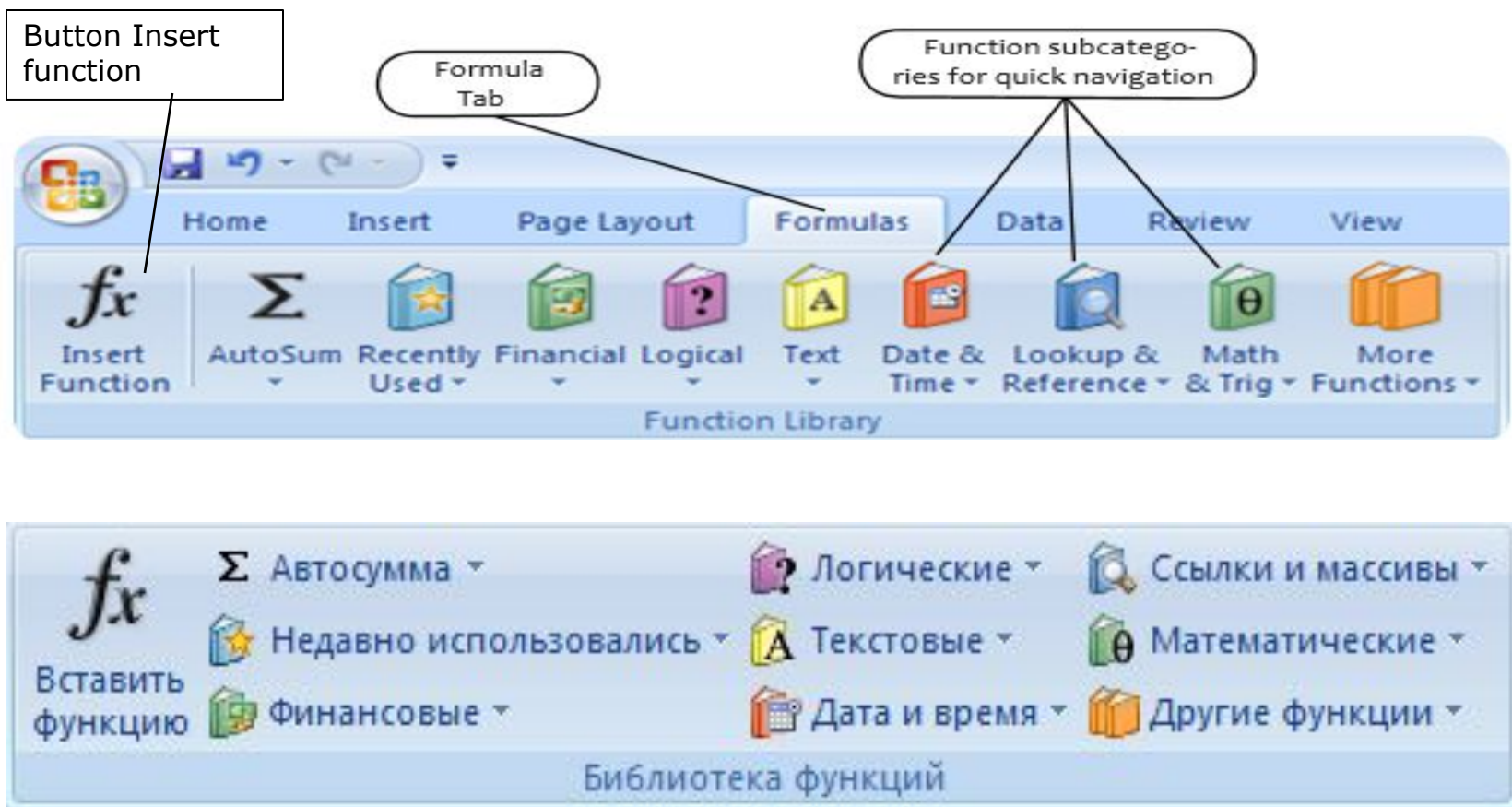
MS Excel has created hundreds of functions that prevent you from having to write out complex or repetitive formulae yourself.

Functions can be inserted by clicking on the function symbol to the left of the formula bar.

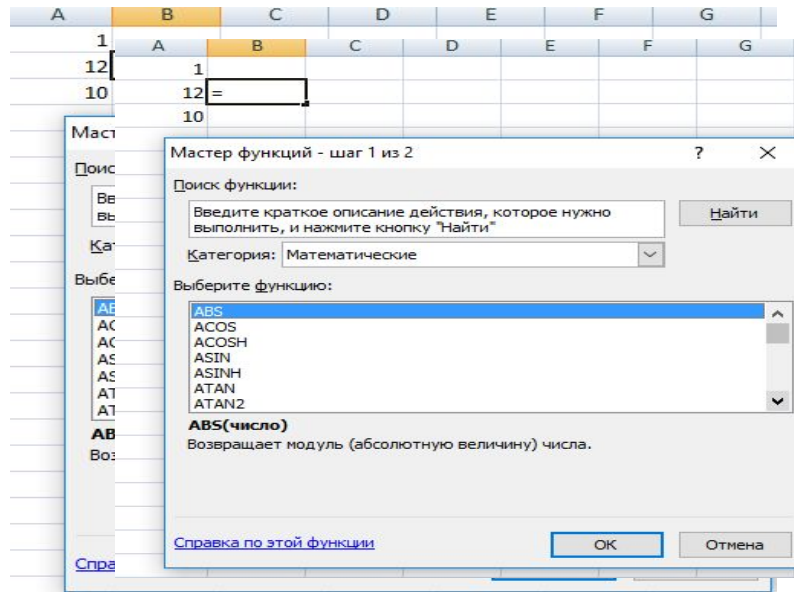
The screenshot shows the MS Excel interface. The function symbol (fx) is circled in the formula bar area. The formula bar contains the text =LN(D2). Below the formula bar, a spreadsheet is visible with columns C, D, and E. Column C is labeled '(counts) Background (counts)' and contains the value 62698. Column D is labeled 'True Activity (counts)' and contains the value 150. Column E is labeled 'LN of True activity' and contains the formula =LN(D2). The value 62548 is displayed in the cell below the formula in column E.

	C	D	E	F
(counts)	Background (counts)	True Activity (counts)	LN of True activity	
62698	150	62548	=LN(D2)	

Functions can also be inserted by clicking on the “Insert Function” button on the “Formula” tab or jumping to any of the subcategories of functions on that tab.



1. Yet another way to insert a function is to type the equals sign into a cell and begin to type the name of formula.



2. A drop down menu will appear, from which you can select the formula.

Functions can also be 'nested'; that is inserted into larger functions by using the appropriate amount of brackets. =AVERAGE(SUM(B2:F2), SUM(B3:F3))

Accessing MS Excel functions

Worksheet functions are categorized by their functionality. Click a category to browse its functions. Or press Ctrl+F to find a function by typing the first few letters or a descriptive word. To get detailed information about a function, click its name in the first column.

Statistical functions:

SUM: Adds a range of cells together

AVERAGE: Calculates the average of a range of cells

COUNT: Counts the number of chosen data in a range of cells

MAX: Identifies the largest number in a range of cells

MIN: Identifies the smallest number in a range of cells

Financial functions:

Interest rates

Loan payments

Depreciation amounts

Accessing MS Excel functions

Date and time functions:

DATE: Converts a serial number to a day of the month

Day of Week

DAYS360: Calculates the number of days between two dates based on a 360-day year

TIME: Returns the serial number of a particular time

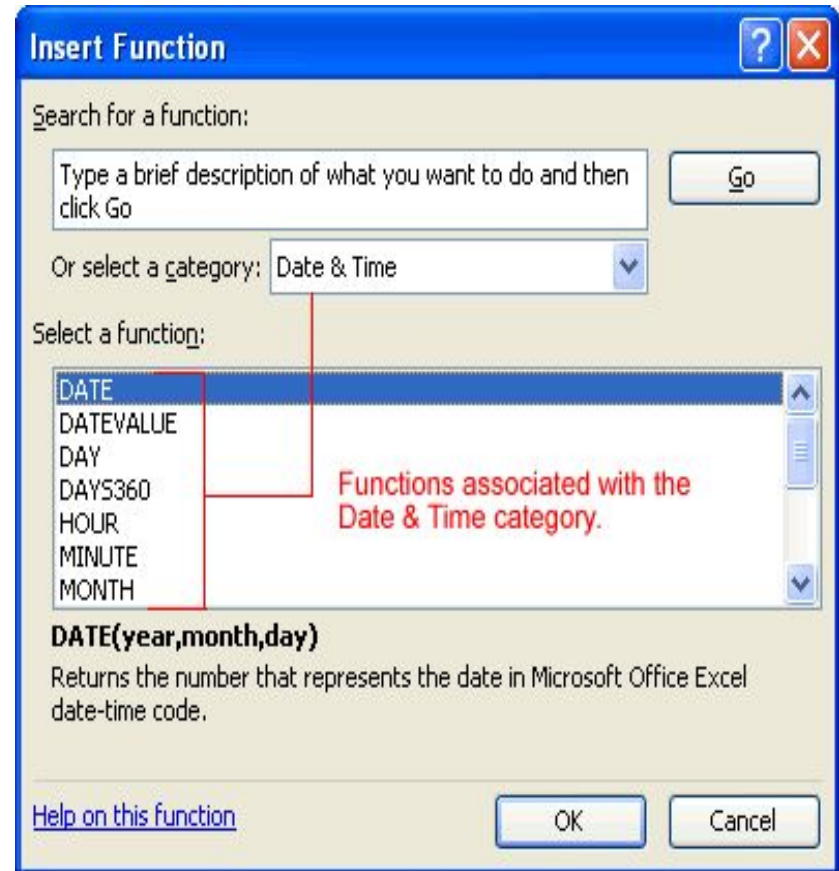
HOUR: Converts a serial number to an hour

MINUTE: Converts a serial number to a minute

TODAY: Returns the serial number of today's date

MONTH: Converts a serial number to a month

YEAR: Converts a serial number to a year



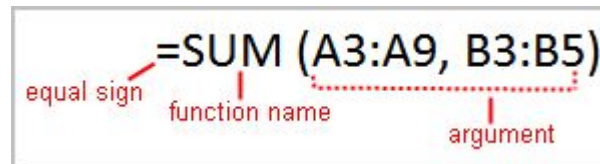
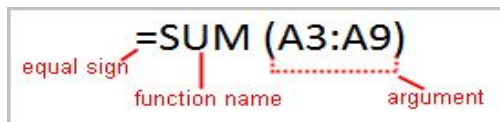
The parts of a function:

Each function has a specific order, called syntax, which must be strictly followed for the function to work correctly.

Syntax order:

1. All functions begin with the = sign.
2. After the = sign, define the function name (e.g., Sum).
3. Then there will be an **argument**. An argument is the cell range or cell references that are enclosed by parentheses. If there is more than one argument, separate each by a comma.

An example of a function with one argument that adds a range of cells, A3 through A9:



To calculate the sum of a range of data using AutoSum:

Select the **Formulas** tab.

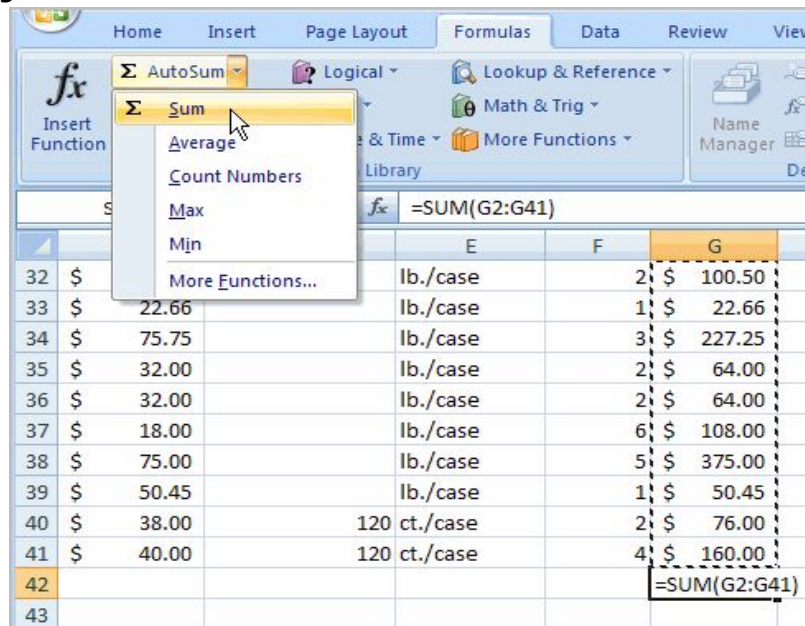
Locate the **Function Library** group. From here, you can access all available functions.

Select the cell where you want the function to appear. In this example, select G42.

Select the drop-down arrow next to the **AutoSum** command.

Select **Sum**. A formula will appear in the selected cell, G42.

This formula, **=SUM(G2:G41)**, is called a **function**. The AutoSum command automatically selects the range of cells from G2 to G41, based on where you inserted the function. You can alter the cell range if necessary.

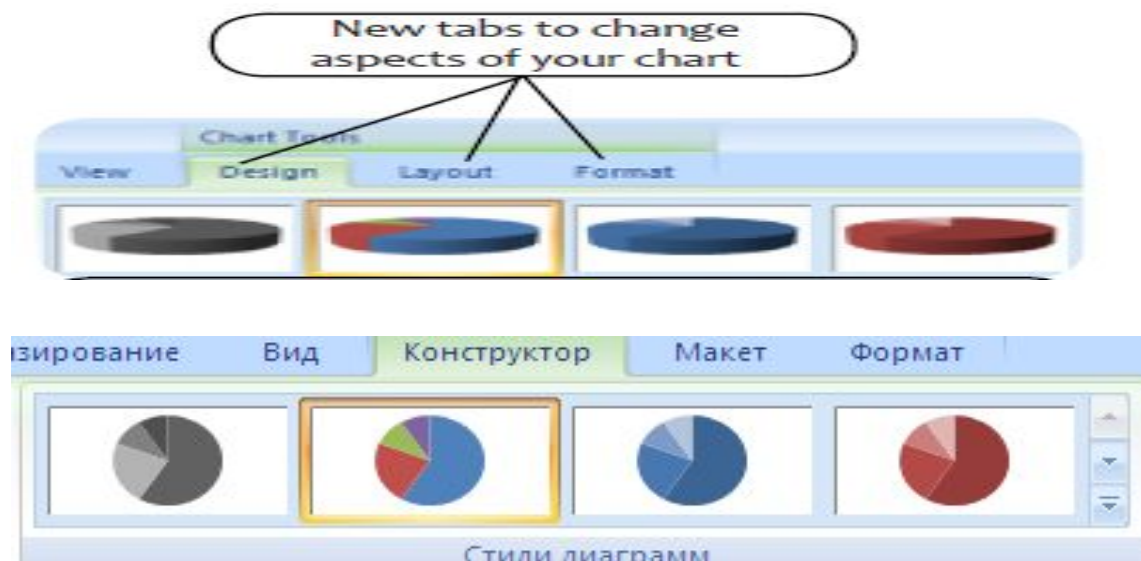


Making the diagrams and charts.
The Building graph

A full discussion of Excel's many charting options is beyond the scope of this handout. We can create a chart (and some complicated ones) **using the chart wizard (master of a diagrams).**



Just highlight the data you wish to base your chart on (including header rows, if you have any) and click on the Insert tab and you will see the available charts there. When you click on a type of chart, you will be prompted to select a subtype of chart. Once you have done so, the chart will appear on your spreadsheet. Three additional tabs will also appear on your ribbon , through which you can alter your chart by adding titles, changing data points, and many other options.



For graphing of the functions must to create the table with importance's of the argument and functions. Choose the necessary column.

	A	B	C	D
1	Calculation of the resistances			
2	Raw data:			
3	Section of the wire	s		
4	The resistances wire	m		
5	Initial temperature	t0		
6	Final temperature	tf		
7	Change the temperature	t		
8		Decision		
9			t	R
10			=C5	=1+\$C\$4*C10*(1+0,04*\$C\$5)*(\$C\$6/\$C\$3)^2
11			=C10+\$C\$7	=1+\$C\$4*C11*(1+0,04*\$C\$5)*(\$C\$6/\$C\$3)^2
12			=C11+\$C\$7	=1+\$C\$4*C12*(1+0,04*\$C\$5)*(\$C\$6/\$C\$3)^2
13			=C12+\$C\$7	=1+\$C\$4*C13*(1+0,04*\$C\$5)*(\$C\$6/\$C\$3)^2
14			=C13+\$C\$7	=1+\$C\$4*C14*(1+0,04*\$C\$5)*(\$C\$6/\$C\$3)^2
15			=C14+\$C\$7	=1+\$C\$4*C15*(1+0,04*\$C\$5)*(\$C\$6/\$C\$3)^2
16			=C15+\$C\$7	=1+\$C\$4*C16*(1+0,04*\$C\$5)*(\$C\$6/\$C\$3)^2
17			=C16+\$C\$7	=1+\$C\$4*C17*(1+0,04*\$C\$5)*(\$C\$6/\$C\$3)^2
18			=C17+\$C\$7	=1+\$C\$4*C18*(1+0,04*\$C\$5)*(\$C\$6/\$C\$3)^2
19				

And then in master of the diagrams to choose the type of the diagram: - point, but type - a graphic.

