MS EXCEL: TABLES, FORMATS, FUNCTIONS AND MACROS

✓ Open the file Task_1_Template.xlsx. All the further tasks will be conducted in this file, on particular sheets (Menu, Task 1, Task 2, Task 3).

TASK 1. CREATING AND FORMATTING TABLES

✓ Work with the "Task 1" sheet. It contains draft version of a company's **Balance Sheet**. Your task is to format it so that it could be presented to company's Boss ;)

1. Work with the **heading** first.

a) For **dividing the text of the heading into two lines** use the **Alt-Enter** key combination. You will get 2 lines in one cell.

b) For **expanding the heading text** to the width of the whole Balance table (that is 8 columns) use the tool of **merging cells** (tab Home – group Alignment – box Merge & Center).

The Main Balance Data of the Enterprise
(on the 1st of January of the reporting year)

2. Continue with **formatting the cells**.

✓ While formatting, use the Format Painter command (tab Home – group Clipboard).
✓ See the **example** below🡻.

a) icons on the tab Home:
- Font, Font size, Border, Fill color, Font color (the Font group);
- Top Align, Middle Align, Bottom Align, Align Left, Center, Align Right, Wrap text, Merge & Center (the Alignment group);
- Increase Decimal, Decrease Decimal (the Number group).

b) dialog box Format cells command:
- in the Number group (Home – group Number – box Format cells) set:
  - the number of **decimal places** 0 (or 2);
  - **negative number** – red colored and in brackets;
  - switch on the mode **use 1000 separator**;
- in the Alignment group (tab Home – group Alignment – box Format cells) select the **Text Alignment alternative** (Horizontal, Vertical), **Wrap text** and **Orientation**;
- in the Font group (tab Home – group Alignment – box Format cells) change **Font**, **Font size** and **Color**;
- in the Border group (box Format cells – tab Border) select Style, Color and Border;
- in the Fill group (the **Ctrl-1** key combination) define **Background Color** of the table cells.

c) change **Height** and **Width** of the cells with the help of:

- the **mouse**;
- the Row Height and Column Width commands (tab Home – group Cells – Format);
- AutoFit Row Height/Column Width (tab Home – group Cells – Format).

The Main Balance Data of the Enterprise
(on the 1st of January of the reporting year)

Balance Sheet

Date:

				0,25		0,35		
			2016		2015		2014	2013
			PLN	USD	PLN	USD		
		Assets						
		Current Assets						
	1,00	Cash	11 874,00		11 454,00		12 032,00	11 029,00
	2,00	Accounts receivable	56,00		78,00			
	3,00	Inventory	67,00		89,00			
	4,00	Prepaid expenses						
	5,00	Short-term investments						
		Total current assets						
		Fixed (Long-Term) Assets						
	1,00	Long-term investments	1 208,00		920,00		1 032,00	1 400,00
	2,00	Property, plant, and equipment	15 340,00		14 200,00		13 250,00	13 904,00
	3,00	(Less accumulated depreciation)	(2 200,00)		(1 920,00)		(900,00)	(1 309,00)
	4,00	Intangible assets						
		Total fixed assets						
		Other Assets						
	1	Deferred income tax						890,00
	2	Other						
		Total Other Assets						
		Total Assets						
		Liabilities and Owner's Equity						
		Current Liabilities						
	1,00	Accounts payable	8 060,00		7 605,00		8 044,00	7 958,00
	2	Short-term loans						
	3	Income taxes payable	3 145,00		2 997,00		3 100,00	2 898,00
	4	Accrued salaries and wages						
	5	Unearned revenue						
	6	Current portion of long-term debt						
		Total current liabilities						
		Long-Term Liabilities						
	1	Long-term debt	3 450,00		3 217,00		2 966,00	3 410,00
	2	Deferred income tax						359,00
	3	Other						
		Total long-term liabilities						
		Owner's Equity						
	1	Owner's investment	7 178,00		6 938,00		7 200,00	7 300,00
	2	Retained earnings	4 389,00		3 897,00		4 104,00	3 989,00
	3	Other						
		Total owner's equity						
		Total Liabilities and Owner's Equity						
		Common Financial Ratios						
		Debt Ratio (Total Liabilities / Total Assets)						
		Current Ratio (Current Assets / Current Liabilities)						
		Working Capital (Current Assets - Current Liabilities)						
		Assets-to-Equity Ratio (Total Assets / Owner's Equity)						
		Debt-to-Equity Ratio (Total Liabilities / Owner's Equity)						

3. Do the necessary **calculations** to finish the Balance Sheet.

✓ See the **example** below🡻.

a) Calculate the value of the **SubTotal** rows (rows 16, 22, 26, 38, 43, 48) with the help of the AutoSum function.

✓ **Copy the formulas** with the help of the AutoFill mode (drag the right bottom corner of the cell)

b) Calculate the value of the **Total Assets** (row 28) with the help of the Summing formula.

✓ **Copy the formulas** with the help of the AutoFill mode.

c) Calculate the value of the **Total Liabilities and Owner's Equity** (row 50) with the help of the AutoSum function (select the cells with help of the Ctrl key).

✓ **Copy the formulas** with the help of the AutoFill mode.

d) Calculate the values of the **Common Financial Ratios** rows by appropriate formulas (using the assistance in the brackets, take into account that **Total Liabilities** in these formulas =**[Total current liabilities + Total long-term liabilities]**).

✓ **Copy the formulas with the help of:**

- the AutoFill mode;
- with the help of the **data duplication operation** (selected the filled interval / enter the formula into the first selected cell / press the Ctrl-Enter key combination).

e) Calculate all the necessary **values in USD**. Multiply the PLN value by the currency rate for the particular year.

✓ Apply the necessary type of **cell reference** (using F4).

f) Insert the **current Date** into the cell **Date** (function =TODAY()).

g) Format the **Date** using the Format Cell options.

The Main Balance Data of the Enterprise
(on the 1st of January of the reporting year)

Balance Sheet

Date: 25.04.2018

		0,25			0,35		
		2016		2015		2014	2013
		PLN	USD	PLN	USD		
	Assets						
	Current Assets						
1,00	Cash	11 874,00	2 968,50	11 454,00	4 008,90	12 032,00	11 029,00
2,00	Accounts receivable	56,00	14,00	78,00	27,30		
3,00	Inventory	67,00	16,75	89,00	31,15		
4,00	Prepaid expenses						
5,00	Short-term investments						
	Total current assets	11 997,00	2 999,25	11 621,00	4 067,35	12 032,00	11 029,00
	Fixed (Long-Term) Assets						
1,00	Long-term investments	1 208,00	302,00	920,00	322,00	1 032,00	1 400,00
2,00	Property, plant, and equipment	15 340,00	3 835,00	14 200,00	4 970,00	13 250,00	13 904,00
3,00	(Less accumulated depreciation)	(2 200,00)	(550,00)	(1 920,00)	(672,00)	(900,00)	(1 309,00)
4,00	Intangible assets						
	Total fixed assets	14 348,00	3 587,00	13 200,00	4 620,00	13 382,00	13 995,00
	Other Assets						
1	Deferred income tax						890,00
2	Other						
	Total Other Assets	0,00	0,00	0,00	0,00	0,00	890,00
	Total Assets	**26 345,00**	**6 586,25**	**24 821,00**	**8 687,35**	**25 414,00**	**25 914,00**
	Liabilities and Owner's Equity						
	Current Liabilities						
1	Accounts payable	8 060,00	2 015,00	7 605,00	2 661,75	8 044,00	7 958,00
2	Short-term loans						
3	Income taxes payable	3 145,00	786,25	2 997,00	1 048,95	3 100,00	2 898,00
4	Accrued salaries and wages						
5	Unearned revenue						
6	Current portion of long-term debt						
	Total current liabilities	11 205,00	2 801,25	10 602,00	3 710,70	11 144,00	10 856,00
	Long-Term Liabilities						
1	Long-term debt	3 450,00	862,50	3 217,00	1 125,95	2 966,00	3 410,00
2	Deferred income tax						359,00
3	Other						
	Total long-term liabilities	3 450,00	862,50	3 217,00	1 125,95	2 966,00	3 769,00
	Owner's Equity						
1	Owner's investment	7 178,00	1 794,50	6 938,00	2 428,30	7 200,00	7 300,00
2	Retained earnings	4 389,00	1 097,25	3 897,00	1 363,95	4 104,00	3 989,00
3	Other						
	Total owner's equity	11 567,00	2 891,75	10 835,00	3 792,25	11 304,00	11 289,00
	Total Liabilities and Owner's Equity	**26 222,00**	**6 555,50**	**24 654,00**	**8 628,90**	**25 414,00**	**25 914,00**
	Common Financial Ratios						
	Debt Ratio (Total Liabilities / Total Assets)	0,56	0,14	0,56	0,19	0,56	0,56
	Current Ratio (Current Assets / Current Liabilities)	1,07	0,27	1,10	0,38	1,08	1,02
	Working Capital (Current Assets - Current Liabilities)	792,00	198,00	1 019,00	356,65	888,00	173,00
	Assets-to-Equity Ratio (Total Assets / Owner's Equity)	2,28	0,57	2,29	0,80	2,25	2,30
	Debt-to-Equity Ratio (Total Liabilities / Owner's Equity)	1,27	0,32	1,28	0,45	1,25	1,30

TASK 2. EXCEL FUNCTIONS

✓ Work with the "Task 2" sheet. Calculate **tariff rates** for employees of a company.

✓ See the **examples** below🡻.

1. Calculate the **Current Month** by using the
- MONTH (Serial_Number) function;
- TODAY() function.

Function MONTH(Serial_number)

Returns the month of a date represented by a serial number. The month is given as an integer, ranging from 1 (January) to 12 (December).

The MONTH function syntax has the following argument:

Serial_number. Required. The date of the month you are trying to find. Dates should be entered by using the DATE function, or as results of other formulas or functions. For example, use DATE(2008,5,23) for the 23rd day of May, 2008. Problems can occur if dates are entered as text.

Function TODAY()

Returns the serial number of the current date. The TODAY function syntax has no arguments.

2. Calculate the **Number of Working Days in the Current Month** using the VLOOKUP (lookup_value, table_array, col_index_num, [range_lookup]) function for searching the number of working days related to the current month.

Function VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])

You can use the VLOOKUP function to search the first column of a range of cells, and then return a value from any cell on the same row of the range.

The VLOOKUP function syntax has the following arguments:

lookup_value. Required. The value to search in the first column of the table or range.

table_array. Required. The range of cells that contains the data. You can use a reference to a range (for example, A2:D8), or a range name. The values in the first column of table_array are the values searched by lookup_value. These values can be text, numbers, or logical values. Uppercase and lowercase text are equivalent.

col_index_num. Required. The column number in the table_array argument from which the matching value must be returned. A col_index_num argument of 1 returns the value in the first column in table_array; a col_index_num of 2 returns the value in the second column in table_array, and so on.

range_lookup. Optional. A logical value that specifies whether you want VLOOKUP to find an exact match or an approximate match:

If range_lookup is either TRUE or is omitted, an exact or approximate match is returned. If an exact match is not found, the next largest value that is less than lookup_value is returned.

If range_lookup is FALSE, the values in the first column of table_array do not need to be sorted.

If the range_lookup argument is FALSE, VLOOKUP will find only an exact match. If there are two or more values in the first column of table_array that match the lookup_value, the first value found is used. If an exact match is not found, the error value #N/A is returned.

✓ The **VLOOKUP** function arguments are:

- lookup_value – the **Current Month** value;
- table_array – the **Working Calendar** table cell interval;
- col_index_num – the number of the **Number of Working Days per Month** column (this column's number is **2**).

Current data	April 25, 2018

WOKING CALENDAR			
Month number	Number of working ways per month	Current month	Number of working days in the current month
1	21	4	19
2	20		
3	23		
4	19		
5	21		
6	21		
7	21		
8	22		
9	21		
10	22		
11	20		
12	19		

3. Work with the **Time of Service** table.

a) Change **Data format** to make it look like a full date (Home – group Number – box Format cells)

TIME OF SERVICE				
№	Name and Surname	Date of hiring	Total work experience	
			Years	*Months*
1	*Employee 1*	June 20, 2003		
2	*Employee 2*	December 15, 2000		
3	*Employee 3*	November 6, 1988		
4	*Employee 4*	July 28, 1991		
5	*Employee 5*	February 2, 2000		
6	*Employee 6*	March 2, 1999		
7	*Employee 7*	June 15, 2003		
8	*Employee 8*	August 26, 2009		
9	*Employee 9*	December 25, 2001		

b) Calculate the **Total Work Experience**, applying the IF function:

- in **Years:**
  - ✓ if **[Current Month >= Month of Hiring]**, then we calculate Year as **[Current Year – The Year of Hiring]**; otherwise the Year is **[Current Year – The Year of Hiring - 1]**
- in **Months**

✓ if **[Current Month >= Month of Hiring]**, then we calculate Month as **[Current Month – The Month of Hiring]**; otherwise the Month is **[Current Month – The Month of Hiring + 12]**

✓ To get the **Current Year or Month**, insert the TODAY() function into the Month() or Year() functions.

TIME OF SERVICE				
№	Name and Surname	Date of hiring	Total work experience	
			Years	*Months*
1	*Employee 1*	June 20, 2003	14	10
2	*Employee 2*	December 15, 2000	17	4
3	*Employee 3*	November 6, 1988	29	5
4	*Employee 4*	July 28, 1991	26	9
5	*Employee 5*	February 2, 2000	18	2
6	*Employee 6*	March 2, 1999	19	1
7	*Employee 7*	June 15, 2003	14	10
8	*Employee 8*	August 26, 2009	8	8
9	*Employee 9*	December 25, 2001	16	4

4. Conduct calculations in the **Payroll** table.

✓ To conduct calculations in this table, you need the table **Reference of Tariff Rates**↓.

REFERENCE OF TARIFF RATES	
Position according to the staff	**Tariff rate (PLN)**
Accountant	3 000,00
Manager	3 500,00
Marketer	3 200,00
Economist	3 150,00
Financial Analyst	4 000,00

PAYROLL						
No.	*Name and Surname*	*Position*	*Number of actual says worked*	Salary		
				Rate	*Calculated salary*	*Salary with the Long Service Pay*
1	2	3	4	5	6	7
1	*Employee 1*	*Economist*	20	3 150,00		
2	*Employee 2*	*Manager*	19	3 500,00		
3	*Employee 3*	*Marketer*	18	3 200,00		
4	*Employee 4*	*Marketer*	16	3 200,00		
5	*Employee 5*	*Financial Analyst*	21	4 000,00		
6	*Employee 6*	*Accountant*	21	3 000,00		
7	*Employee 7*	*Economist*	19	3 150,00		
8	*Employee 8*	*Marketer*	21	3 200,00		
9	*Employee 9*	*Financial Analyst*	22	4 000,00		
TOTAL				**30 400,00**		

▪ **Define the Rate column value on the bases of the employee's position and Reference on Tariff Rates using the VLOOKUP (…) function.**

✓ The **VLOOKUP** function arguments are:
- lookup_value – the **Position** column value in the current row;
- table_array – the **Reference on Tariff Rates** table cell interval;
- col_index_num – the number of the **Amount of tariff rate (PLN)** column (this column's number is **2**).

a) Calculate the **Calculated Salary** column values using the data about the **Number of Actual Days Worked** and the **Number of Working Days** of the **WORKING CALENDAR** table.

*Calculated Salary = (Number of Actual Days Worked/Number of Working Days) * Rate*

b) highlight with the **fill color** those **Calculated Salary** column cells, where the values in the current row coincide with the appropriate **Rate** column cell values (for example, **=G5=F5**, where **G5** is **Calculated Salary**, **F5** is **Rate**).

✓ For doing this use Conditional Formatting (tab Home – group Styles – icon Conditional Formatting – Manage Rules – New Rule – Select the Rule Type: Use a formula to determine which cells to format / Format value where this formula is true).

PAYROLL						
No.	Name and Surname	Position	Number of actual says worked	Salary		
				Rate	Calculated salary	Salary with the Long Service Pay
1	2	3	4	5	6	7
1	Employee 1	Economist	20	3 150,00	3 315,79	
2	Employee 2	Manager	19	3 500,00	3 500,00	
3	Employee 3	Marketer	18	3 200,00	3 031,58	
4	Employee 4	Marketer	16	3 200,00	2 694,74	
5	Employee 5	Financial Analyst	21	4 000,00	4 421,05	
6	Employee 6	Accountant	21	3 000,00	3 315,79	
7	Employee 7	Economist	19	3 150,00	3 150,00	
8	Employee 8	Marketer	21	3 200,00	3 536,84	
9	Employee 9	Financial Analyst	22	4 000,00	4 631,58	
TOTAL				30 400,00	16 963,16	

c) Calculate the **Salary with the Long Service Pay** column cell values using the nested IF(logical_test, [value_if_true], [value_if_false]) function, based on the **Work Experience**.

Function IF(logical_test, [value_if_true], [value_if_false])

The IF function returns one value if a condition you specify evaluates to TRUE, and another value if that condition evaluates to FALSE.

The IF function syntax has the following arguments:

logical_test. Required. Any value or expression that can be evaluated to TRUE or FALSE.

value_if_true. Optional. The value that you want to be returned if the logical_test argument evaluates to TRUE.

value_if_false. Optional. The value that you want to be returned if the logical_test argument evaluates to FALSE.

✓ To get the **Salary with the Long Service Pay**, use the following rules:

Work Experience	Salary with the Long Service Pay
less than 5 years	Calculated salary
from 5 to 10 years	Calculated salary + 10% of the Calculated salary
from 10 to 20 years	Calculated salary + 20% of the Calculated salary
over 20 years	Calculated salary + 30% of the Calculated salary

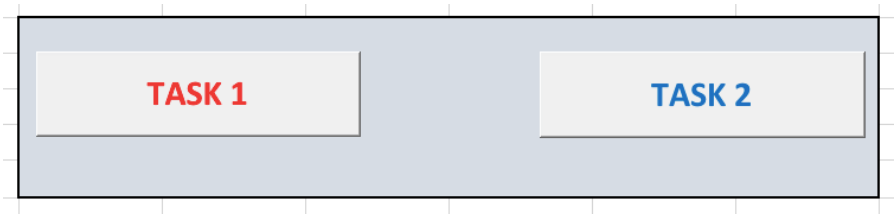
PAYROLL						
No.	*Name and Surname*	*Position*	*Number of actual says worked*	Salary		
				Rate	*Calculated salary*	*Salary with the Long Service Pay*
1	2	3	4	5	6	7
1	*Employee 1*	*Economist*	20	3 150,00	3 315,79	3 978,95
2	*Employee 2*	*Manager*	19	3 500,00	3 500,00	4 200,00
3	*Employee 3*	*Marketer*	18	3 200,00	3 031,58	3 941,05
4	*Employee 4*	*Marketer*	16	3 200,00	2 694,74	3 503,16
5	*Employee 5*	*Financial Analyst*	21	4 000,00	4 421,05	5 305,26
6	*Employee 6*	*Accountant*	21	3 000,00	3 315,79	3 978,95
7	*Employee 7*	*Economist*	19	3 150,00	3 150,00	3 780,00
8	*Employee 8*	*Marketer*	21	3 200,00	3 536,84	3 890,53
9	*Employee 9*	*Financial Analyst*	22	4 000,00	4 631,58	5 557,89
TOTAL				**30 400,00**	**16 963,16**	**20 928,42**

TASK 3. MACROS IN EXCEL

✓ Work with the "Menu" sheet, as well as with "Task 1" and "Task 2" sheets. Create **buttons** to make it easier to switch between the sheets.

1. Check whether you have the Developer tab active on the ribbon. If not, go to Excel – Preferences – Ribbon & Toolbar. In the Customize the Ribbon category select the Developer checkbox, then click Save.

2. On the "Menu" sheet, draw **buttons** (you may use AutoForms for that) for each of the tasks you made before.



3. On the sheets "Task 1" and "Task 2" draw **buttons** (in any suitable part of the sheet) that will take you back to the "Menu" sheet.

4. Now you should record **Macro's** to make the buttons work. You will need **4 macros** for 4 buttons you've made.

✓ Start recording a macro when you are sure what this macro will perform.
✓ To start recording a macro, go to the Developer tab and click Record Macro. When you finish recording, **go back** to click Stop Recording**!!!**

- Create **macros** task_1 and task_2 to move from the "Menu" sheet to the "Task 1" and "Task 2" sheets respectively.
- Create **macros** menu_1 and menu_2 to move back to the "Menu" sheet from the "Task 1" and "Task 2" sheets respectively.

✓ Once the macros are recorded, **connect them with the particular buttons**. To do that:

- **right mouse click** on the required button;
- choose Assign Macro;
- choose the **particular macro from the list**;
- **press the button** to see if the macro works and you're taken to the required Excel sheet;
- enjoy the result :)

TASK 4. CUSTOM NUMERIC FORMATS

This task is additional and is to be done individually at home!

✓ Work with the "Task 3" sheet. Create **custom numeric formats** for each column.
✓ As a result, you should have **the table** as one on the example below🡻.

Working Assets Register

Material Number	Item	Unit of Measure	Price per Unit, PLN	Quantity of goods	Surplus on the 1st of September		Turnover per Month, PLN
					Total, PLN	Total, USD	
1	*2*	*3*	*4*	*5*	*5*	*6*	*7*
01	Material A	kg	1,00 mln	30	30 000 000	$7 142 857,14	Expenditure: 19 993
02	Material B	kg	6,00 mln	10	60 000 000	$14 285 714,29	Receipts: 60 000
03	Material C	kg	3,67 mln	20	73 370 860	$17 469 252,38	Expenditure: 12 000
04	Material D	kg	33,46 thous	30	1 003 650	$238 964,29	Receipts: 40 000
05	Material E	kg	2,10 mln	25	52 474 450	$12 493 916,67	Expenditure: 32 000
06	Material F	kg	1,20 mln	34	40 829 784	$9 721 377,14	Expenditure: 5 000
07	Material G	kg	789,44 thous	20	15 788 800	$3 759 238,10	Receipts: 10 250

1. For formatting the columns 1, 2, 3, 4, 7 use Custom Number Formats (tab Number – dialog box Format cells – Custom) in accordance with the following rules:

a) **column 1** – for **Material Number** less than 10 there must appear a **"0"** before it;

b) **column 2** – for **Material Item** (for example, A) the text **"Material A"** must appear in the cell;

c) **column 3** – fill it in with the help of the **data duplication operation**: having selected the filled interval input the text **"kg"** into the first selected cell and using either:

- the Fill command (tab Home – group Editing – Fill);
- Ctrl-Enter combination.

d) **column 4** – for the **Price** value the system must perform the number value analysis:

For example, the number **2 000 000** is entered into the cell:
– this number is **greater than or equal to 1 000 000**, that's why it must be **rounded off to million**;
– this number must be visualized in the cell as: **2,00 mln**.
For example, the number **2 000** is entered into the cell:
– this number **is greater than or equal to 1 000**, that's why it must be **rounded off to thousand**;
– this number must be visualized in the cell as: **2,00 thous**.

e) **column 6**:

- calculate the values of the cells on the basis of the data in **column 5** and information about the dollar exchange rate;
- apply the **currency format with two decimal places**;

f) **column 7**:

- for **a positive number** (for example 40 000) there must appear a value: **Receipts: 40 000**;
- for a negative number (for example -40 000) there must appear a message: **Expenditure: 40 000**;
- for a **"0" (zero)** there must appear the symbol **"–"**.

2. For formatting the columns 4-7 use Conditional Formatting (tab Styles – list Conditional Formatting – Manage Rules – New Rule) in accordance with the following rules:

a) **column 4**:

✓ Select the Rule Type: Format all cells based on their value; Format Style: Icon Sets; Icon Style: 3 symbol (uncircled); Type: Number:

- values which **exceed 5 000 000** are marked with the icon  ;
- values which **exceed 1 000 000** and are **less than 5 000 000** are marked with the icon  ;
- values which are **less than 1 000 000** are marked with the icon  .

b) **column 5**:

✓ Select the Rule Type: Format only cells that contain:

- values which are **less than 20 000 000** have to be marked with the **blue** color;
- values which are **greater than 50 000 000** have to be marked with the **red** color;

✓ Select the Rule Type: Format all cells based on their value; Format Style: Icon Sets; Icon Style: 5 Ratings; Type: Percent:

- values which **exceed 80 % of the total sum** of all the values of this column are marked with the icon  ;

- values which **exceed 60 % and are less than 80 % of the total sum** of all the values of this column are marked with the icon  ;
- values which **exceed 40 % and are less than 60 % of the total sum** of all the values of this column are marked with the icon  ;
- values which **exceed 20 % and are less than 40 %** of the total sum of all the values of this column are marked with the icon  ;
- values which are **less than 20 % of the total sum** of all the values of this column are marked with the icon  .

c) **column 6**:

✓ for the values which are **above or below average** of all the cells of this column are highlighted with the color;

- Select the Rule Type: Format only value that are above or below average;
  Format values that are: above the average of the selected range;
- choose any **fill color** (icon Format).

d) **column 7**:

✓ each number is highlighted with **the bar of different length** (according to the **relevant value** of the number in this cell):

- Select the Rule Type: Format all cells based on their value;
- Format Style: Data bar;
- Type: Automatic;
- Fill: Gradient Fill.

✓ the bar color for negative values is red:

- Negative Value and Axis: Negative bar fill color – Red.