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IT Department

Stremnev A.Y.

INFORMATION TECHNOLOGIES

The methodical recommendations
for the practical course "Information technologies"

for

МОиИ-11, СИИ-11

2018

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THEME № 1

CONSTRUCTION OF PERSONAL COMPUTER. OPERATION SYSTEM

Summary

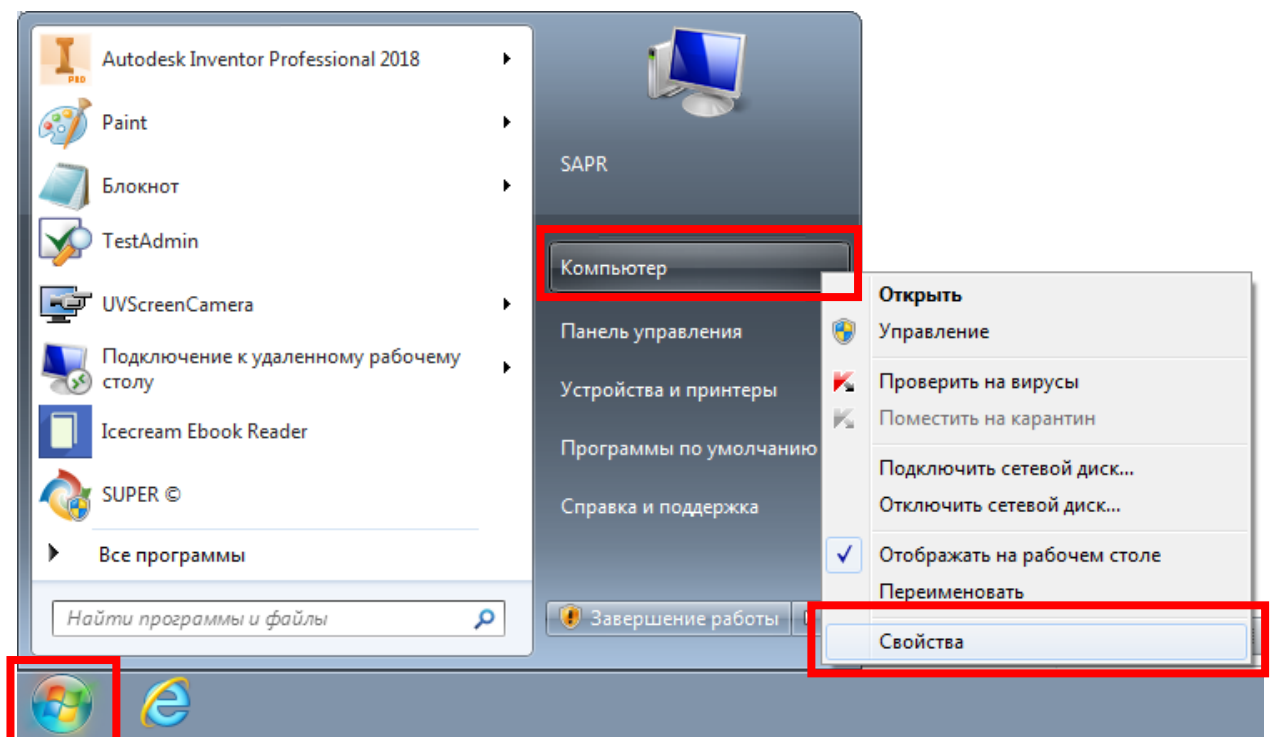
Operation system. Central processing unit. Random access memory. Hard drive. Graphic card. Audio card. Optical Drive. Network adapter. Windows Explorer (using and adjusting). Search and sorting in Windows Explorer. Adjusting parameters of mouse, keyboard, monitor, audio system. Service functions of MS Windows (process explorer, restoring, defragmentation, cleaning). Time and regional parameters in MS Windows.

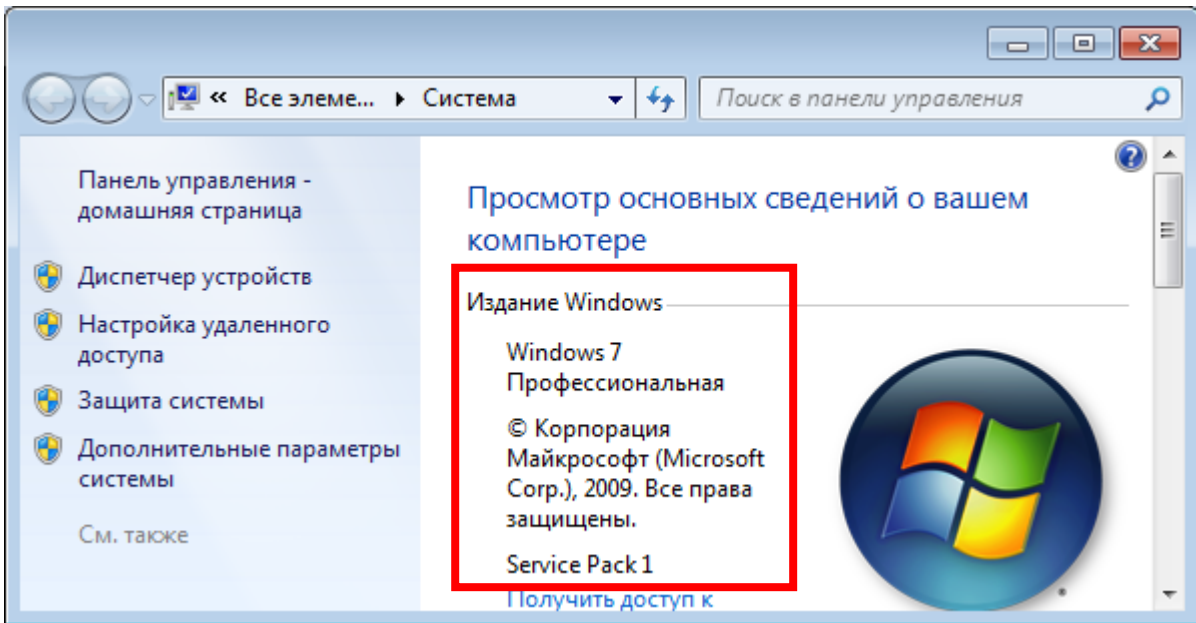
Example 1

Using appropriate commands find necessary information about your computer.

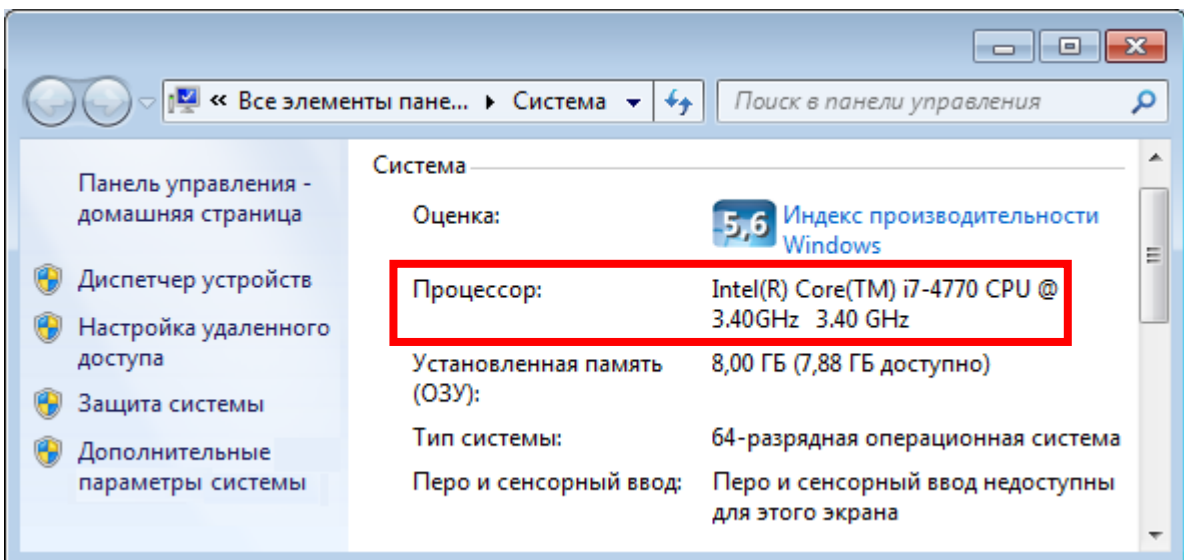
Solving

1) Installed operation system.

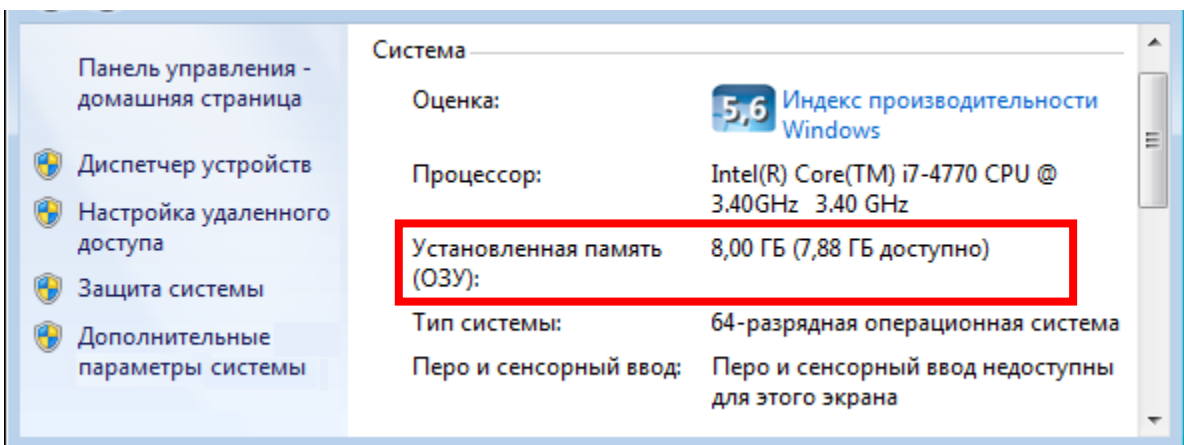




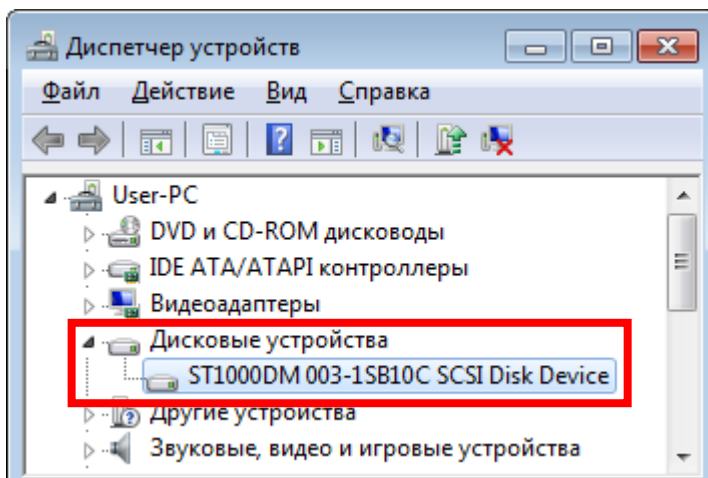
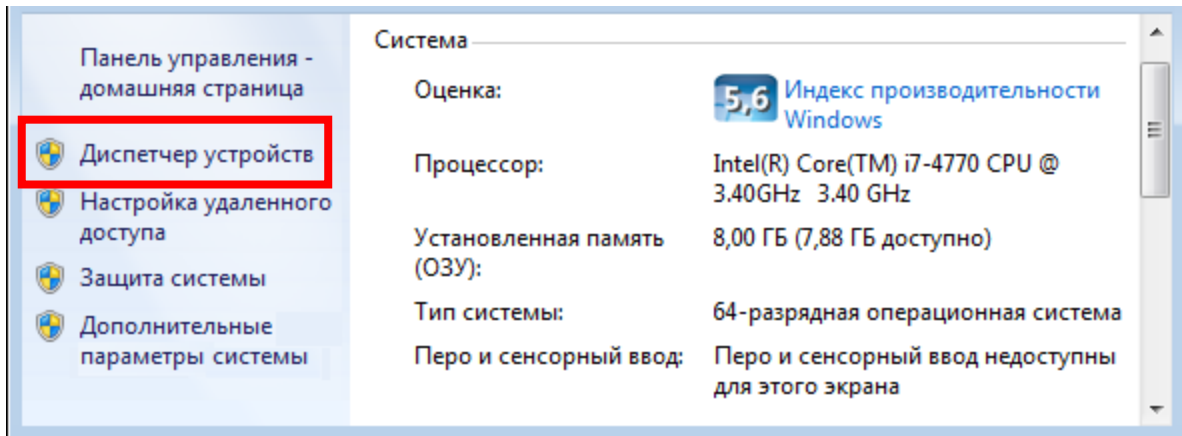
2) Central processing unit (type name, frequency).



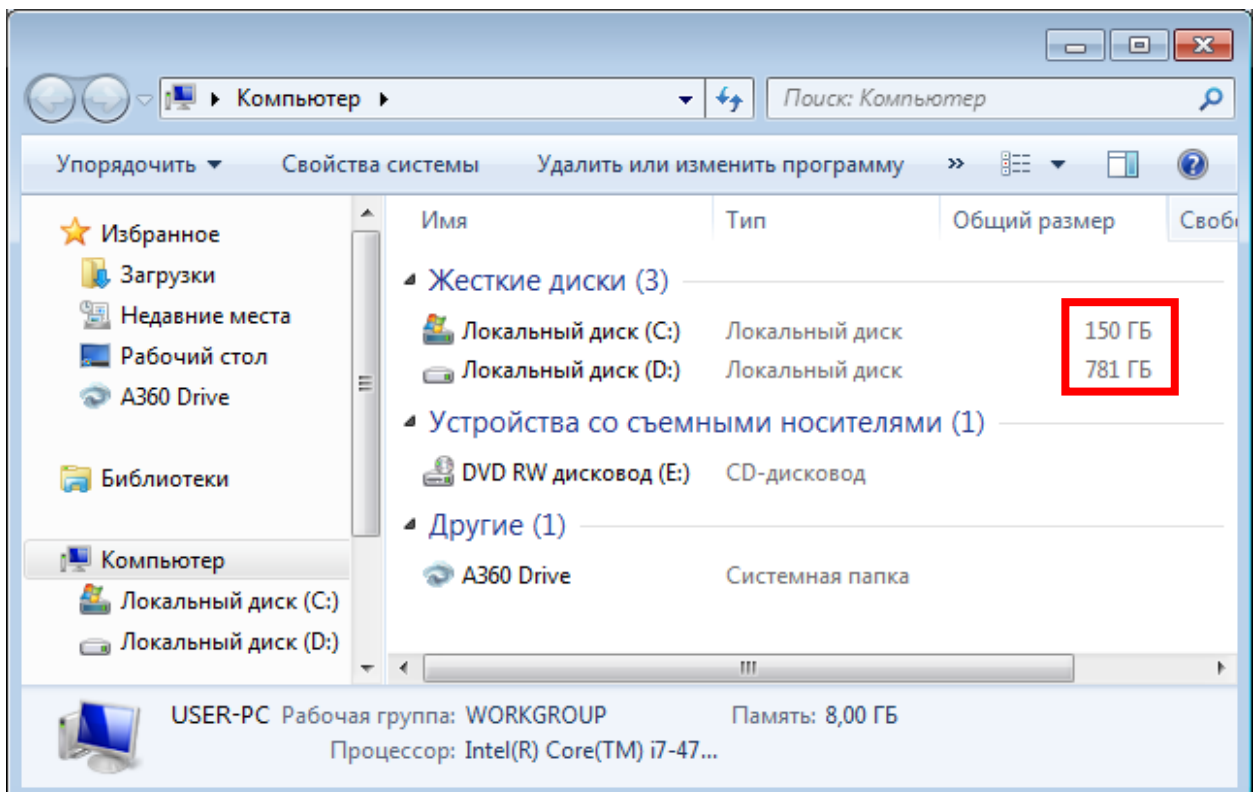
3) Random access memory (volume).



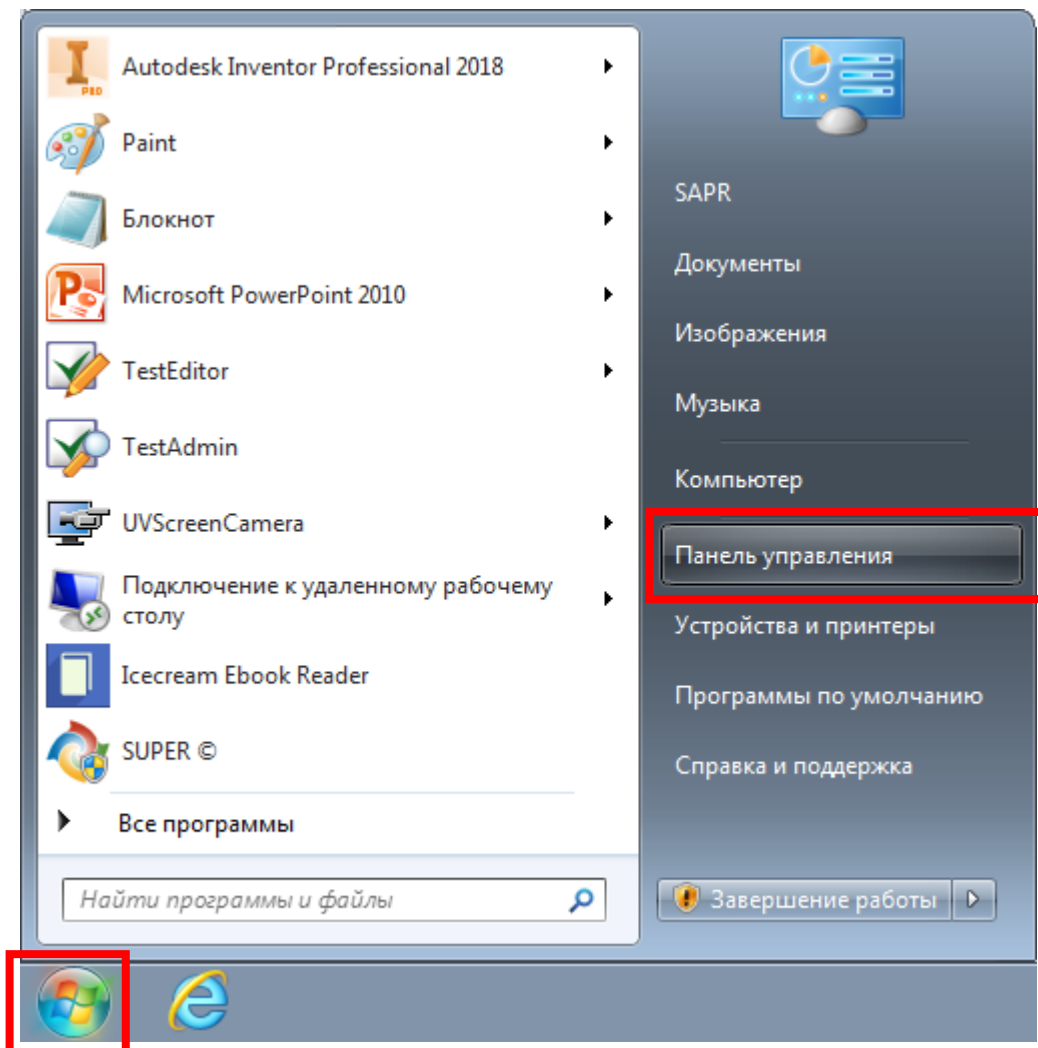
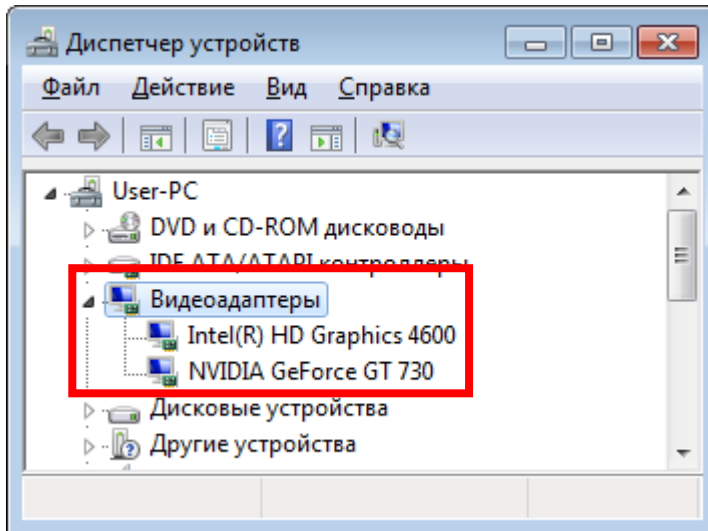
4) Hard drive (type name, volume).

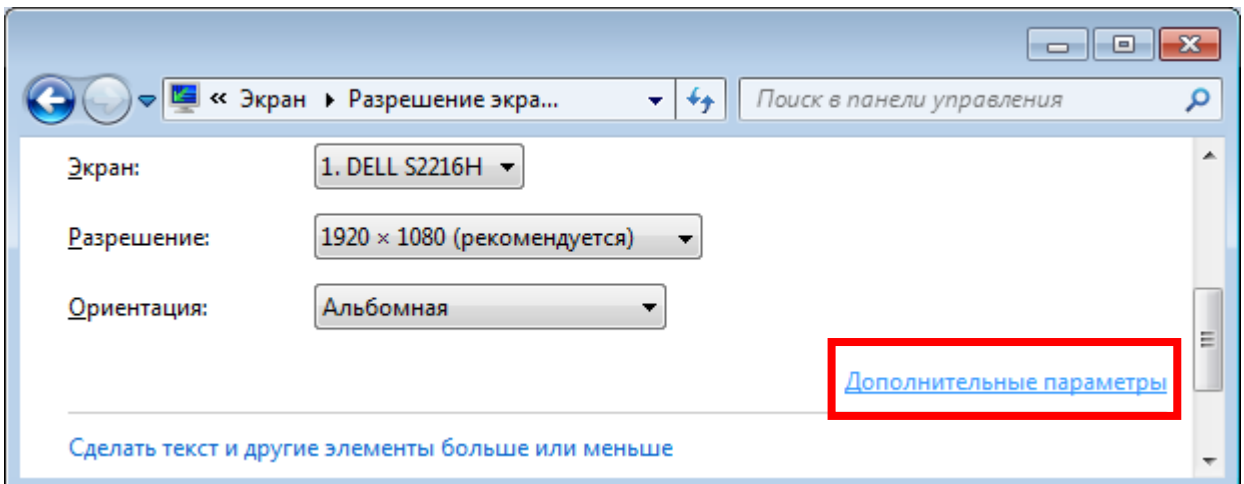
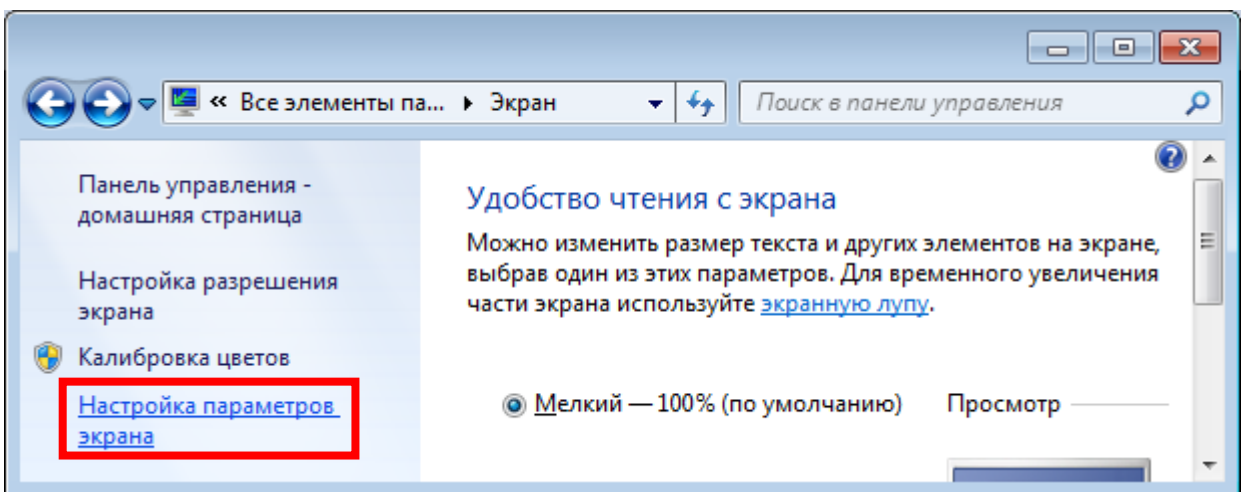
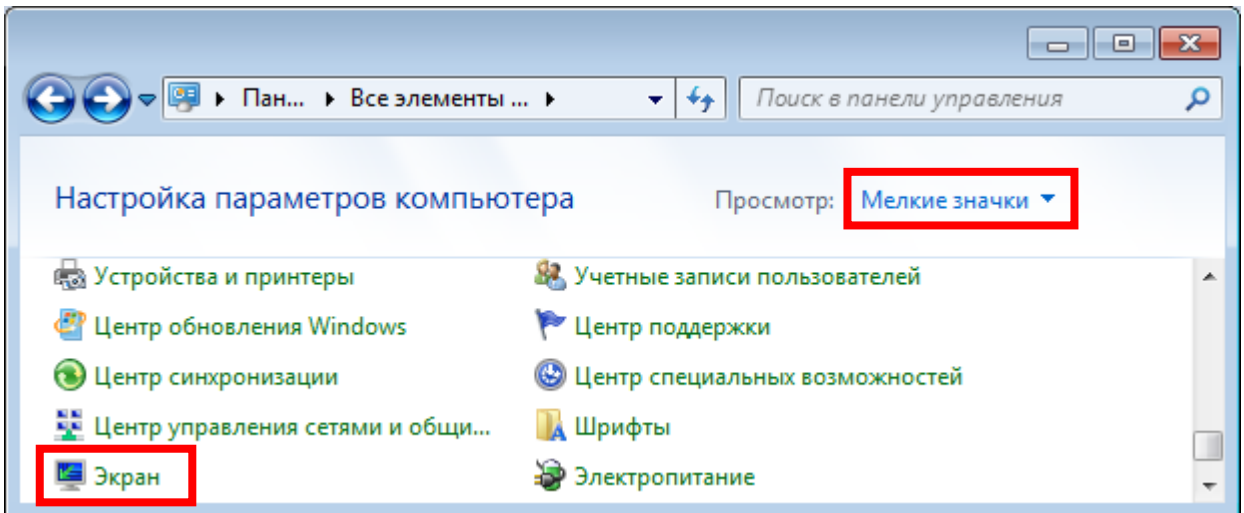


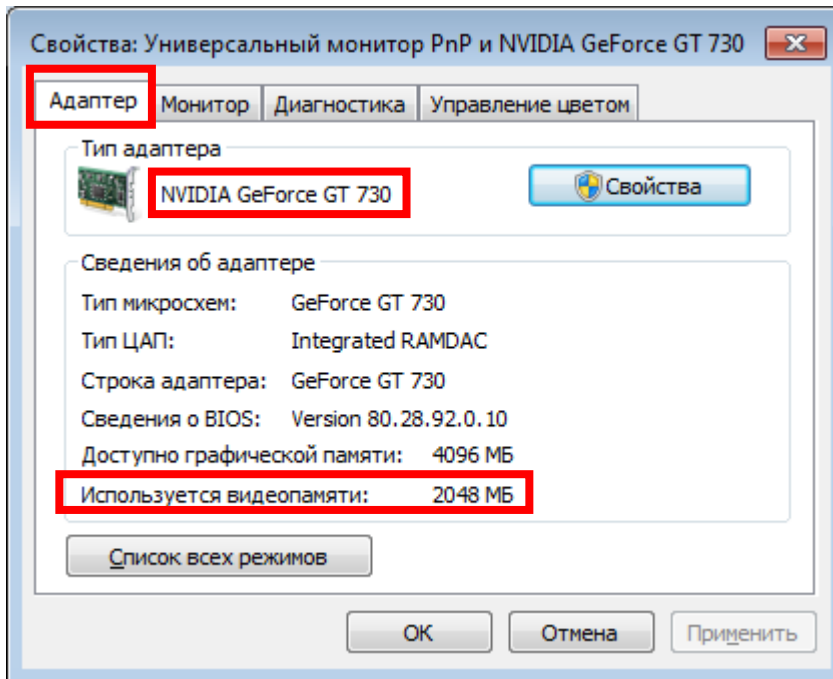
Press keyboard combination **WIN+E**.



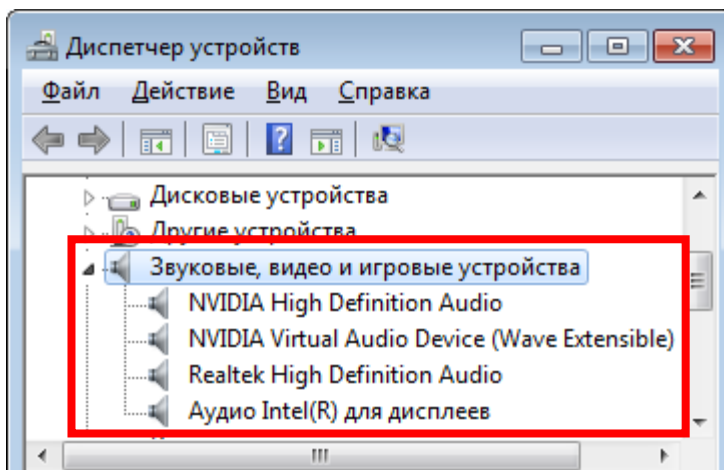
5) Graphics card (type name, video memory size).



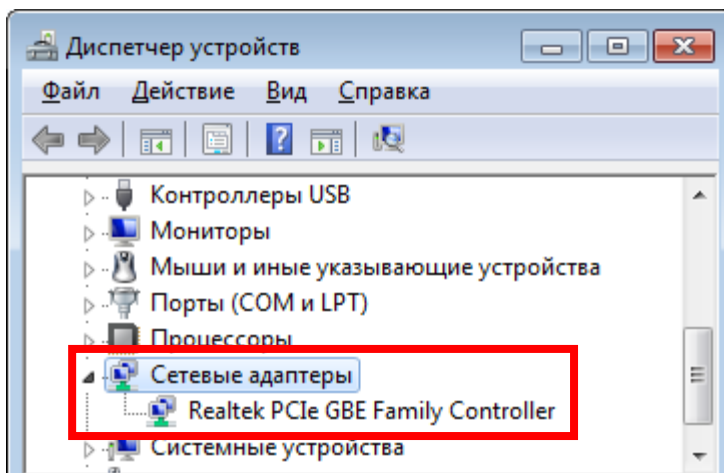




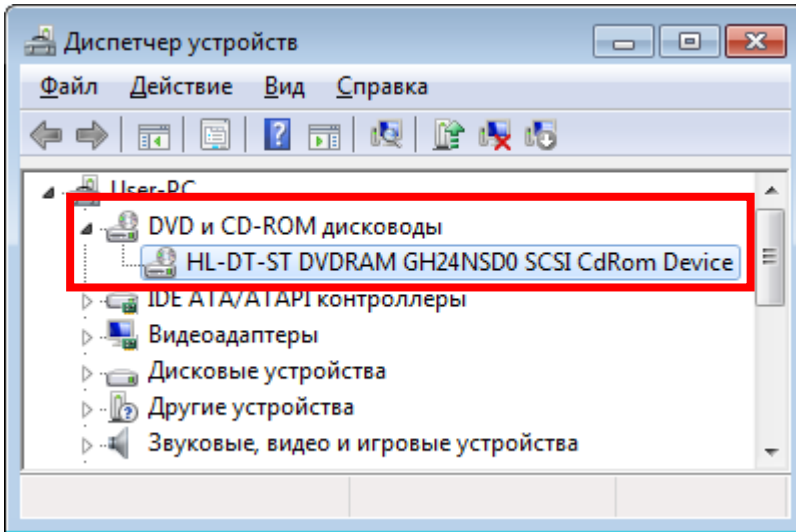
6) Audio card (type name).



7) Network adapter (type name).

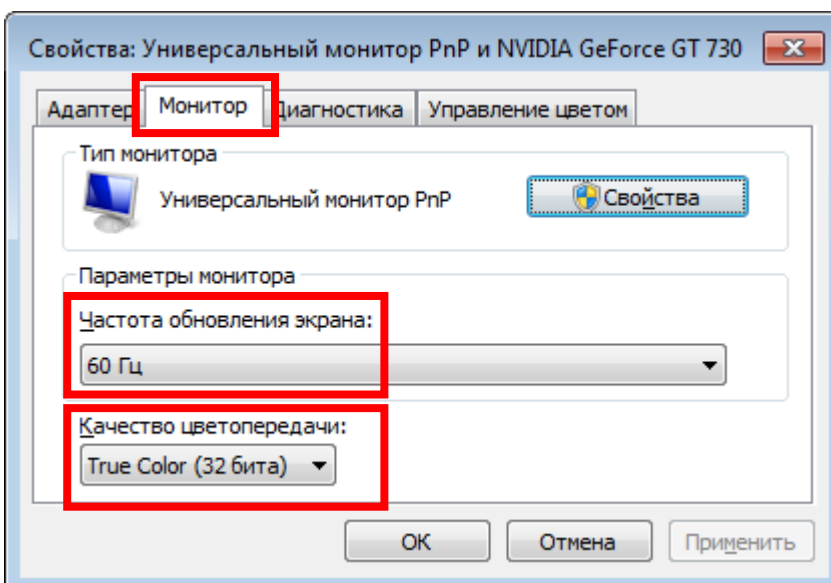
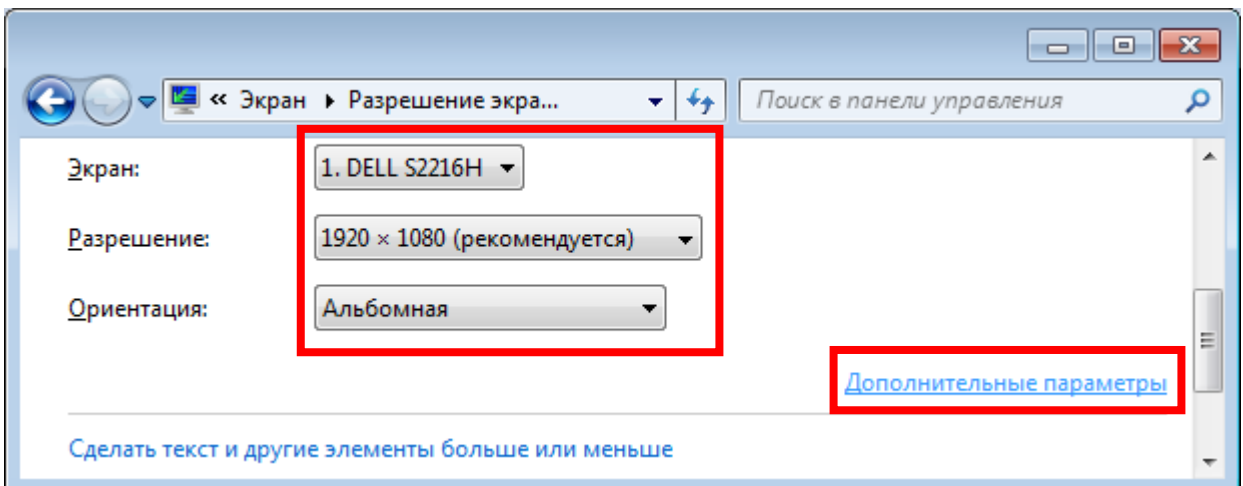


8) Optical drive.

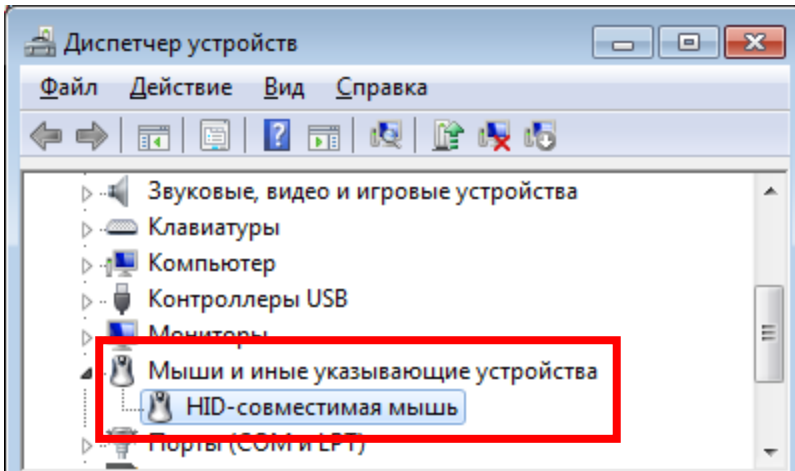


9) Monitor, display (type name, geometric size, physical resolution, working frequency, number of colors, interface).

See pos. 5.

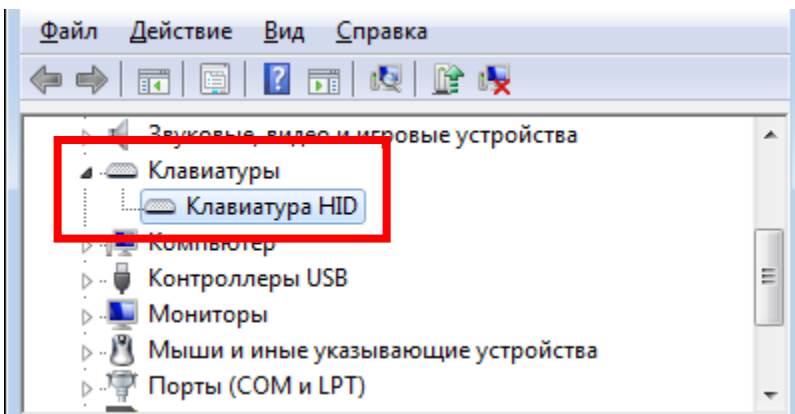


10) Mouse (type name, buttons, interface).



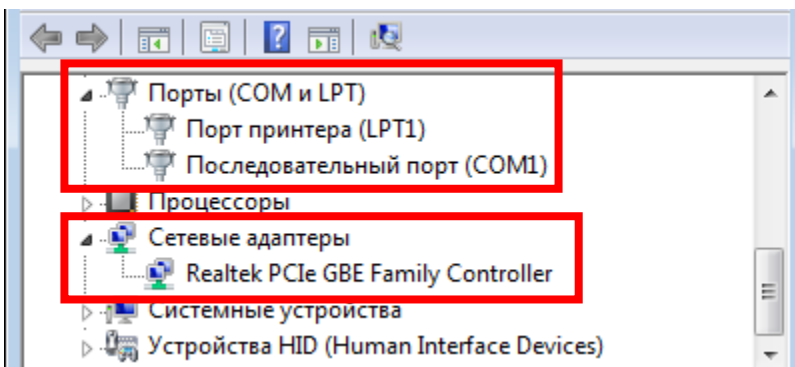
Mouse: Genius, 2 buttons + wheel, USB.

11) Keyboard (type name, buttons, interface).



Keyboard: Genius, Standard + special buttons (sound control, player control, browser, e-mail), USB.

12) Other peripheral devices: printer, scanner, headphones, camera, gamepad, flash-drive, media projector, ...



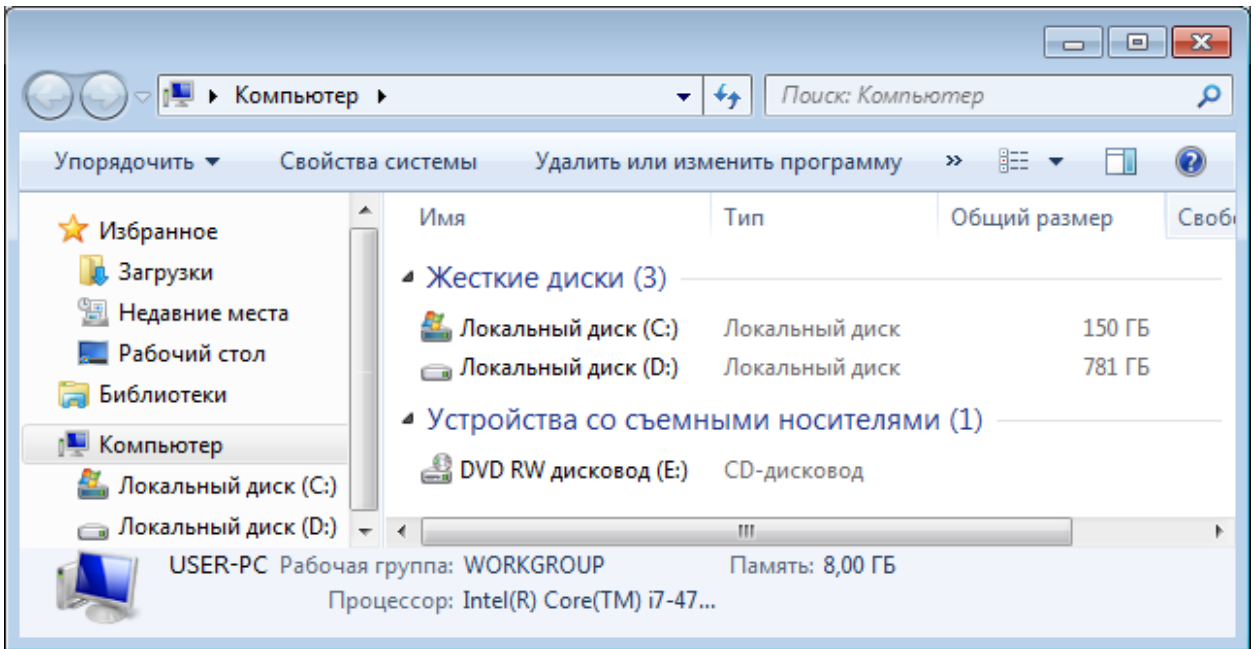
Example 2

Try to perform basic actions using operation system abilities.

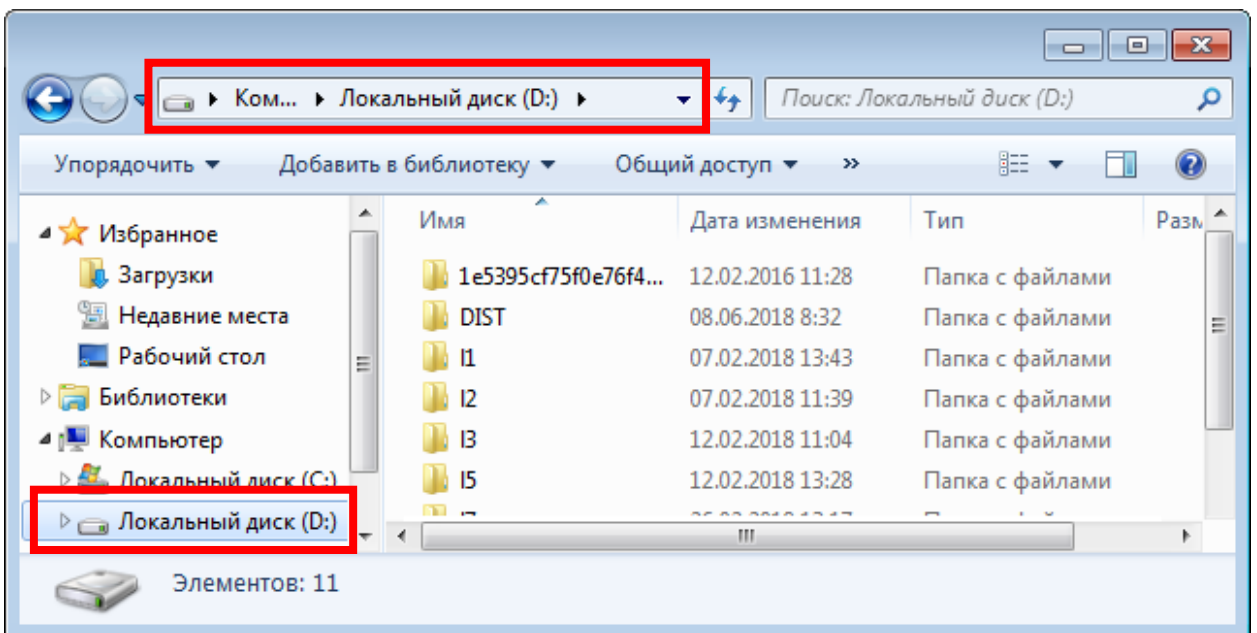
Solving

1) Starting of Windows Explorer.

Press keyboard combination **WIN+E**.

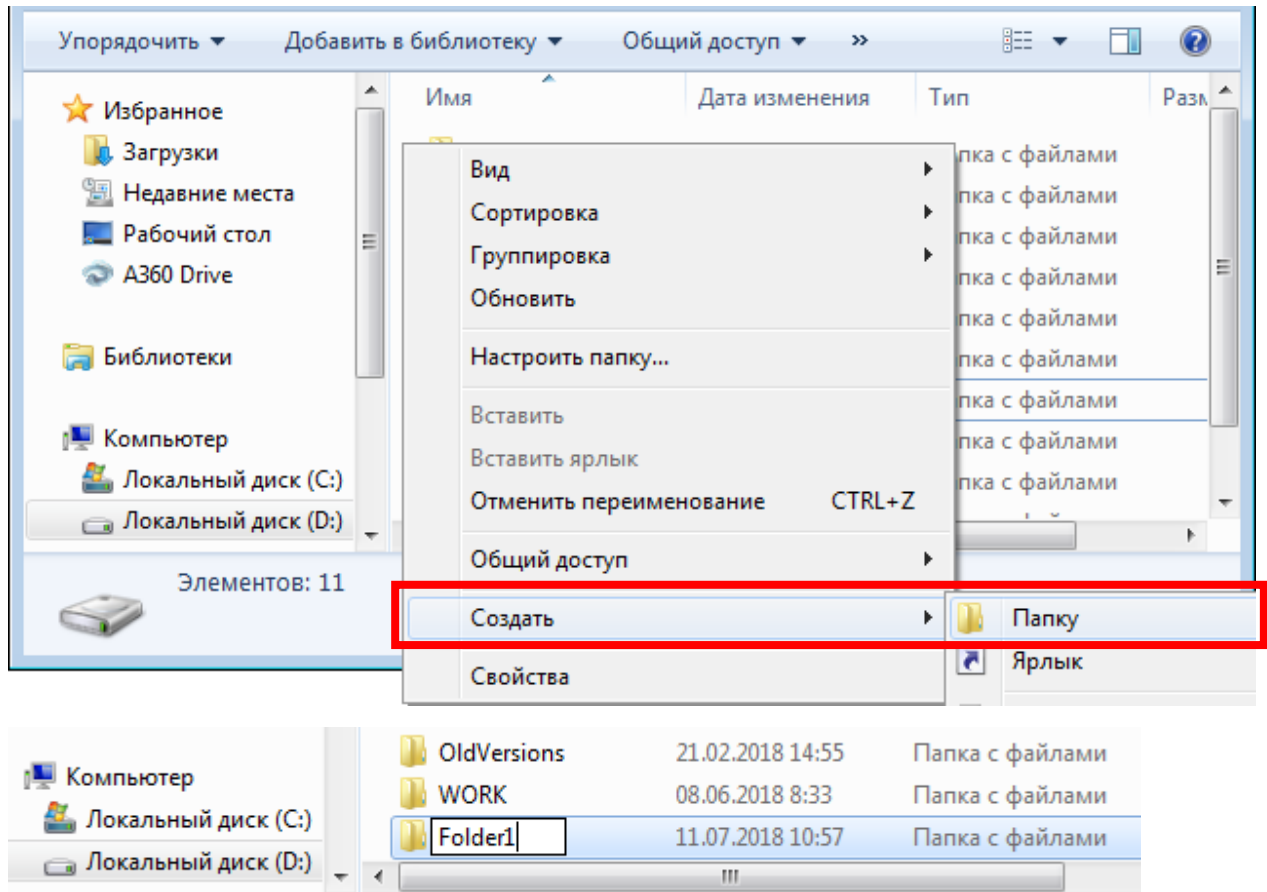


2) Moving to certain location in a file structure.



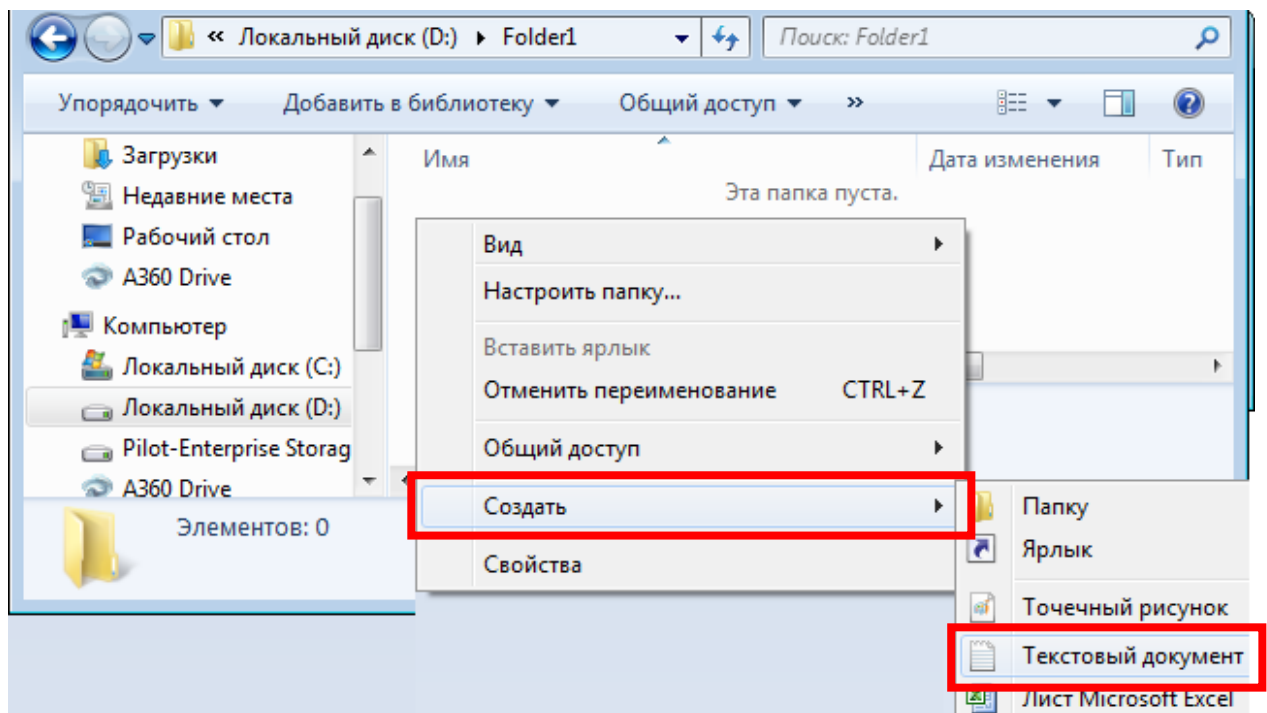
3) Creation of a new folder.

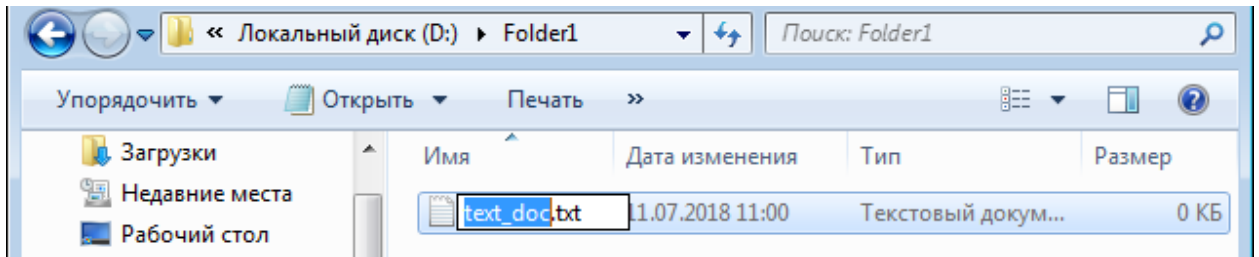
Use context menu for appropriate location.



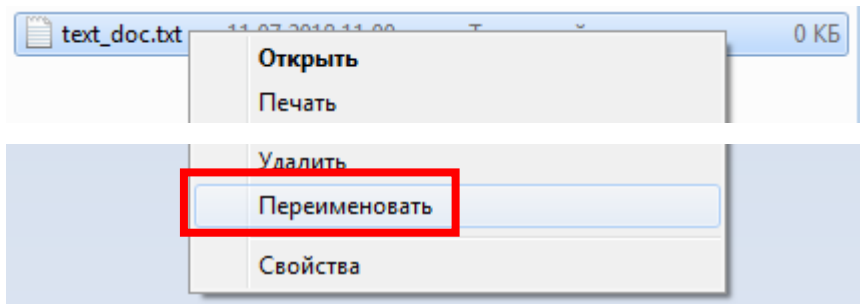
4) Creation of a new text file.

Use context menu for appropriate location.

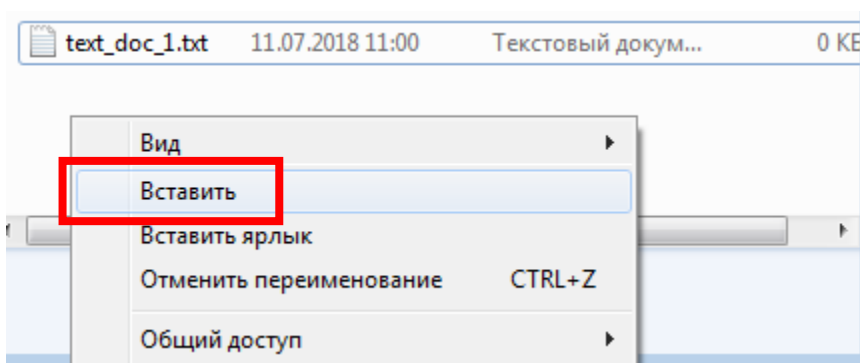
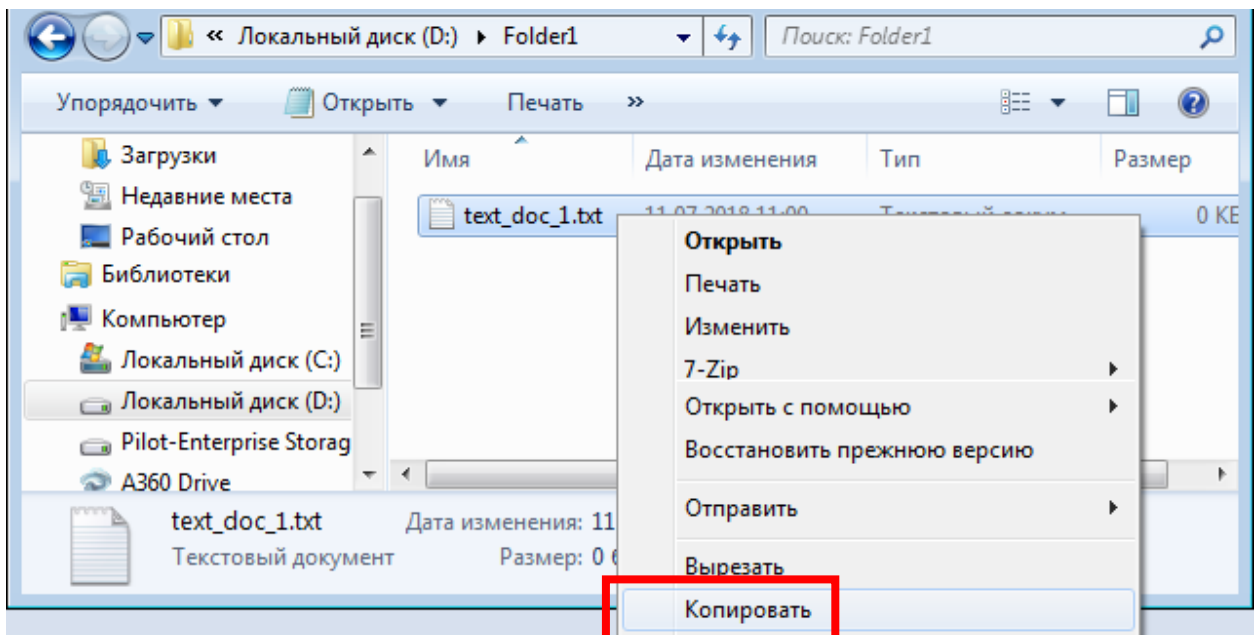




5) Renaming of a folder (or file).

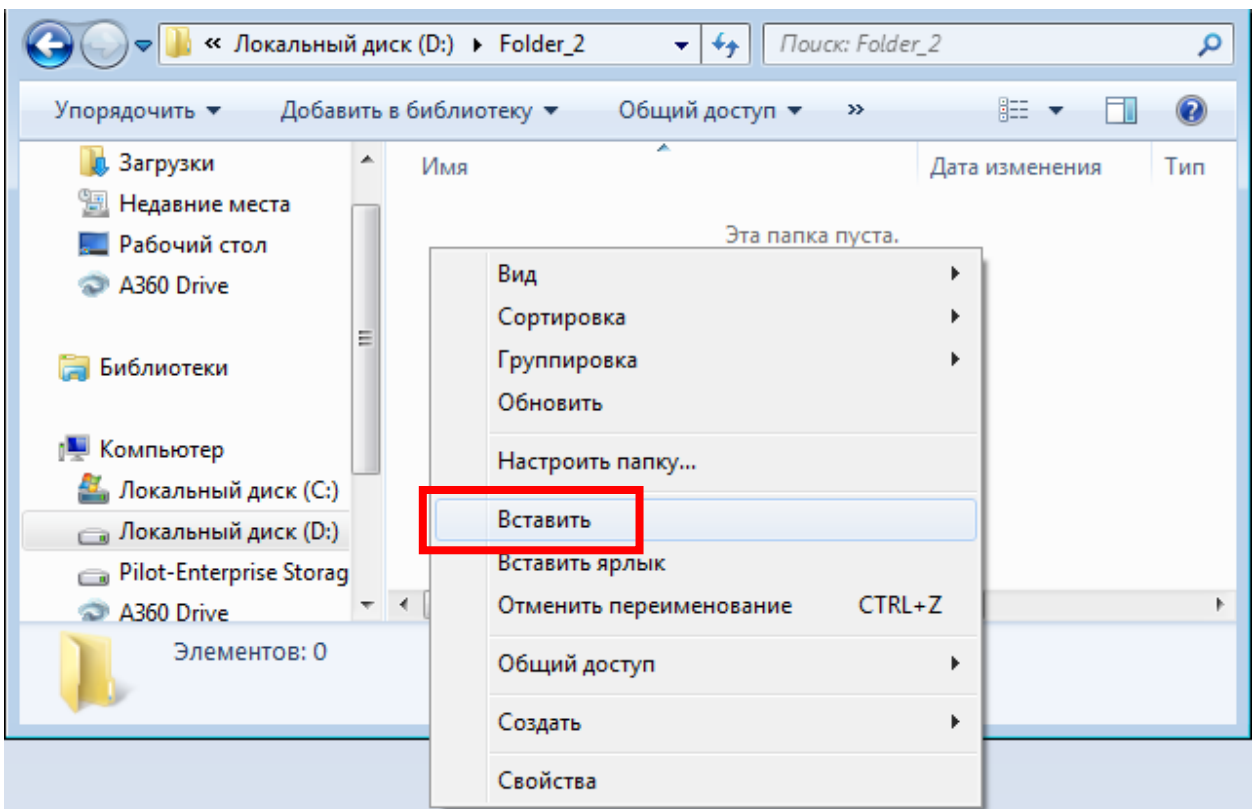
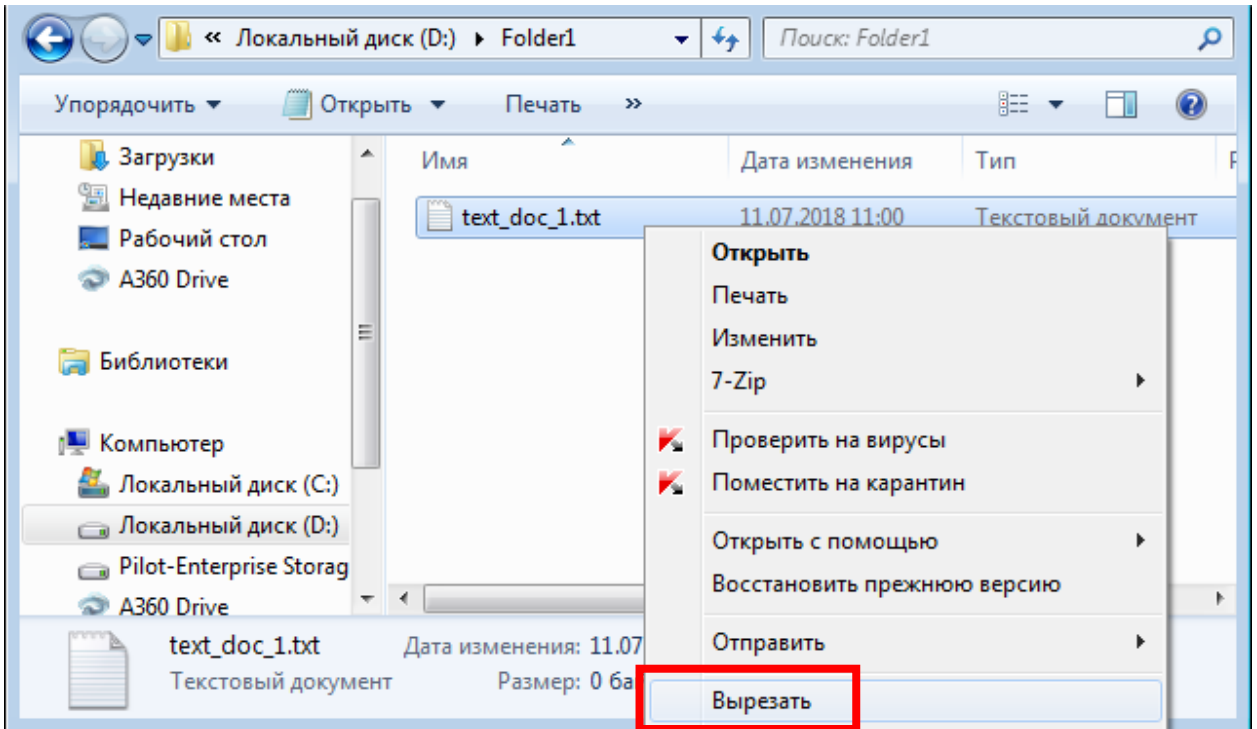


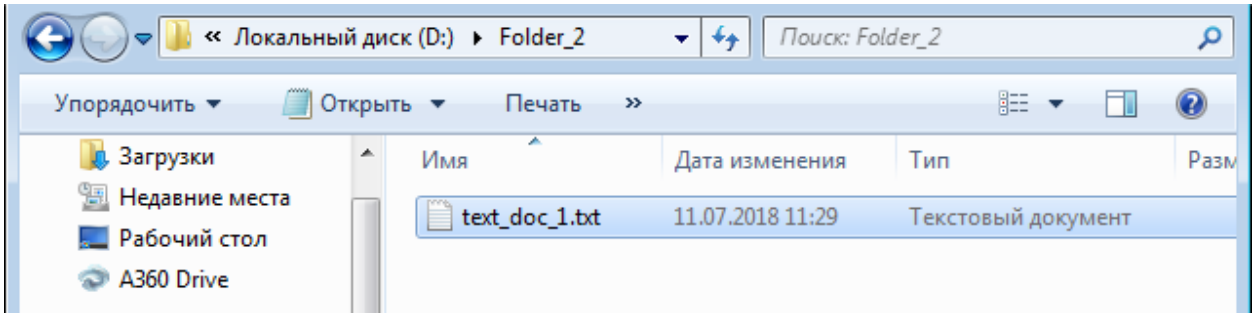
6) Copying a folder (or file).



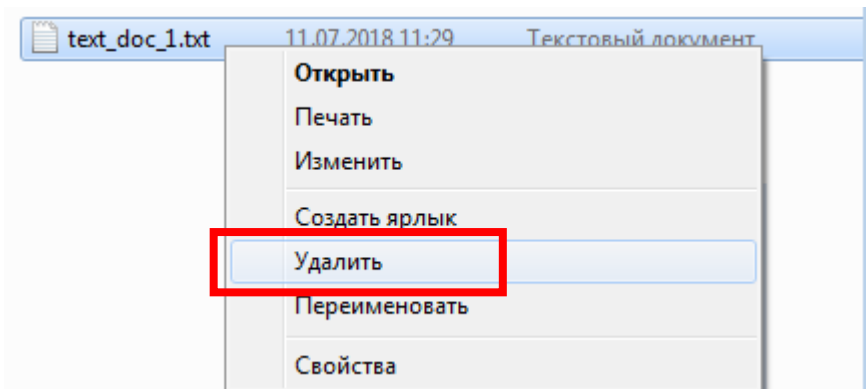
| Имя | Дата изменения | Тип |
|------------------------|------------------|--------------------|
| text_doc_1 - копия.txt | 11.07.2018 11:00 | Текстовый документ |
| text_doc_1.txt | 11.07.2018 11:00 | Текстовый документ |

7) Moving a folder (or file).



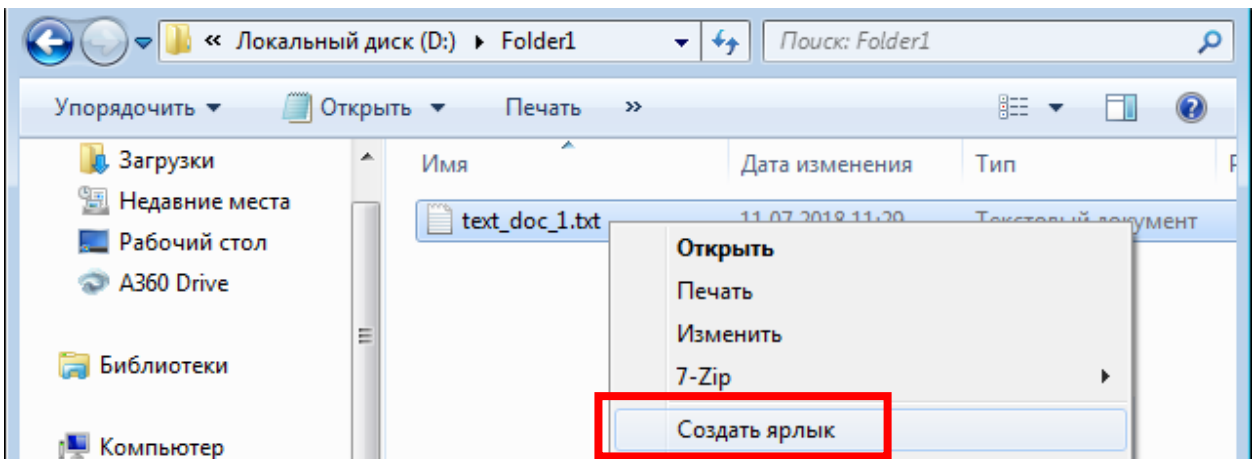


8) Deleting a folder (or file).



Complete removal: Select object + **SHIFT+DELETE**.

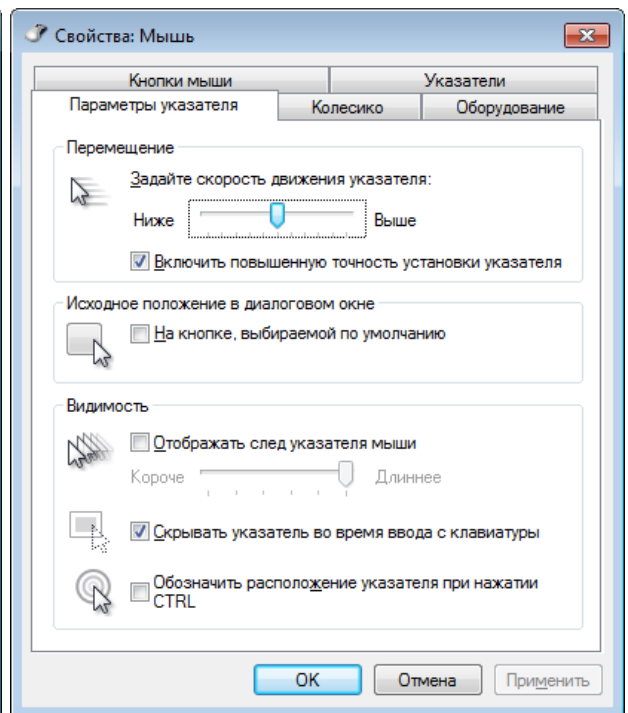
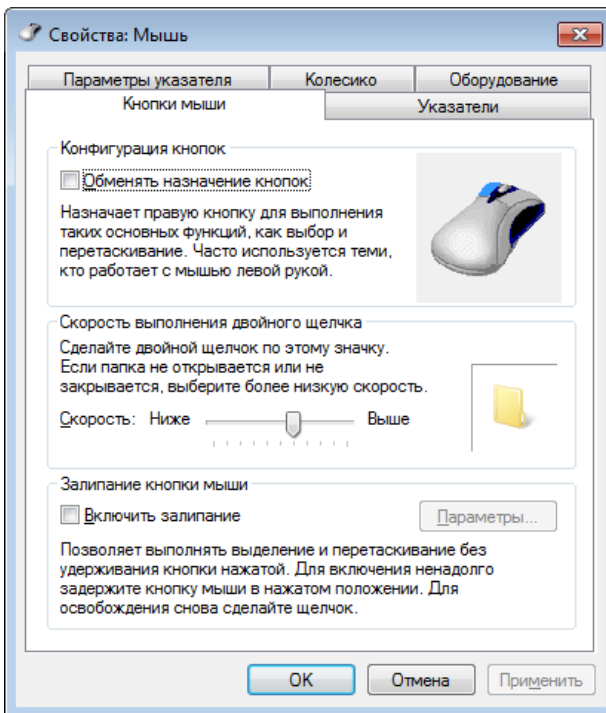
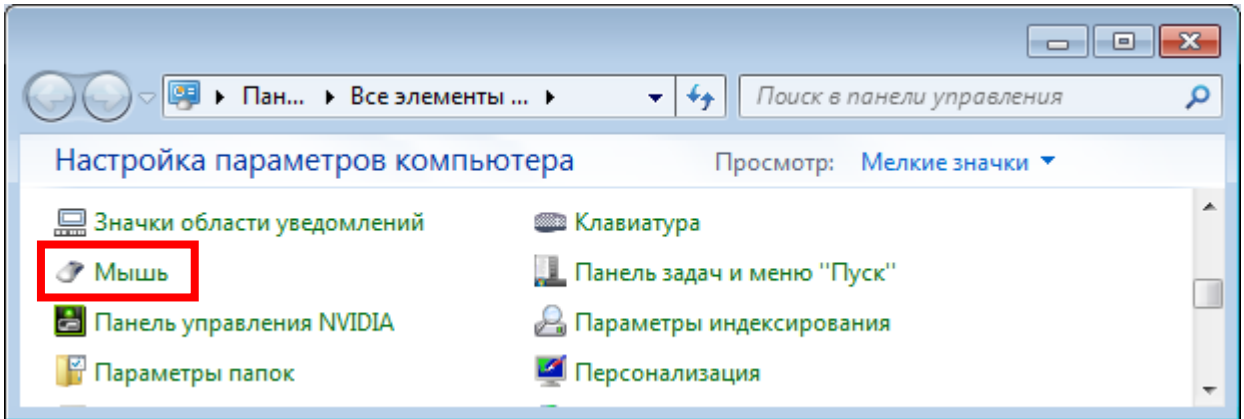
9) Making a label (link) for a folder (or file).



| Имя | Дата изменения | Тип |
|------------------------|------------------|--------------------|
| text_doc_1.txt | 11.07.2018 11:29 | Текстовый документ |
| text_doc_1.txt - Ярлык | 11.07.2018 11:40 | Ярлык |

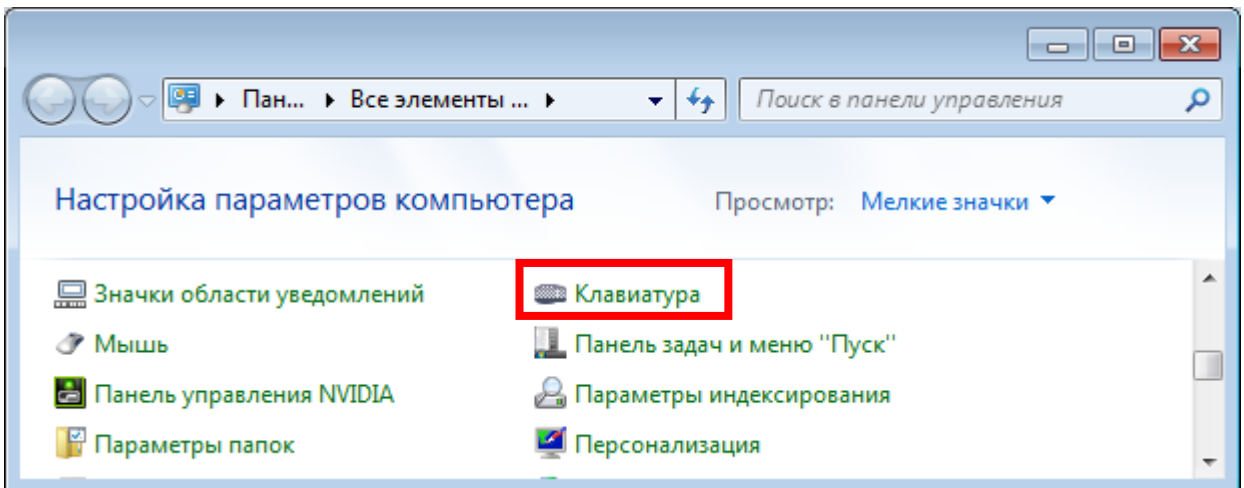
10) Changing of mouse parameters.

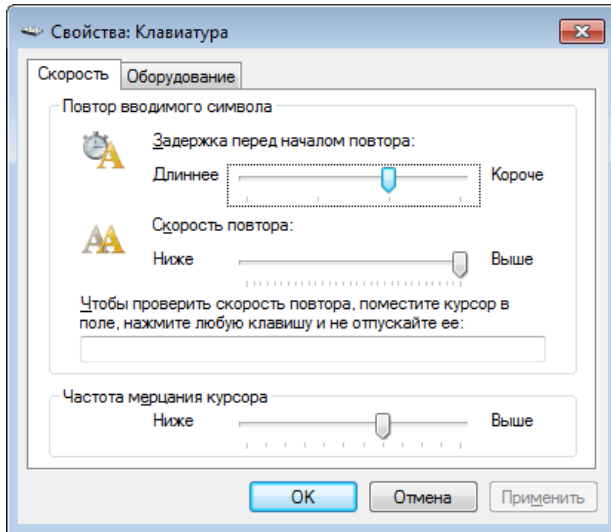
Open **Control Panel** (See pos. 5 of previous **Solving**).



11) Changing of keyboard parameters.

Open **Control Panel** (See pos. 5 of previous Solving).



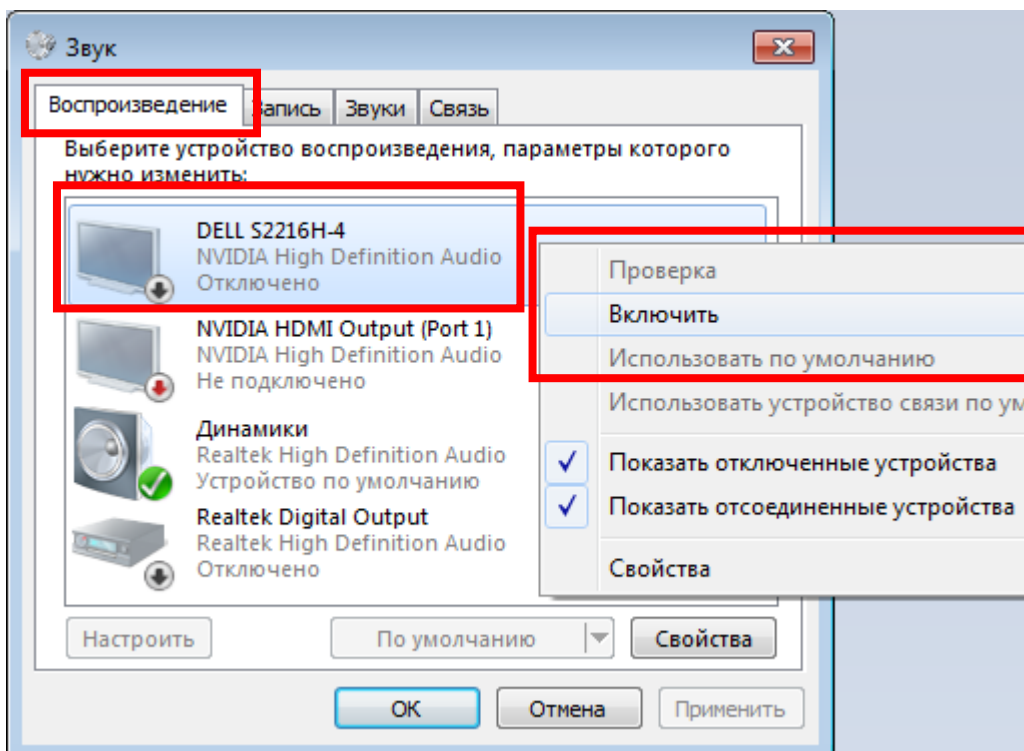
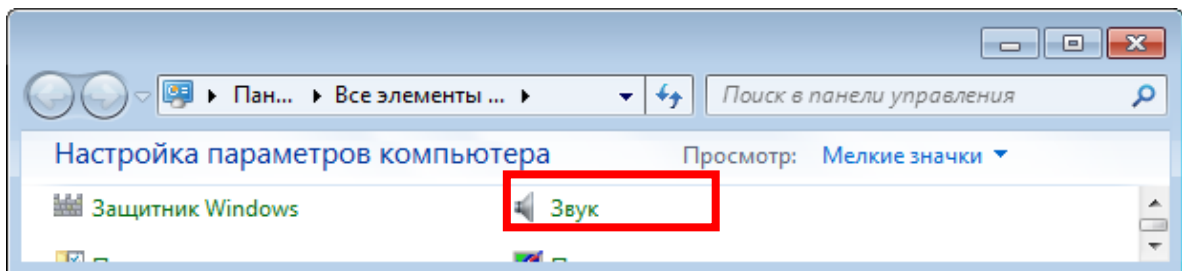


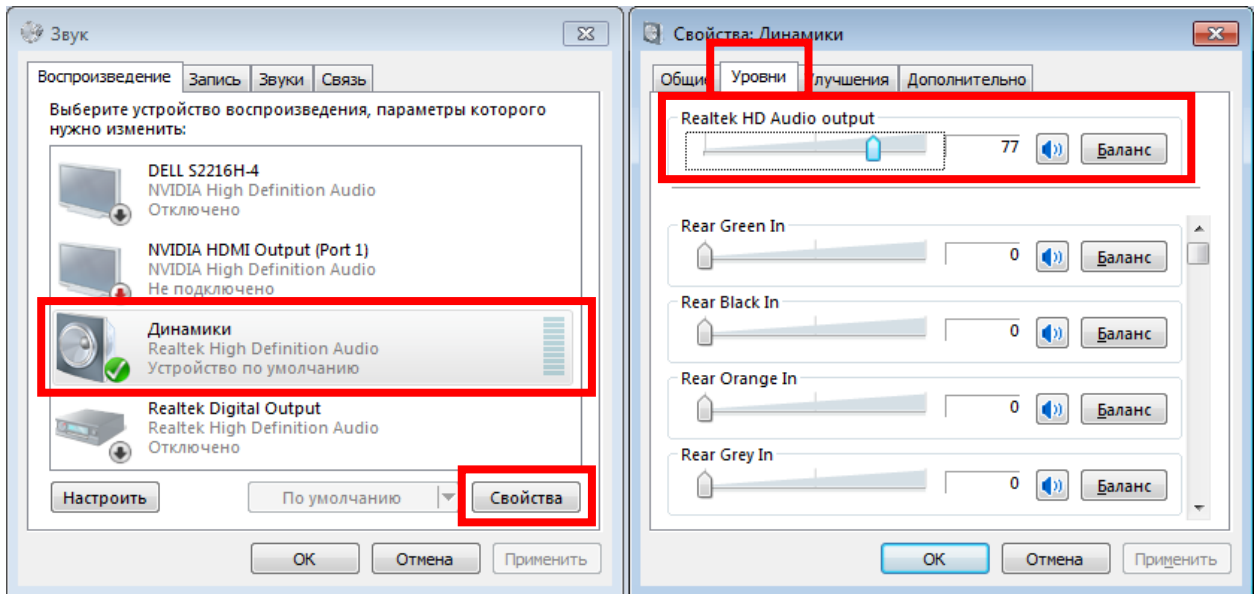
12) Changing of monitor (display) parameters.

See pos. 5 of previous **Solving**.

13) Changing of audio system parameters.

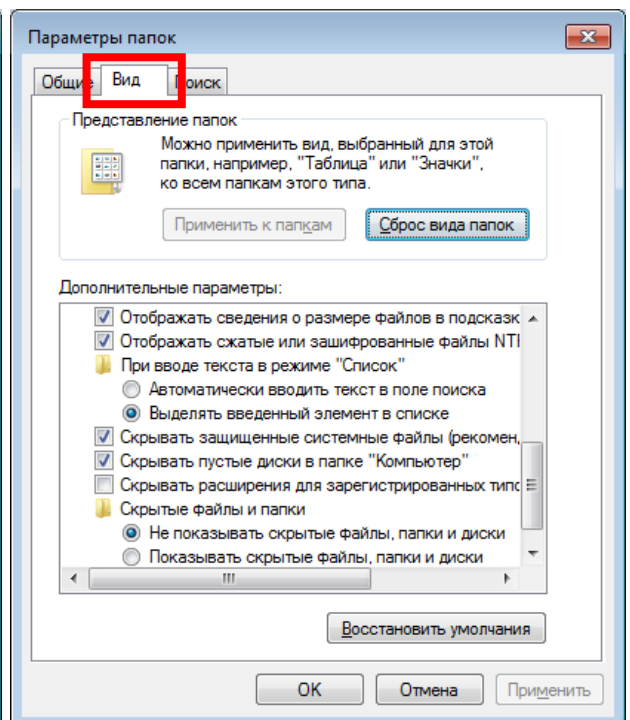
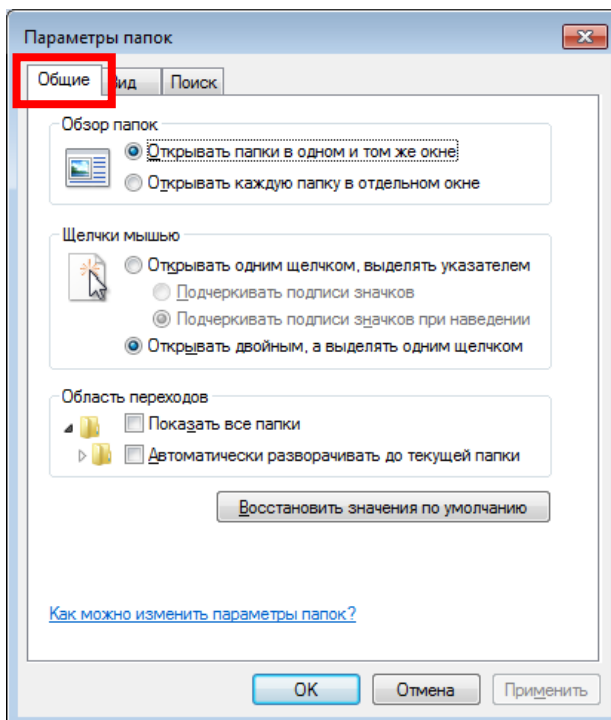
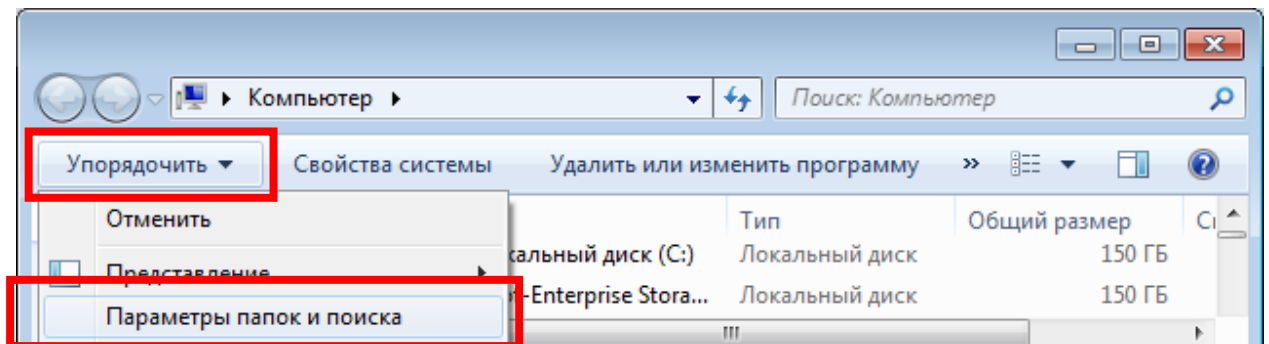
Open **Control Panel** (See pos. 5 of previous **Solving**).



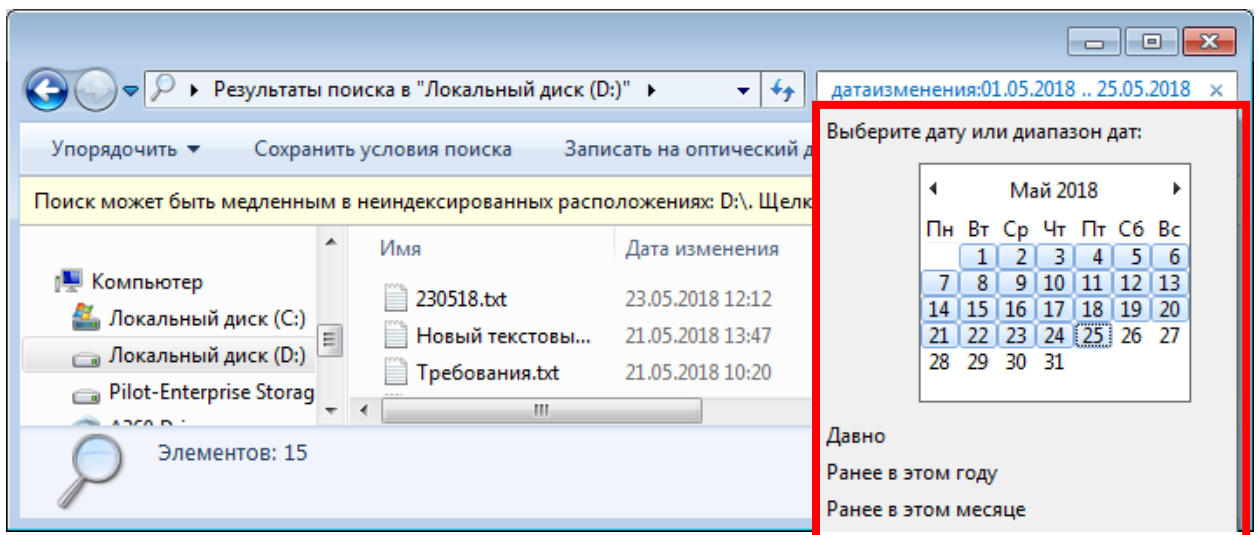
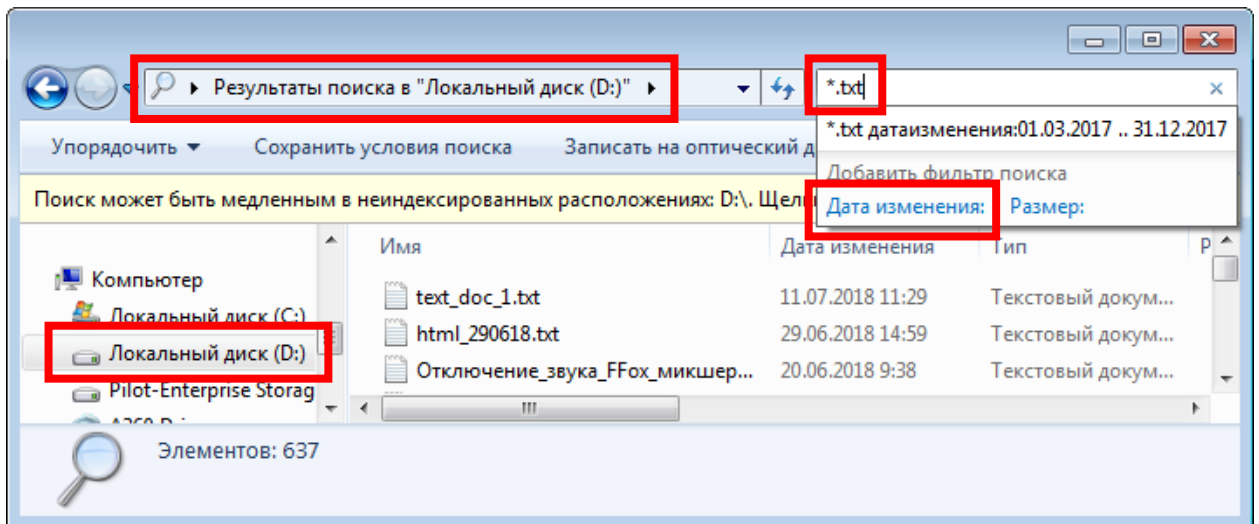


14) Changing of **Windows Explorer** parameters.

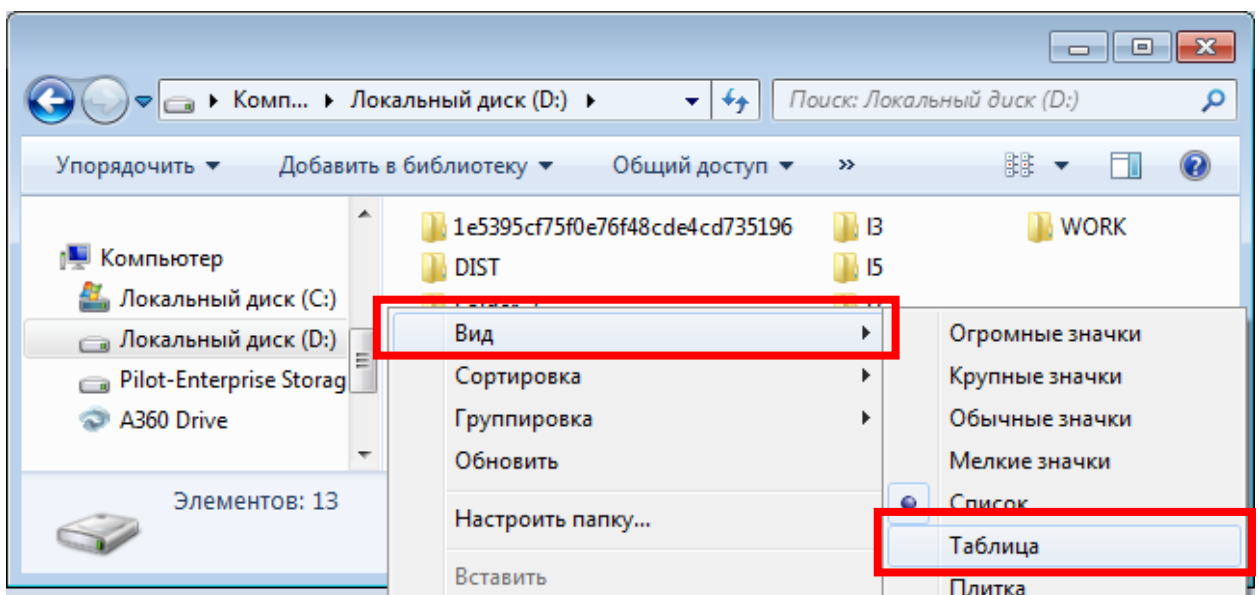
Press keyboard combination **WIN+E**.

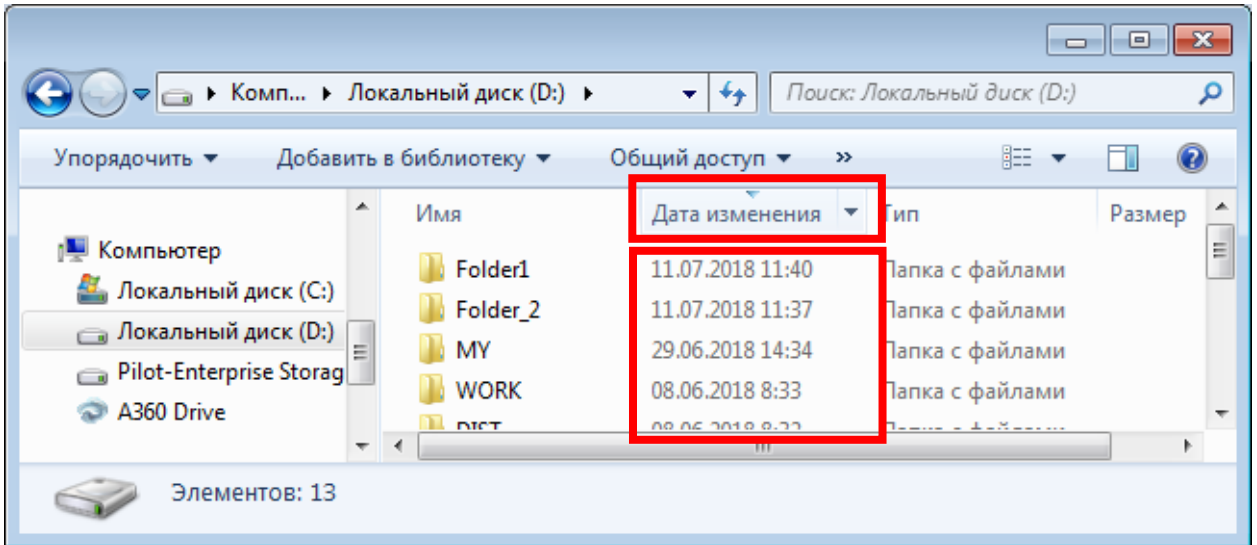


15) Performing a search in Windows Explorer.



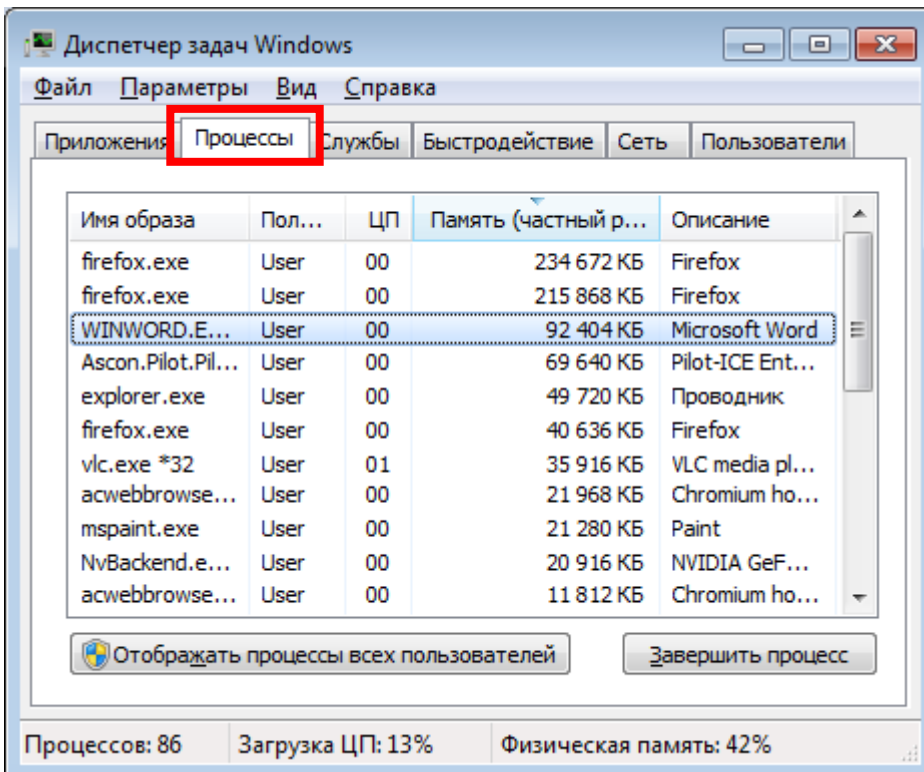
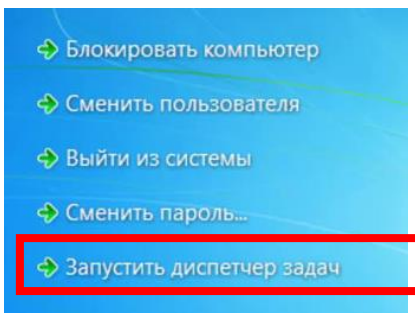
16) Performing a sorting in Windows Explorer.



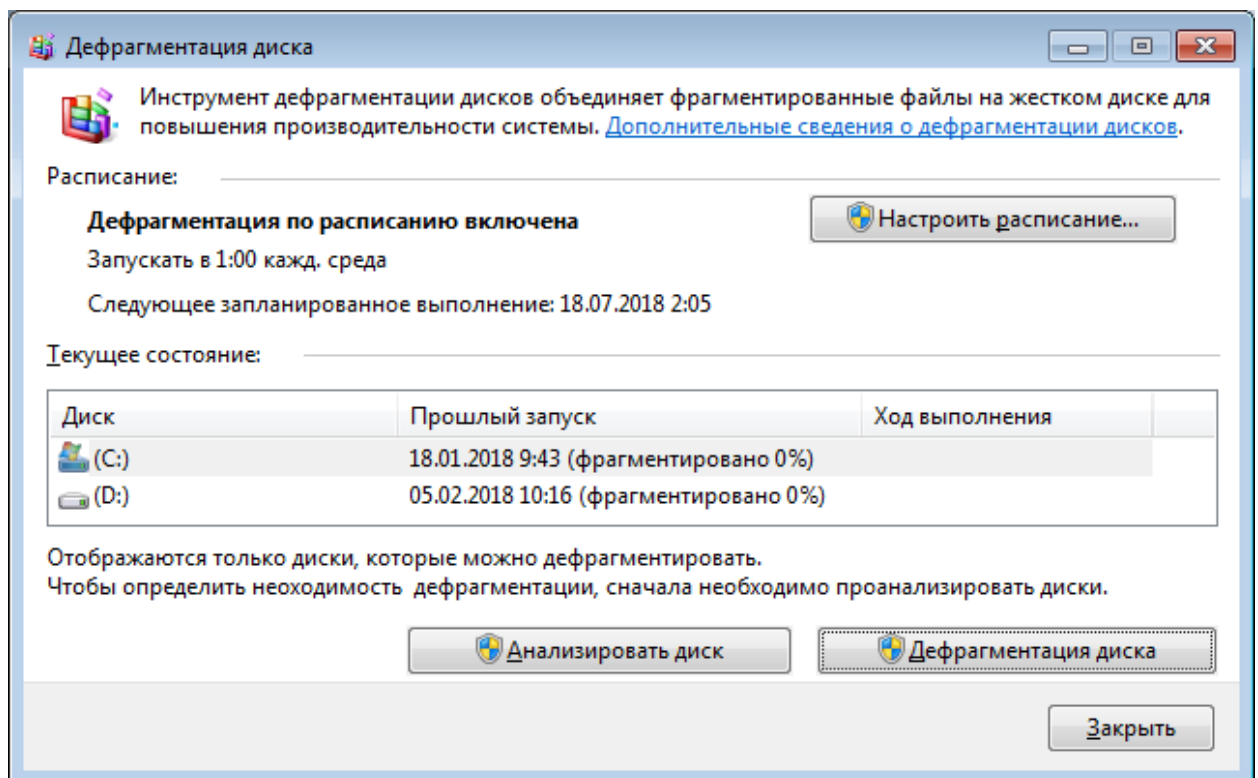
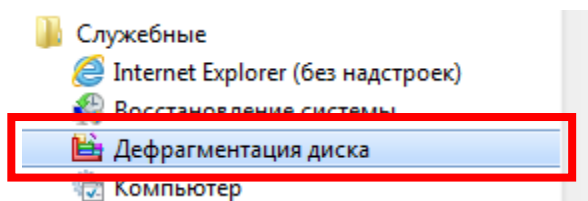
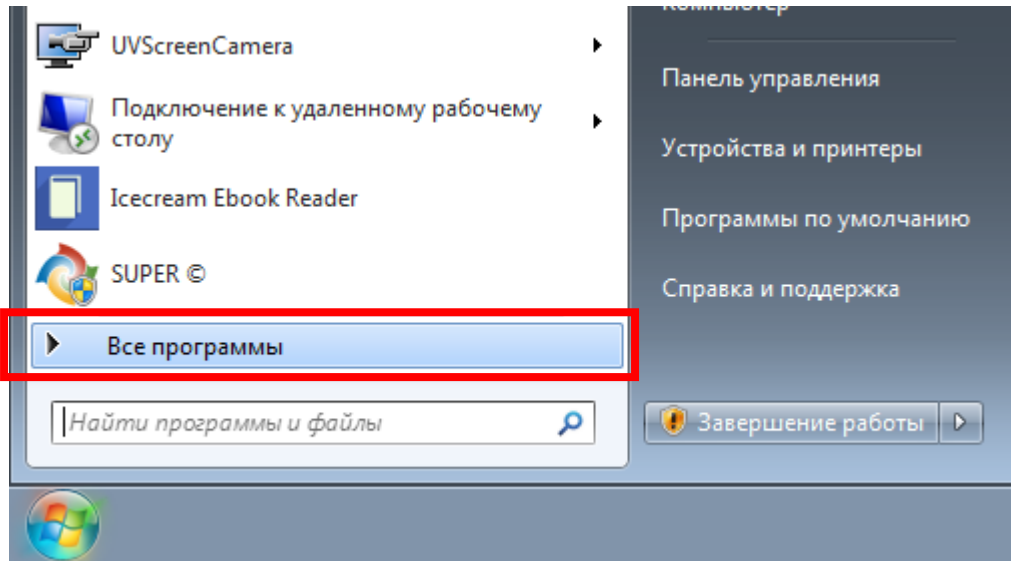


17) Opening of process explorer.

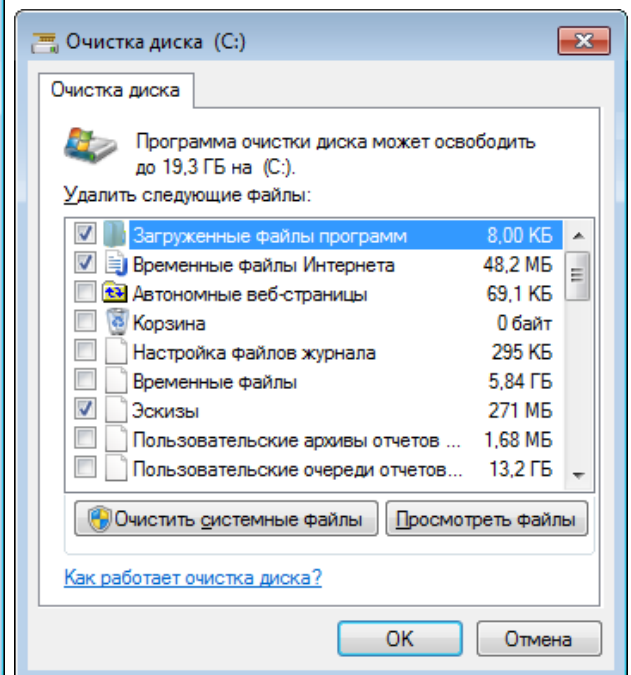
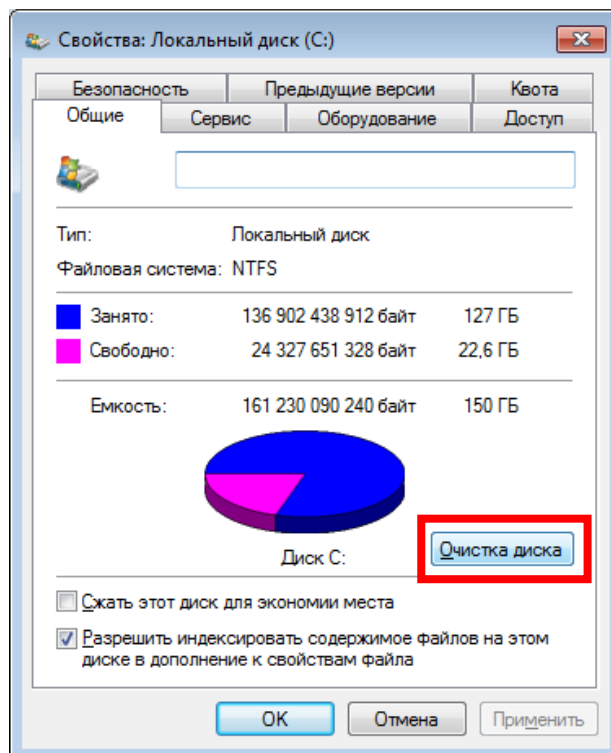
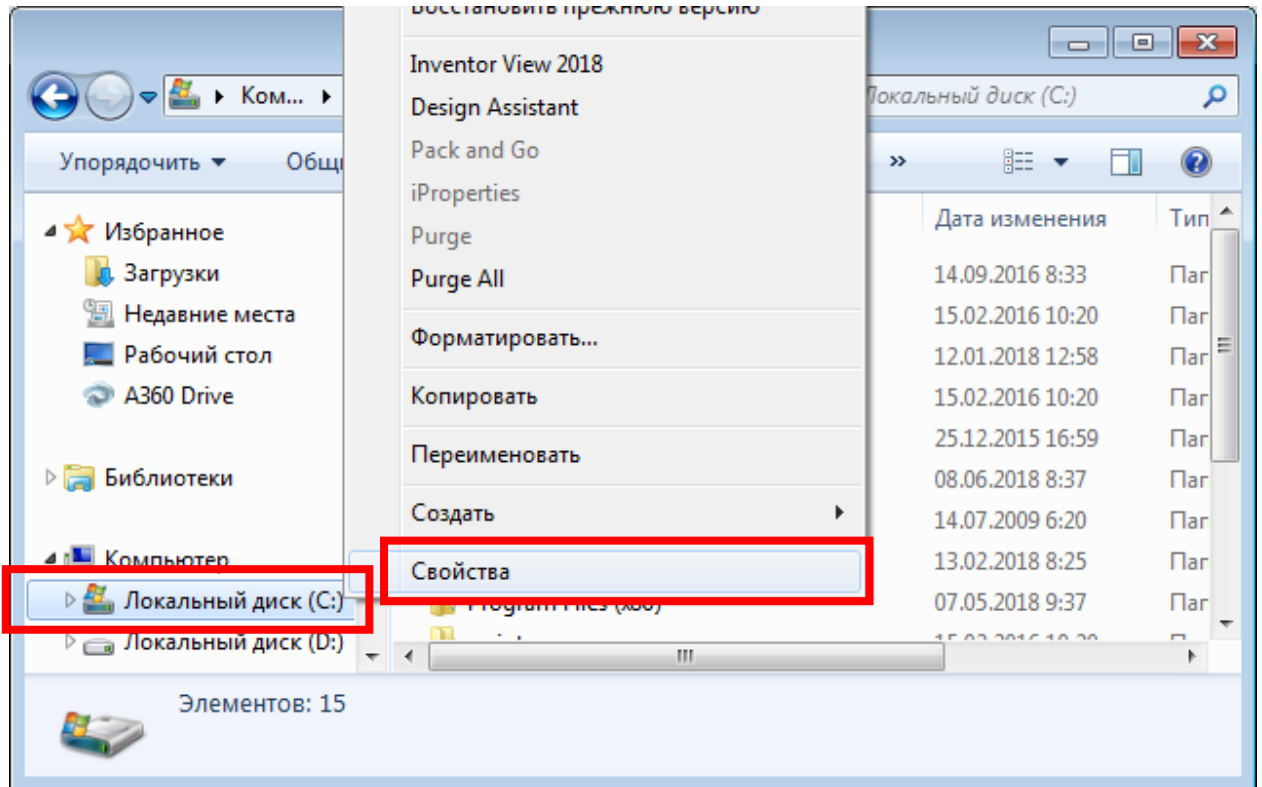
Press keyboard combination: **CTRL+ALT+DEL**



18) Opening of defragmentation tool.

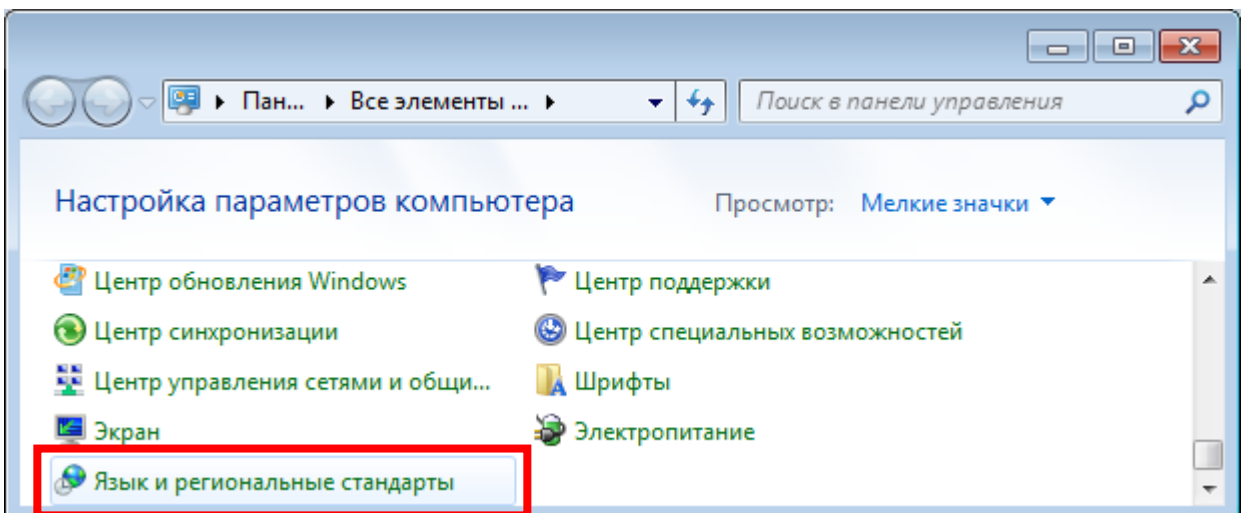
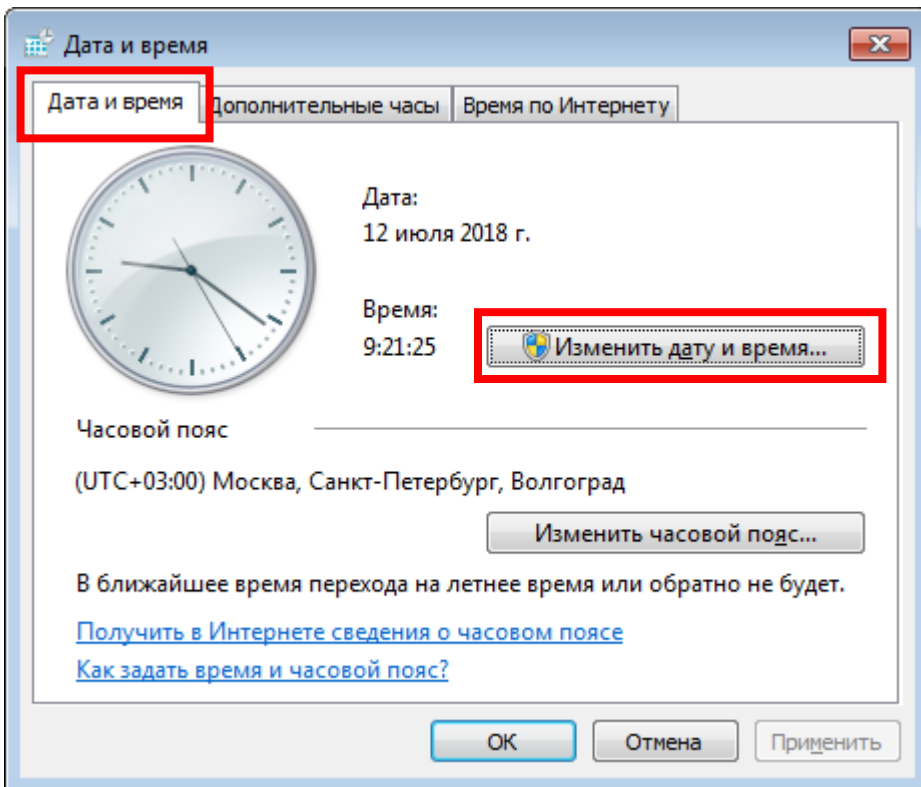
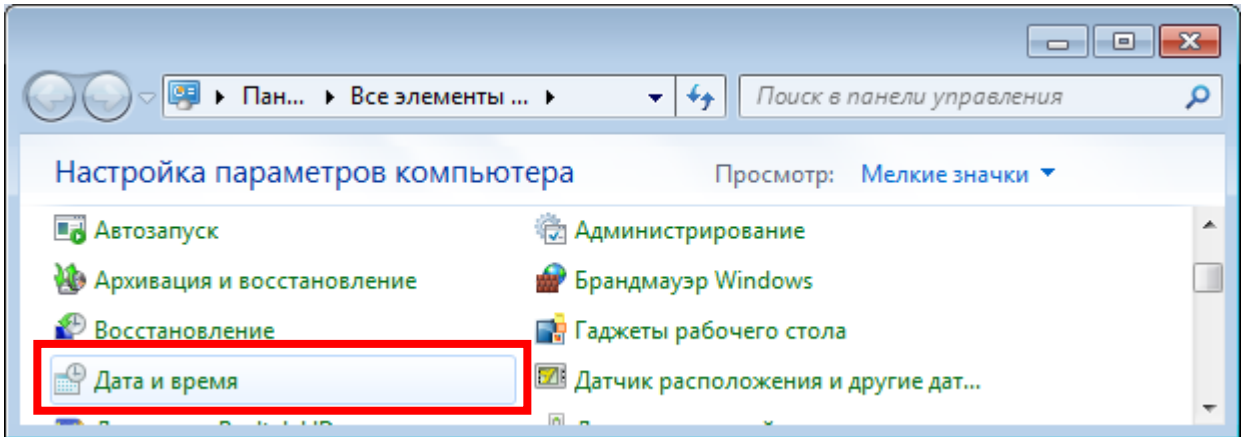


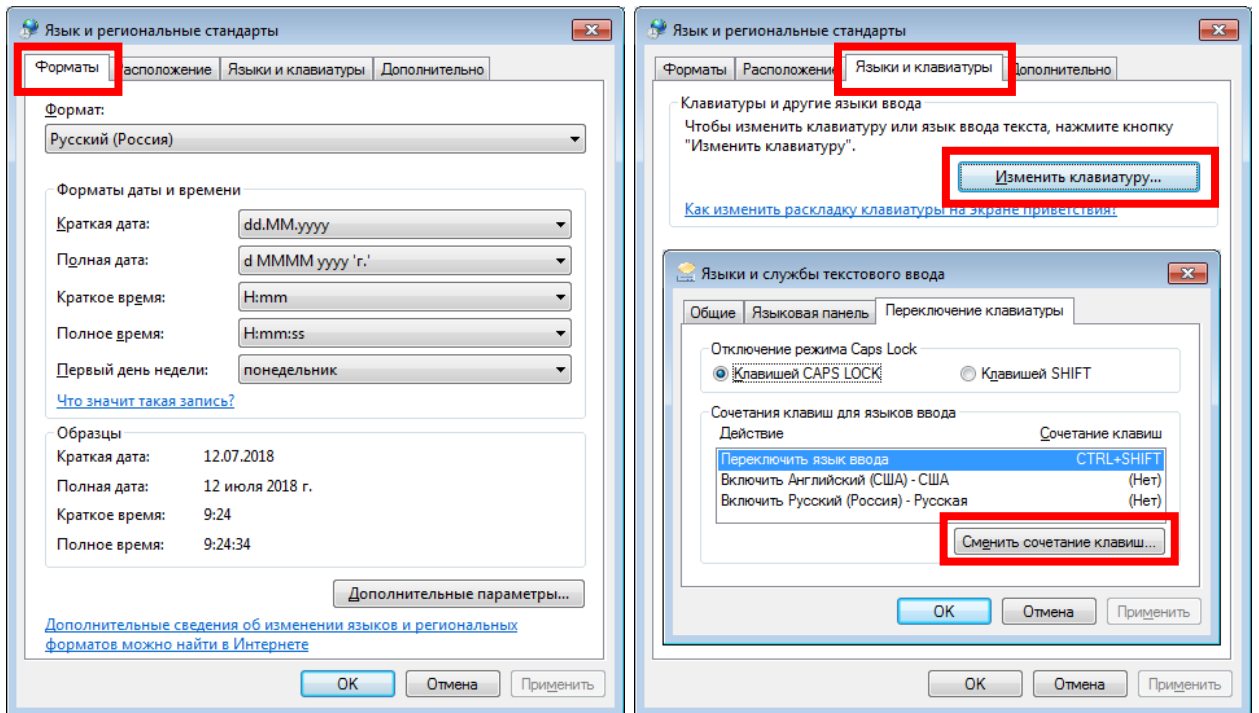
19) Opening of cleaning drive tool.



20) Changing of time and regional parameters.

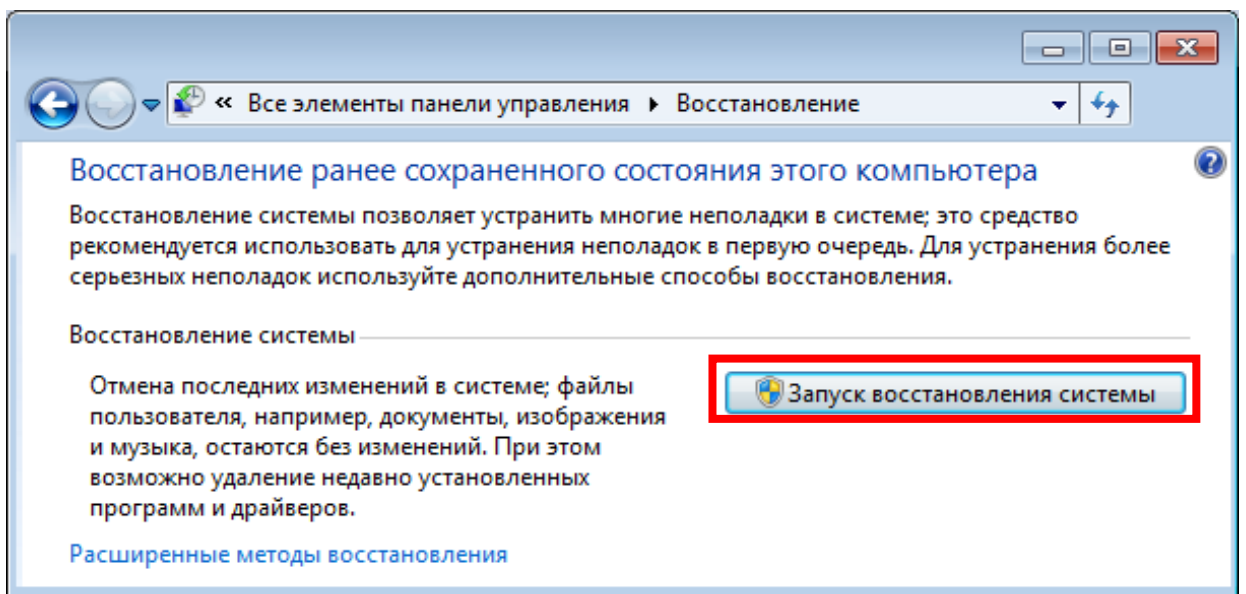
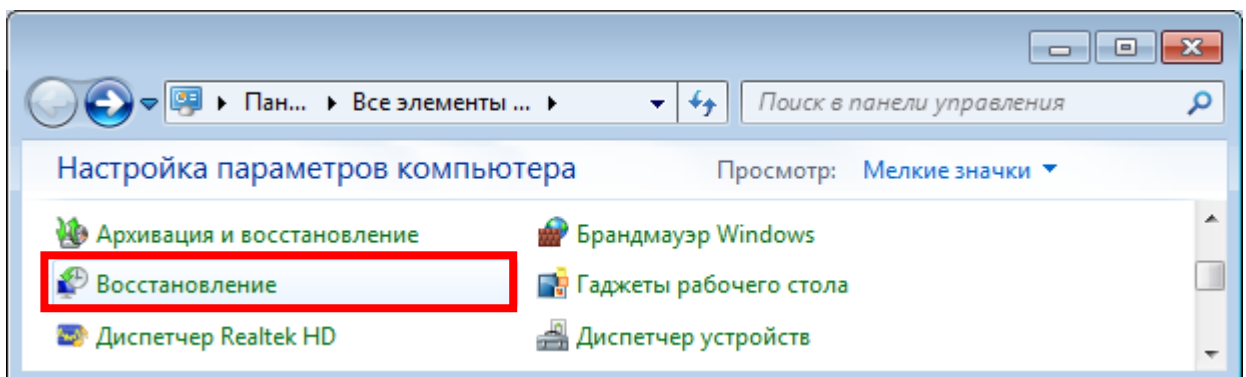
Open **Control Panel** (See pos. 5 of previous **Solving**).

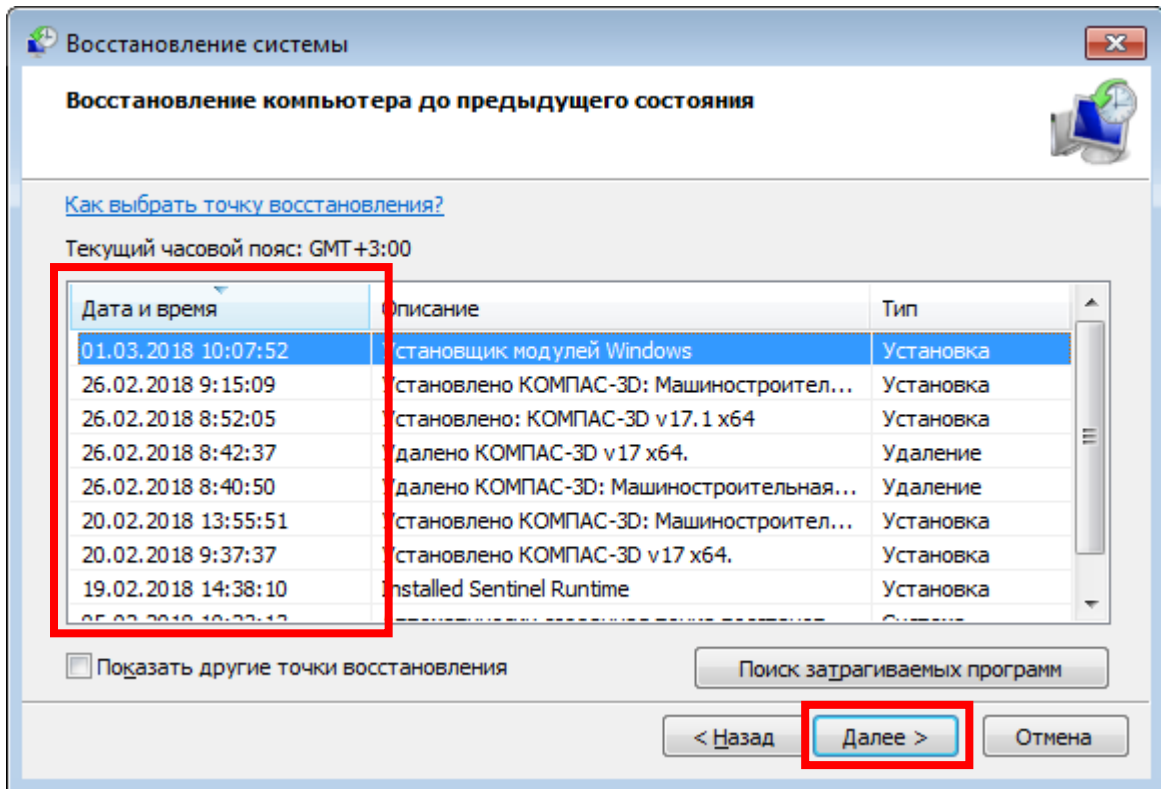




21) Opening of operation system restoring tool.

Open **Control Panel** (See pos. 5 of previous **Solving**).





Practice (two tasks)

Task 1. Using appropriate commands find necessary information about your computer and fill the following table (into your report):

| № | Characteristic | Value | The sequence of commands |
|---|--|-------|--------------------------|
| 1 | Installed operation system | | |
| 2 | Central processing unit (type name, frequency) | | |
| 3 | Random access memory (volume) | | |
| 4 | Hard drive (type name, volume) | | |
| 5 | Graphics card (type name, video memory size) | | |
| 6 | Audio card (type name) | | |
| 7 | Network adapter (type name) | | |
| 8 | Optical drive | | |
| 9 | Monitor, display (type name, geometric size, physical resolution, working frequency, | | |

| | | | |
|----|--|--|--|
| | number of colors, interface) | | |
| 10 | Mouse (type name, buttons, interface) | | |
| 11 | Keyboard (type name, buttons, interface) | | |
| 12 | [Other peripheral devices: printer, scanner, headphones, camera, gamepad, flash-drive, media projector, ...] | | |

Task 2. Try to perform basic actions using operation system abilities and fill the following table (into your report):

| № | Action | The sequence of commands |
|----|--|--------------------------|
| 1 | Starting of Windows Explorer | |
| 2 | Moving to certain location in a file structure | |
| 3 | Creation of a new folder | |
| 4 | Creation of a new text file | |
| 5 | Renaming of a folder (or file) | |
| 6 | Copying a folder (or file) | |
| 7 | Moving a folder (or file) | |
| 8 | Deleting a folder (or file) | |
| 9 | Making a label (link) for a folder (or file) | |
| 10 | Changing of mouse parameters | |
| 11 | Changing of keyboard parameters | |
| 12 | Changing of monitor (display) parameters | |
| 13 | Changing of audio system parameters | |
| 14 | Changing of Windows Explorer parameters | |
| 15 | Performing a search in Windows Explorer | |
| 16 | Performing a sorting in Windows Explorer | |
| 17 | Opening of process explorer | |
| 18 | Opening of defragmentation tool | |

| | | |
|----|--|--|
| 19 | Opening of cleaning drive tool | |
| 20 | Changing of time and regional parameters | |
| 21 | Opening of operation system restoring tool | |

Report

1. Write work title with number, your name (first & last) and name of your group.
2. Your task.
3. Result table with information about your computer structure.
4. Result table with information about the basic commands to get access to main operation system abilities.

Control questions

1. How to find information about installed operation system, central processing unit and random access memory?
2. How to find information about installed hard drive, graphics card, audio card, optical drive and network adapter?
3. How to find information about adjust parameters for monitor, mouse, keyboard and audio system?
4. Describe the sequence of actions to navigate to appropriate location using Windows Explorer.
5. Describe the sequence of actions to create a new folder (file), rename, copy, move and delete existing folder (file).
6. How to change parameters of Windows Explorer?
7. Describe the sequence of actions to search information using Windows Explorer.
8. Describe the sequence of actions to sort information using Windows Explorer.
9. Describe the using of process explorer and restoring tool in MS Windows.
10. Describe the using of defragmentation and cleaning tool in MS Windows.
11. Describe the sequence of actions to adjust time and regional parameters in MS Windows.

THEME № 2

CALCULATOR

Summary

Sequencing mathematical calculations in MS Calculator. Trigonometric, power, logarithm and memory functions in MS Calculator.

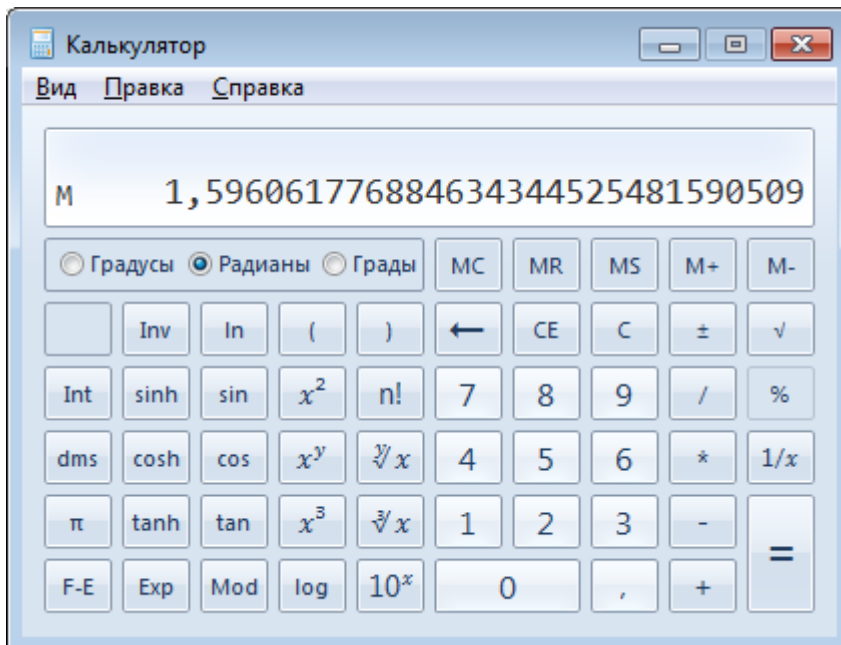
Example

Write the program for calculation equation using MS Calculator

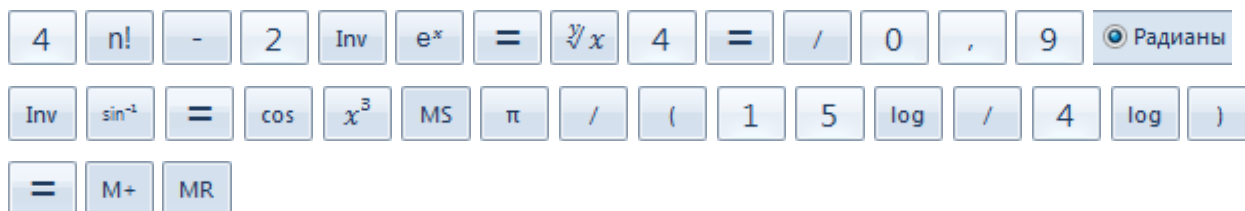
$$\cos^3\left(\frac{\sqrt[4]{4! - e^2}}{\arcsin(0,9)}\right) + \frac{\pi}{\log_4 15}$$

Solving

1) Run MS Calculator: "Start" ("Пуск") > "All Programs" ("Все программы") > "Standard" ("Стандартные").



2) Write following sequence of commands:



3) Result: 1,596

Practice

1. Solve a mathematical expression according the variant using MS Calculator. Put the sequence of actions into report.

| | |
|--|--|
| <p>Variant 1</p> $\frac{\cos(65^\circ) - \arcsin(\sqrt[3]{300} - e^2)}{5! - \log_3 100 + \operatorname{tg}(6)}$ | <p>Variant 2</p> $\sqrt[3]{\frac{\sin(30^\circ) - \ln 4!}{\arccos^2(0,6) + \operatorname{ctg}(15)}}$ |
| <p>Variant 3</p> $\frac{e^4 + 4!}{\sin(30^\circ) + \log_2 10} - \frac{\sqrt{2 - \cos(6)}}{\arccos(0,1)}$ | <p>Variant 4</p> $\sqrt[5]{\frac{\pi + 5!}{e^2 + \ln 9}} - \frac{\sin(20^\circ)}{\arccos(0,6)}$ |
| <p>Variant 5</p> $\frac{\sqrt[3]{3^{2,5} + e^2 + \sin(10^\circ)}}{\log_2 15 - 4! + \operatorname{ctg}(\pi)}$ | <p>Variant 6</p> $\sin^3 \left(e^5 - \frac{\sqrt[3]{6! - \arccos(0,1)}}{\pi + \log_5 26} \right)$ |
| <p>Variant 7</p> $\frac{\log_\pi 100 + \cos(16^\circ)}{\sqrt[4]{\arccos(0,5) + e^3 + 3!}}$ | <p>Variant 8</p> $\cos^2 \left(\frac{\sqrt[5]{81 - e^2}}{\arcsin(0,7) + 4!} \right)$ |
| <p>Variant 9</p> $\frac{\log_\pi e^5 + 4! + \arcsin(0,6)}{\sqrt[4]{\pi + \operatorname{tg}(10^\circ)}}$ | <p>Variant 10</p> $\operatorname{tg}^2 \left(\frac{4! + \arccos(0,4)}{\sqrt{e^6 - \log_6 60}} \right)$ |
| <p>Variant 11</p> $\sin^2 \left(\frac{\sqrt{\pi + e^2}}{3!} \right) \operatorname{arctg}(4) \log_7 81$ | <p>Variant 12</p> $\cos^5 \left(\frac{\sqrt[3]{\pi} - e^4 + \arcsin(0,2)}{4! + \log_3 28} \right)$ |

| | |
|--|---|
| <p>Variant 13</p> $\sin\left(\frac{\sqrt[5]{\log_4 5! + \arccos(0,8)}}{e^3 + \pi^2}\right)$ | <p>Variant 14</p> $\operatorname{tg}\left(\frac{e^\pi + 5^3}{4!}\right) + \sqrt[6]{\frac{\arcsin(0,45)}{\log_3 10}}$ |
| <p>Variant 15</p> $\cos^2\left(\frac{\operatorname{arctg}(2)}{5^2 + 5!}\right) + \sqrt[3]{\frac{\log_4 60}{\pi + e}}$ | <p>Variant 16</p> $\frac{\log_2(e^3 + \sin(32^\circ))}{\sqrt[3]{\pi + 3!} + \arccos(0,3)}$ |

Report

1. Write work title with number, your name (first & last) and name of your group.
2. Your task (variant of equation).
3. Full sequence of commands for MS Calculator.
4. Result of calculation.

Control questions

1. Describe the principles of sequencing actions for mathematical calculations in MS Calculator.
2. How to use trigonometric functions in MS Calculator.
3. How to use power and logarithm functions in MS Calculator.
4. How to use memory functions in MS Calculator.

THEME № 3

TEXT AND TABLES IN MS WORD

Summary

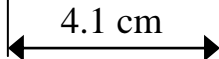
Font and paragraph parameters in MS Word document. Creating, editing and formatting tables in MS Word document.

Example

Create (in MS Word) a document with some texts and one table using following scheme and requirements.

Paragraph1 ... text text text text ...

Paragraph2 ... text text text text ...

| | | |
|---|------|------|
| | text | |
| text | text | text |
| | | |
|  | | |

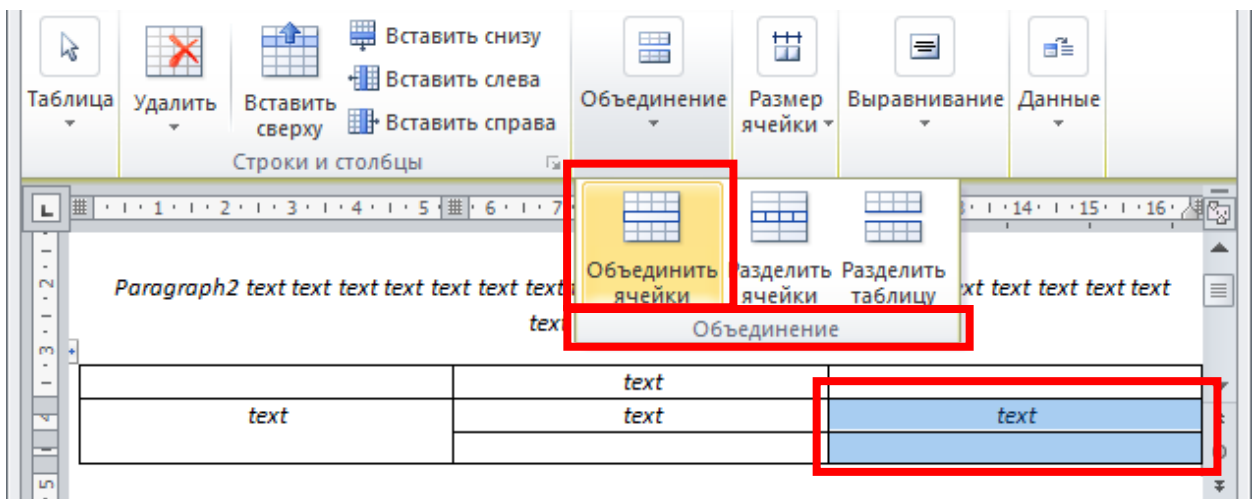
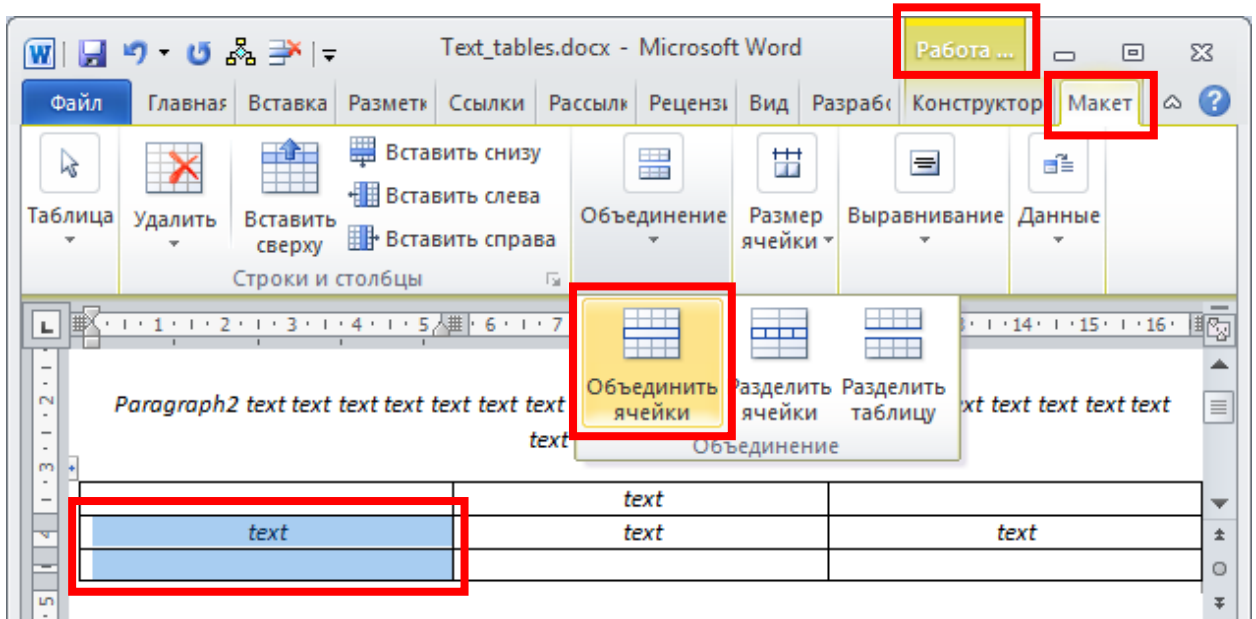
Paragraph1: alignment = left; left indent = 1.2 cm; line spacing = 1.6; first line indent = 3 cm; after text indent = 8 pt; font = bold; font = underline

Paragraph2: alignment = center; font = italic

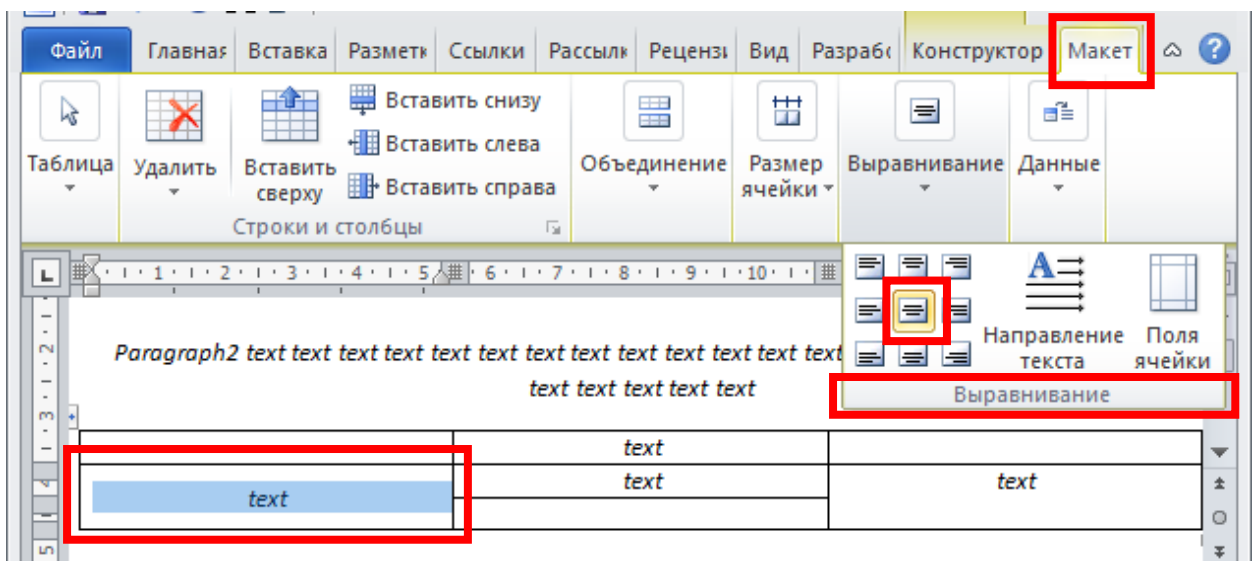
Solving

1) Open MS Word application, create a new document and save it

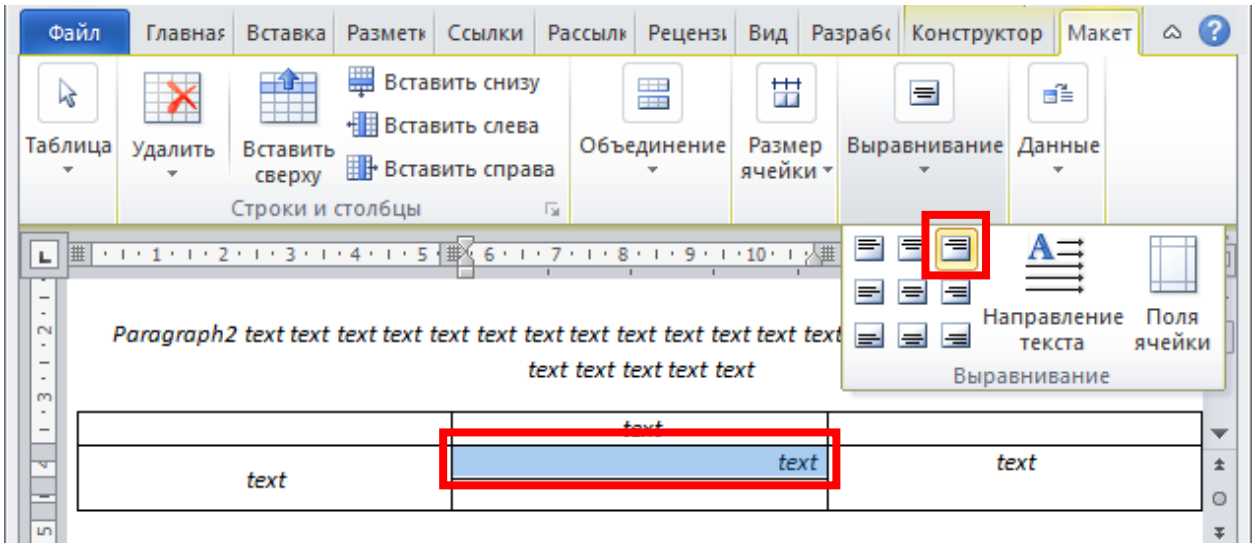
9)



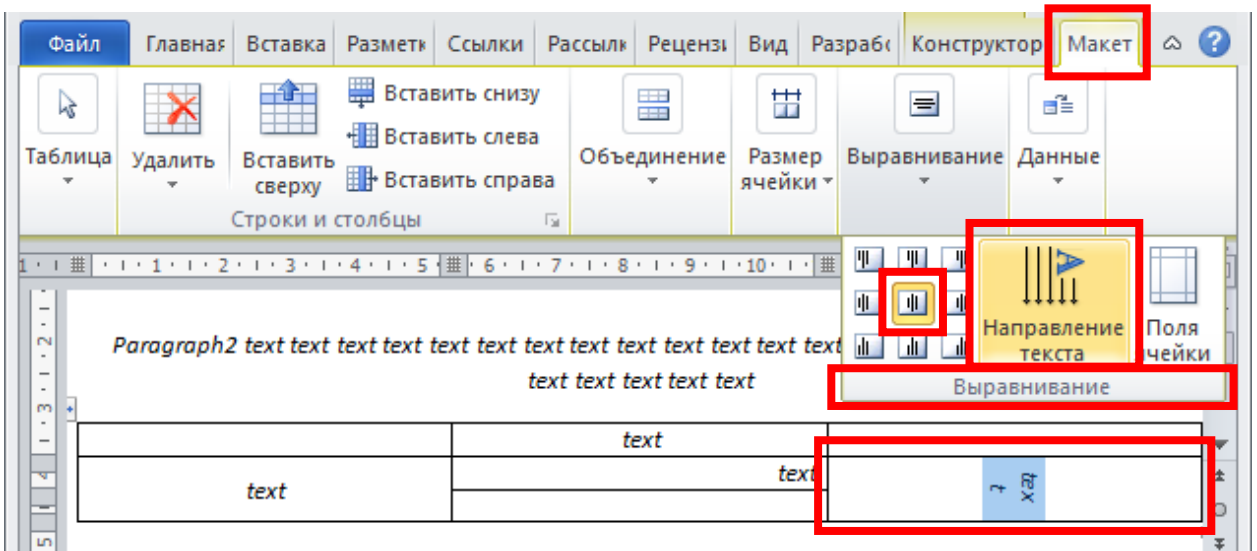
10)



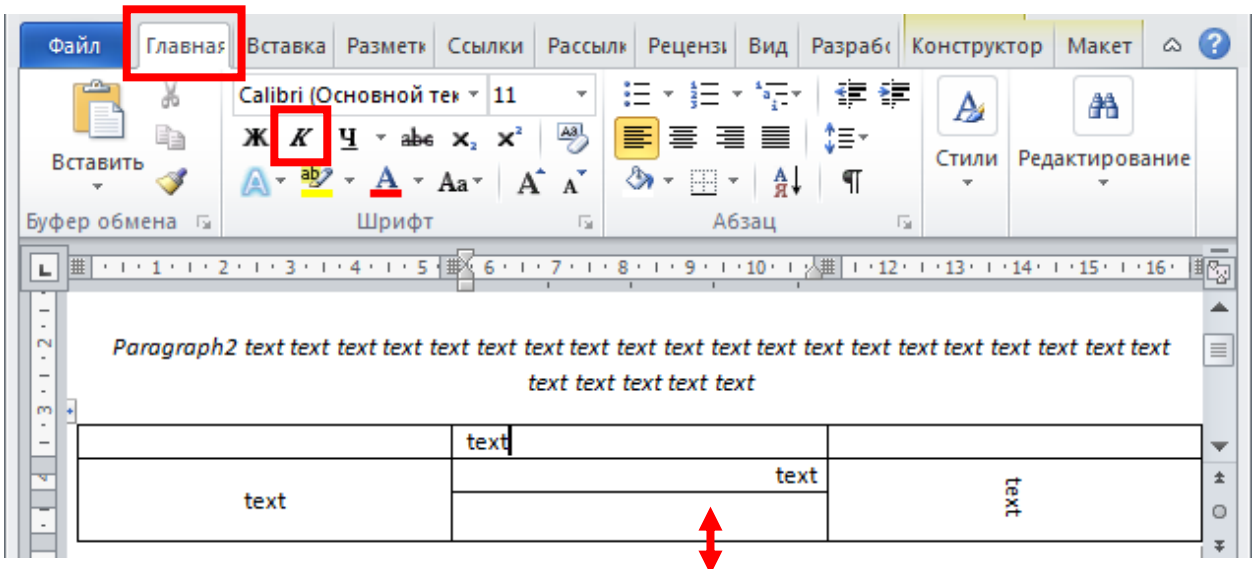
11)



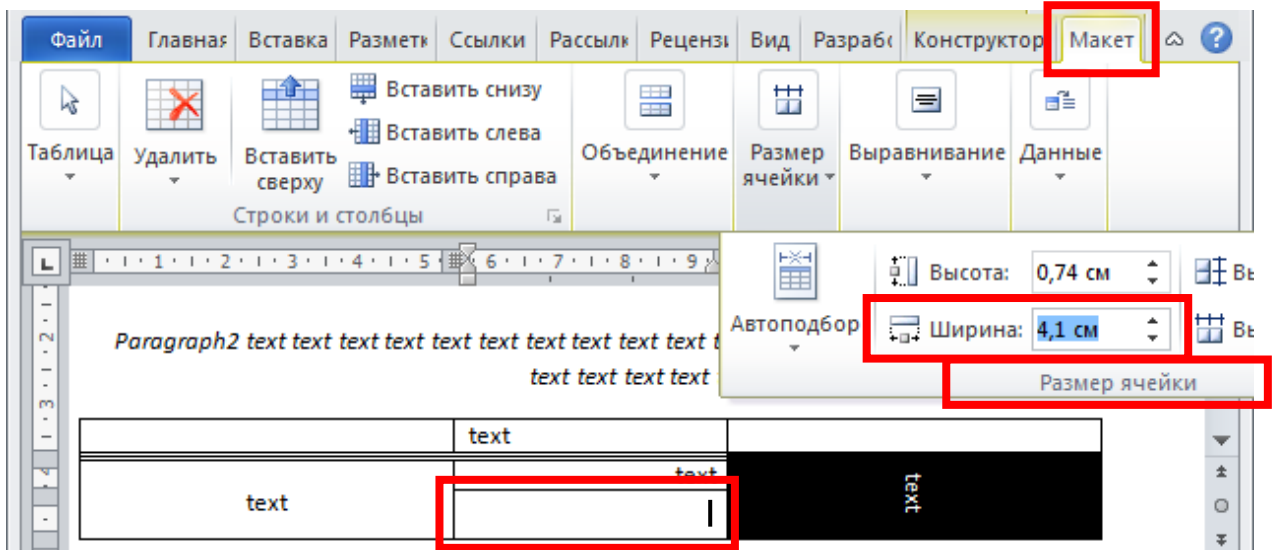
12)



13)



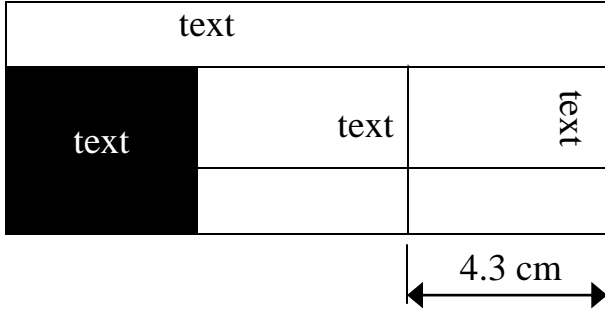
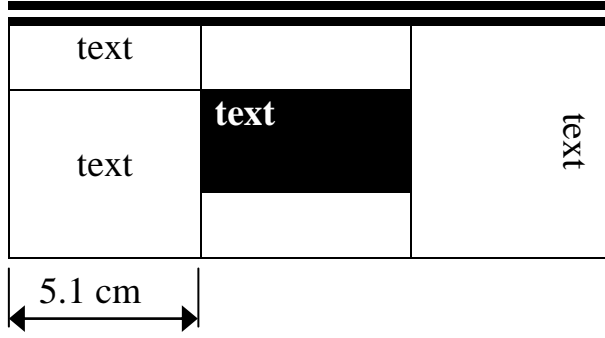
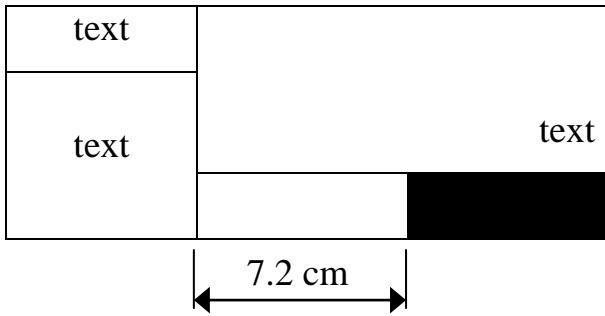
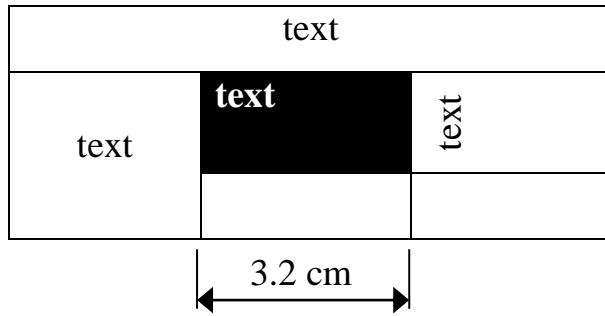
17)



Practice

Create (in MS Word) a document with some texts and one table using following scheme and requirements.

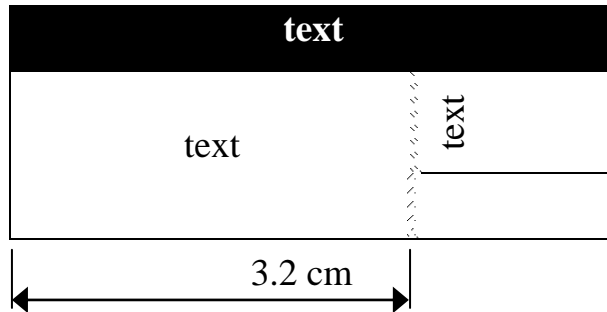
| | | | | | | | | | | | | | | | | | | | |
|--|---|------|------|---|--|------|--|--|--|------|---|------|--|------|---|--|------|--|--|
| <p>Variant 1</p> <p>Paragraph1 ... text text text text ...</p> <p>Paragraph2 ... text text text text ...</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 30%;"></td> <td style="width: 70%;">text</td> </tr> <tr> <td rowspan="2" style="width: 30%; vertical-align: middle;">text</td> <td style="width: 70%; text-align: center;"> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 60%;"></td> <td style="width: 40%;">text</td> </tr> <tr> <td style="width: 60%;"></td> <td style="width: 40%; background-color: black;"></td> </tr> </table> </td> </tr> <tr> <td></td> <td style="text-align: right;">text</td> </tr> </table> <p style="text-align: center; margin-left: 20px;">↔ 2.1 cm ↔</p> | | text | text | <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 60%;"></td> <td style="width: 40%;">text</td> </tr> <tr> <td style="width: 60%;"></td> <td style="width: 40%; background-color: black;"></td> </tr> </table> | | text | | | | text | <p>Variant 2</p> <p>Paragraph1 ... text text text text ...</p> <p>Paragraph2 ... text text text text ...</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="2" style="width: 100%;">text</td> </tr> <tr> <td style="width: 30%; vertical-align: middle;">text</td> <td style="width: 70%; text-align: center;"> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 60%; background-color: black;"></td> <td style="width: 40%;">text</td> </tr> <tr> <td style="width: 60%;"></td> <td style="width: 40%;"></td> </tr> </table> </td> </tr> </table> <p style="text-align: center; margin-left: 20px;">↔ 3.2 cm ↔</p> | text | | text | <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 60%; background-color: black;"></td> <td style="width: 40%;">text</td> </tr> <tr> <td style="width: 60%;"></td> <td style="width: 40%;"></td> </tr> </table> | | text | | |
| | text | | | | | | | | | | | | | | | | | | |
| text | <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 60%;"></td> <td style="width: 40%;">text</td> </tr> <tr> <td style="width: 60%;"></td> <td style="width: 40%; background-color: black;"></td> </tr> </table> | | text | | | | | | | | | | | | | | | | |
| | | text | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | text | | | | | | | | | | | | | | | | | | |
| text | | | | | | | | | | | | | | | | | | | |
| text | <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 60%; background-color: black;"></td> <td style="width: 40%;">text</td> </tr> <tr> <td style="width: 60%;"></td> <td style="width: 40%;"></td> </tr> </table> | | text | | | | | | | | | | | | | | | | |
| | text | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| <p>Paragraph1: alignment = left; left indent = 2 cm; line spacing = 1.5; first line indent = 3 cm</p> <p>Paragraph2: alignment = center; before text indent = 6 pt; font = italic</p> | <p>Paragraph1: alignment = right; right indent = 2 cm; line spacing = 2.5</p> <p>Paragraph2: alignment = left; first line indent = 1.5 cm; before text indent = 6 pt; font = underline; font = bold</p> | | | | | | | | | | | | | | | | | | |

| | |
|--|--|
| <p>Variant 3</p> <p>Paragraph1 ... text text text text ...</p> <p>Paragraph2 ... text text text text ...</p>  <hr/> <p>Paragraph1: alignment = center; right indent = 2 cm; line spacing = 1.5</p> <p>Paragraph2: alignment = left; first line indent = 0.5 cm; before text indent = 6 pt; font = italic; font = bold</p> | <p>Variant 4</p> <p>Paragraph1 ... text text text text ...</p> <p>Paragraph2 ... text text text text ...</p>  <hr/> <p>Paragraph1: alignment = right; right indent = 1 cm; line spacing = 1.4</p> <p>Paragraph2: alignment = center; first line indent = 1.5 cm; before text indent = 2 pt; font = underline; font = italic</p> |
| <p>Variant 5</p> <p>Paragraph1 ... text text text text ...</p> <p>Paragraph2 ... text text text text ...</p>  <hr/> <p>Paragraph1: alignment = justify; right indent = 2 cm; line spacing = 1.5</p> <p>Paragraph2: alignment = right; first line indent = 1 cm; before text indent = 1 pt; font = underline; font = bold</p> | <p>Variant 6</p> <p>Paragraph1 ... text text text text ...</p> <p>Paragraph2 ... text text text text ...</p>  <hr/> <p>Paragraph1: alignment = justify; left indent = 1 cm; line spacing = 2.5; after text indent = 8 pt</p> <p>Paragraph2: alignment = left; first line indent = 1.4 cm; font = underline</p> |

Variant 7

Paragraph1 ... text text text text ...

Paragraph2 ... text text text text ...



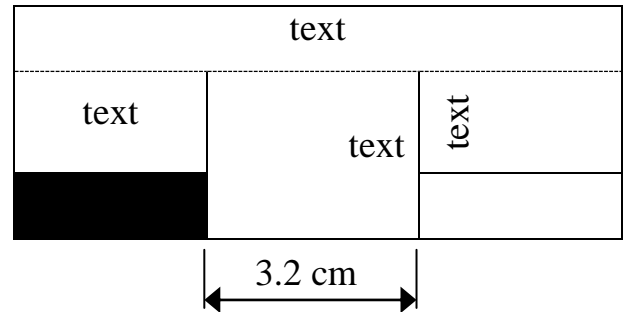
Paragraph1: alignment = right; right indent = 2 cm; after text indent = 2 pt

Paragraph2: alignment = left; first line indent = 1.5 cm; line spacing = 1.1; font = underline; font = bold

Variant 8

Paragraph1 ... text text text text ...

Paragraph2 ... text text text text ...



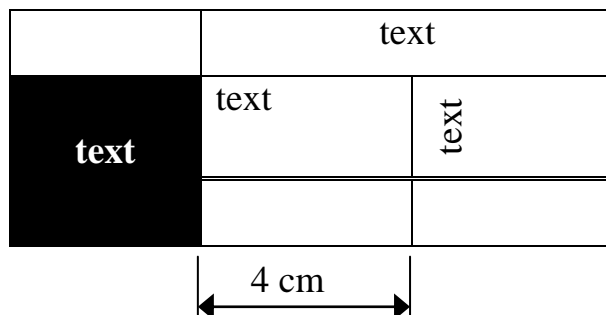
Paragraph1: alignment = justify; left indent = 2 cm; line spacing = 1.6

Paragraph2: alignment = right; first line indent = 1.5 cm; after text indent = 4 pt; font = underline; font = italic

Variant 9

Paragraph1 ... text text text text ...

Paragraph2 ... text text text text ...



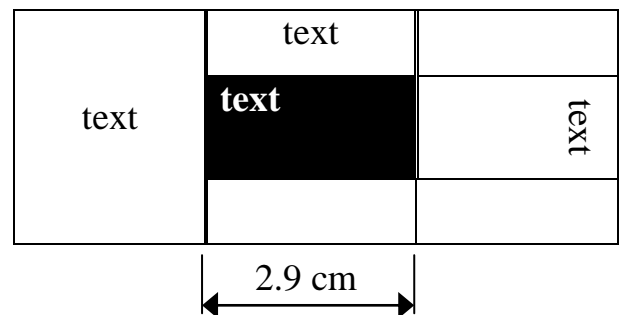
Paragraph1: alignment = left; left indent = 1.8 cm; line spacing = 1.6

Paragraph2: alignment = center; first line indent = 1.5 cm; before text indent = 4 pt; font = underline; font = bold

Variant 10

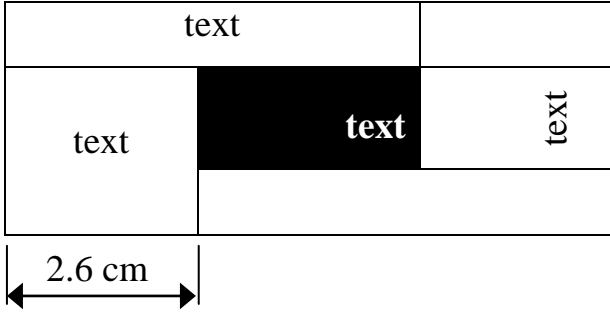
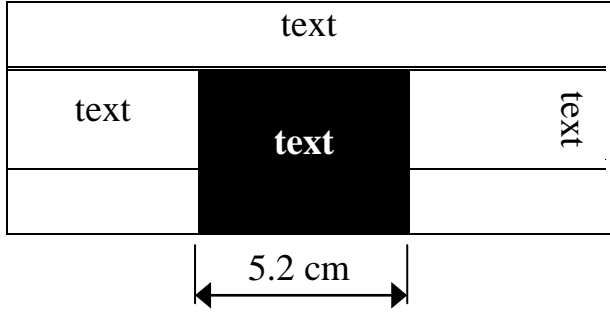
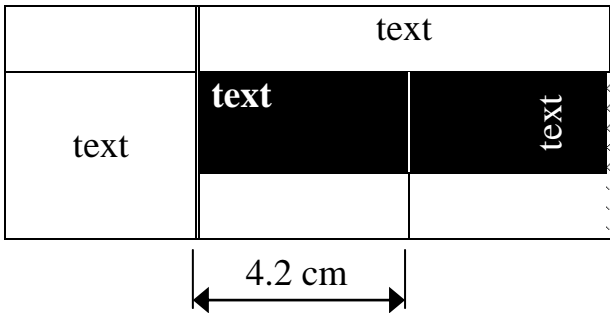
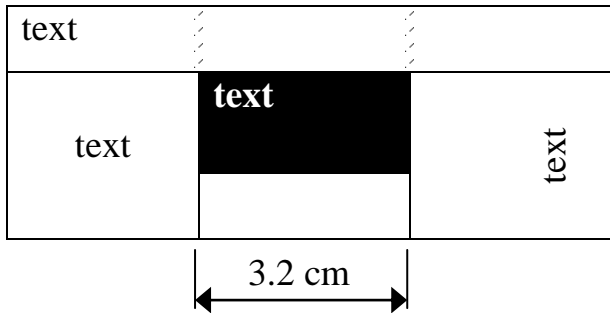
Paragraph1 ... text text text text ...

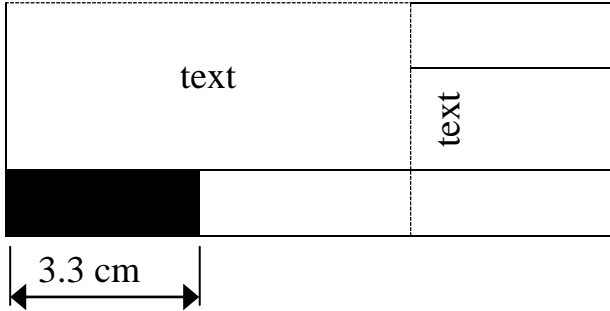
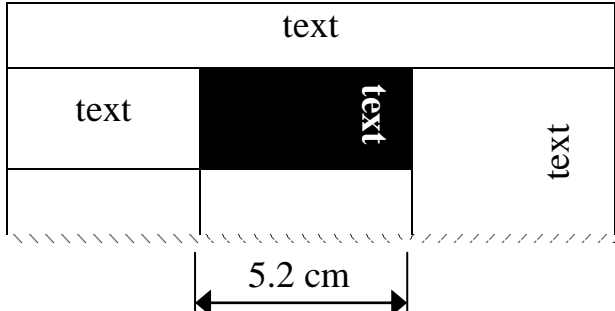
Paragraph2 ... text text text text ...



Paragraph1: alignment = right; right indent = 2.2 cm; line spacing = 1.1

Paragraph2: alignment = center; first line indent = 1 cm; before text indent = 6 pt; font = italic; font = bold

| | |
|--|---|
| <p>Variant 11</p> <p>Paragraph1 ... text text text text ...</p> <p>Paragraph2 ... text text text text ...</p>  <p>Paragraph1: alignment = center; right indent = 1 cm; line spacing = 2</p> <p>Paragraph2: alignment = left; first line indent = 1 cm; before text indent = 4 pt; font = underline; font = italic</p> | <p>Variant 12</p> <p>Paragraph1 ... text text text text ...</p> <p>Paragraph2 ... text text text text ...</p>  <p>Paragraph1: alignment = right; right indent = 2 cm; line spacing = 2.5; after text indent = 6 pt</p> <p>Paragraph2: alignment = left; first line indent = 3 cm; font = italic; font = bold</p> |
| <p>Variant 13</p> <p>Paragraph1 ... text text text text ...</p> <p>Paragraph2 ... text text text text ...</p>  <p>Paragraph1: alignment = right; left indent = 2 cm; line spacing = 1.4</p> <p>Paragraph2: alignment = center; first line indent = 1.5 cm; before text indent = 5 pt; font = italic; font = bold</p> | <p>Variant 14</p> <p>Paragraph1 ... text text text text ...</p> <p>Paragraph2 ... text text text text ...</p>  <p>Paragraph1: alignment = left; right indent = 2 cm; line spacing = 1.7</p> <p>Paragraph2: alignment = right; first line indent = 1.5 cm; before text indent = 2 pt; font = underline; font = bold</p> |

| Variant 15 | Variant 16 |
|---|---|
| Paragraph1 ... text text text text ... | Paragraph1 ... text text text text ... |
| Paragraph2 ... text text text text ... | Paragraph2 ... text text text text ... |
|  |  |
| <p>Paragraph1: alignment = center; right indent = 2 cm; line spacing = 1.5; after text indent = 4 pt; font = italic</p> <p>Paragraph2: alignment = left; first line indent = 1.5 cm; font = underline</p> | <p>Paragraph1: alignment = left; line spacing = 2.5; font = bold, italic</p> <p>Paragraph2: alignment = left; first line indent = 1.5 cm; left indent = 2 cm; before text indent = 6 pt</p> |

Report

1. Write work title with number, your name (first & last) and name of your group.
2. Your task (variant of scheme and format requirements).
3. Sequence of 10 commands.

| № | Action | Command |
|-----|-------------------|--------------------------|
| 1 | Inserting a table | MS Word > Insert > Table |
| ... | ... | ... |

+ Include result MS Word file.

Control questions

1. How to show hidden signs in MS Word document?
2. How to adjust paragraph parameters in MS Word document?
3. How to adjust font parameters in MS Word document?
4. How to add table to MS Word document?
5. Describe the commands for table editing and formatting in MS Word.

THEME № 4

GRAPHICS IN MS WORD

Summary

Photo (bitmap) objects in MS Word. Autoshapes graphical objects in MS Word. Placement, adjusting and special effects for graphical objects in MS Word. Math equations in MS Word.

Example 1

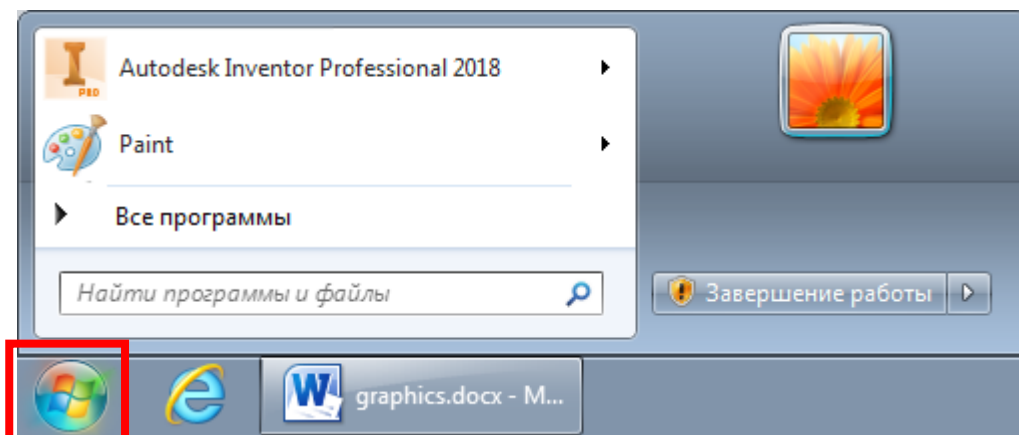
Create (in MS Word) a sample of advertisement or logotype using following requirements:

- raster image (s) must be included;
- vector autoshape (s) must be included;
- WordArt must be included;
- some elements must overlap each other;
- each element must have special effect;
- some elements must be rotated by the specified angle;
- all the elements must be connected to each other's (in rigid group).

Solving

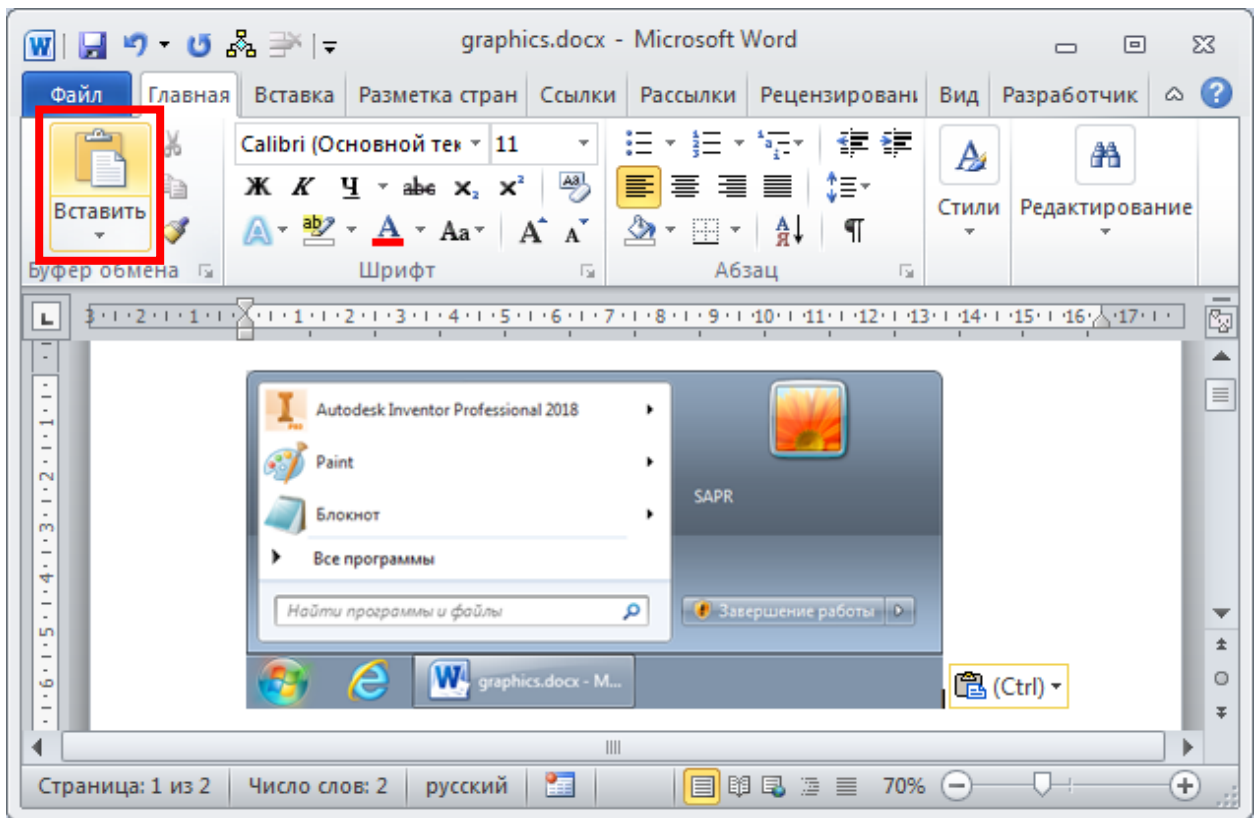
1) Run MS Word application, create a new document and save it.

2)

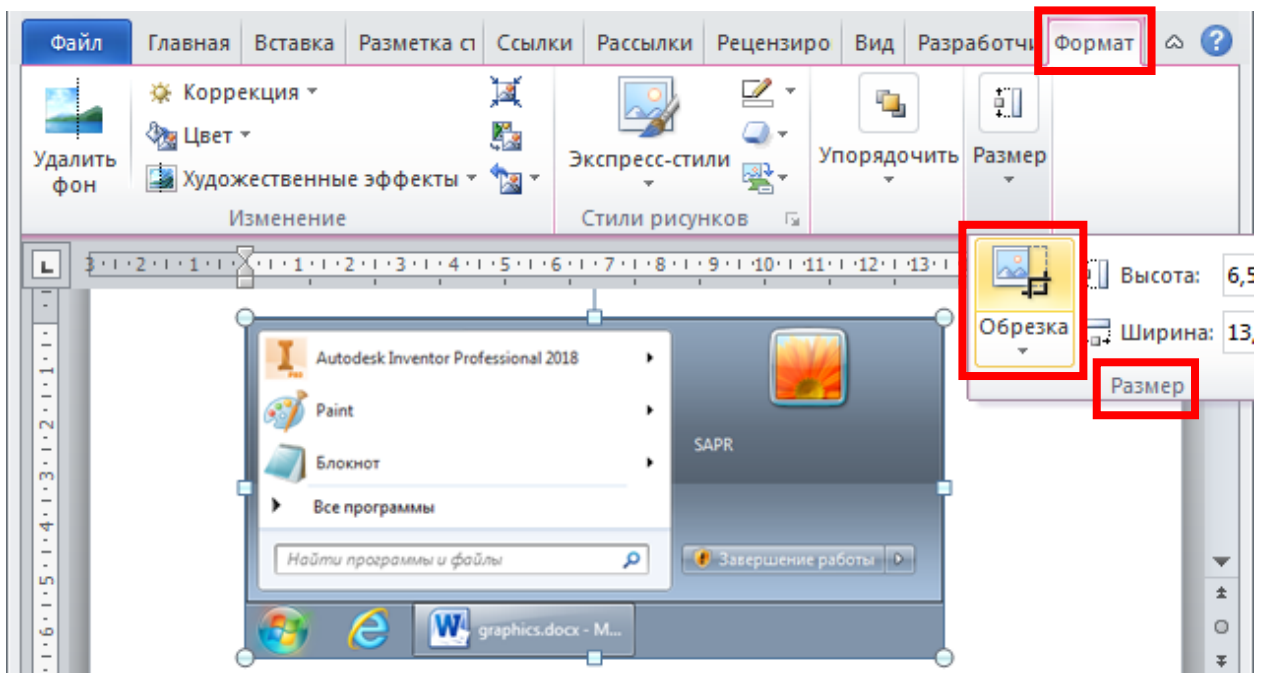


3) Execute keyboard command: **PRINT SCREEN**.

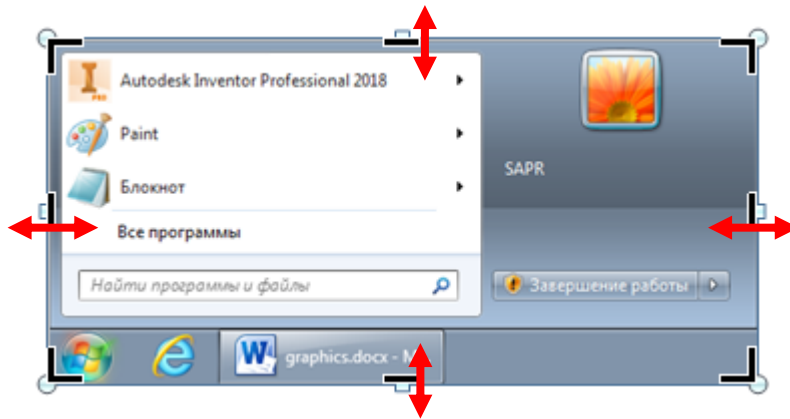
4)



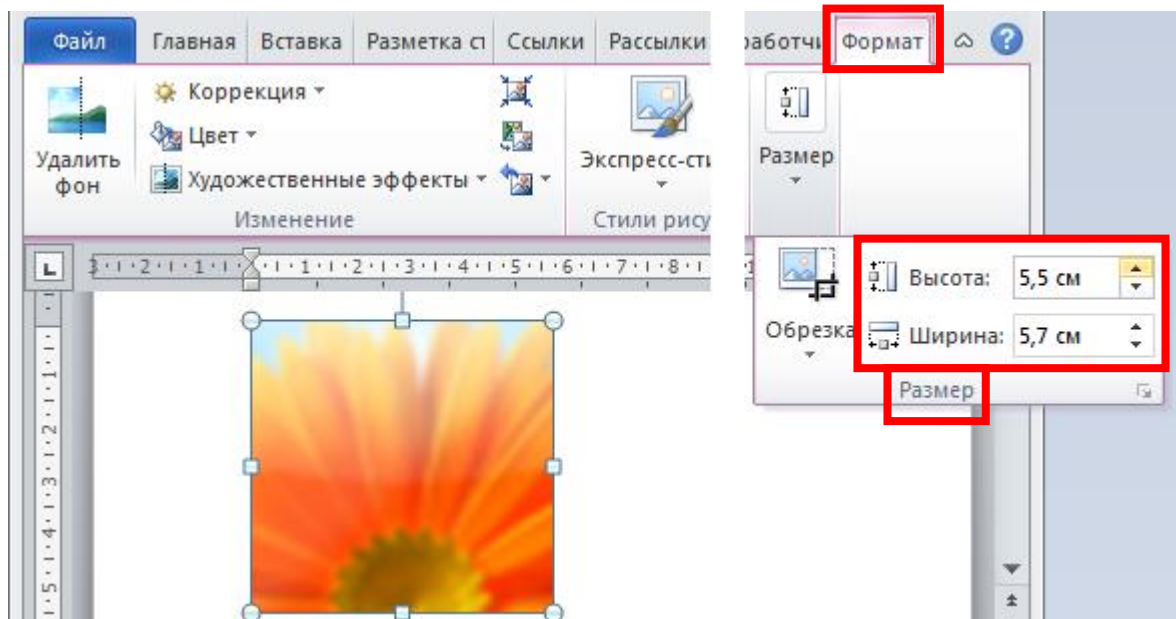
5)



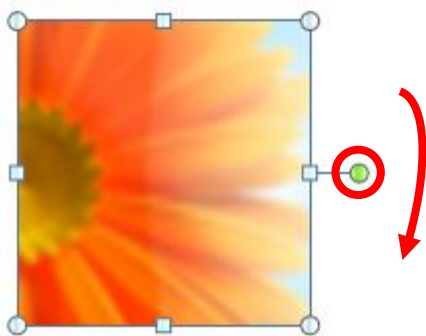
6)



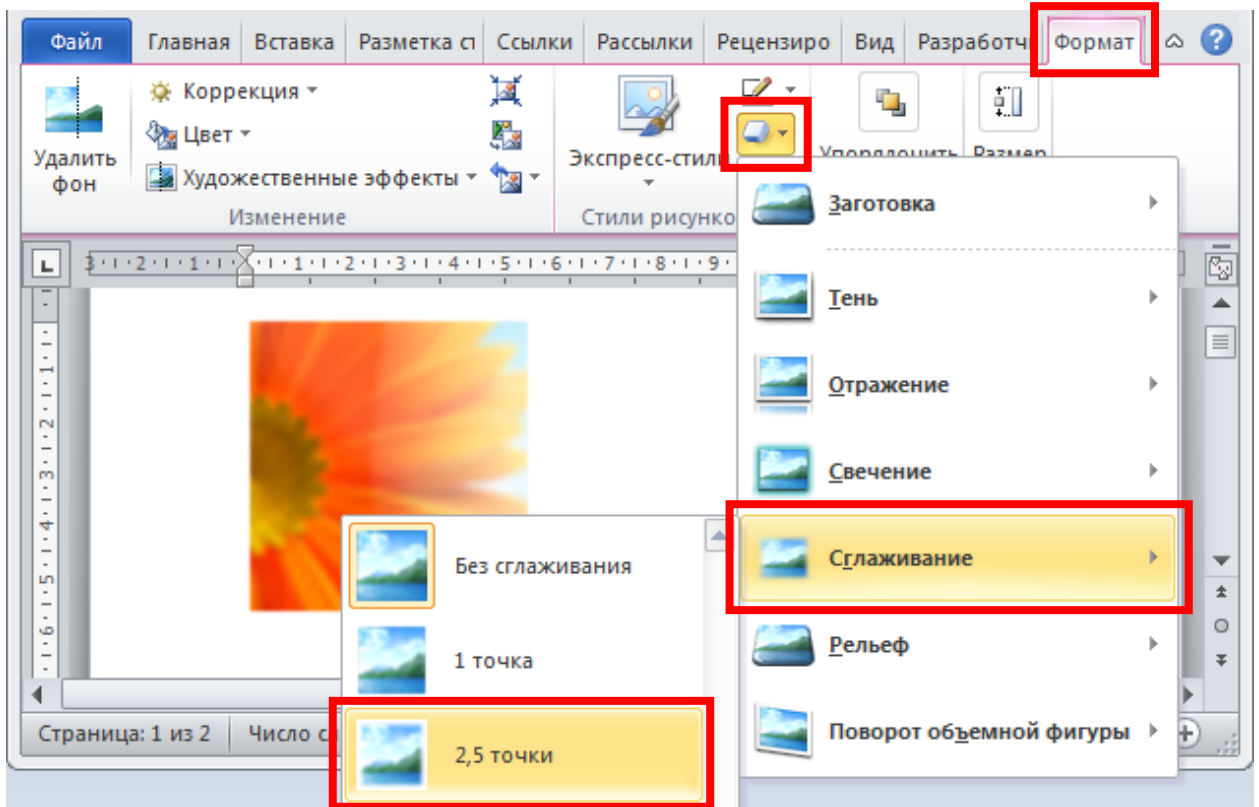
7)



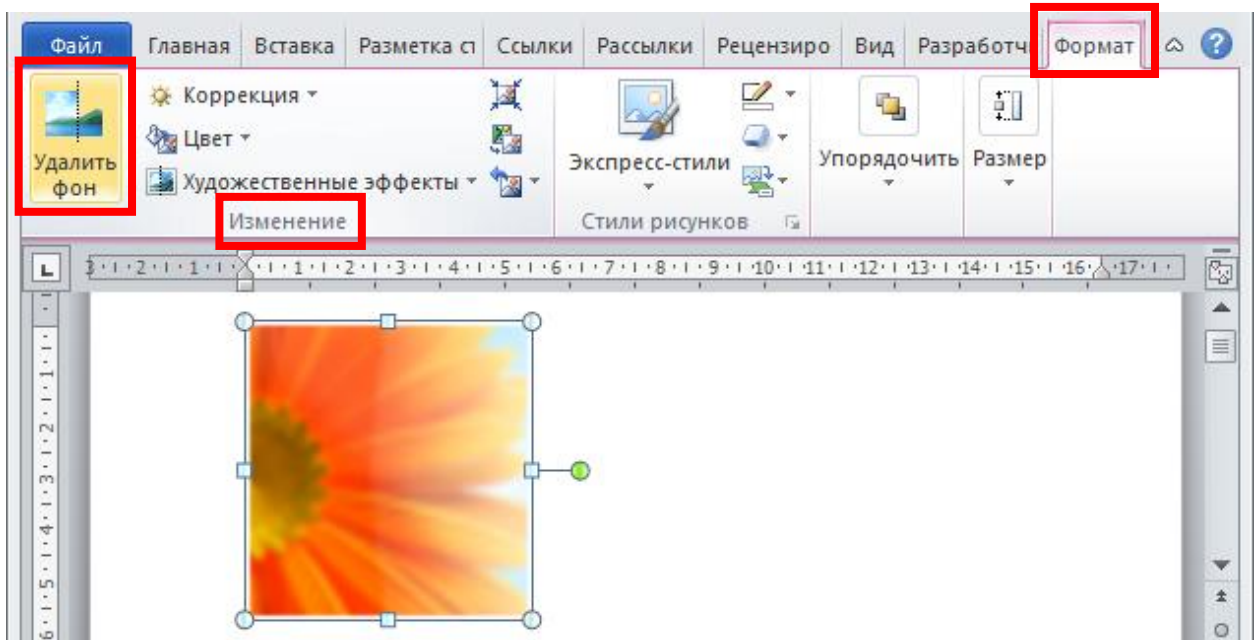
8)



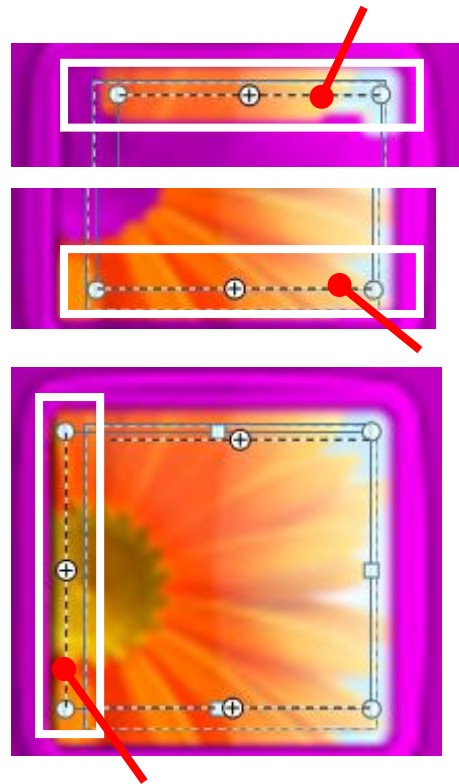
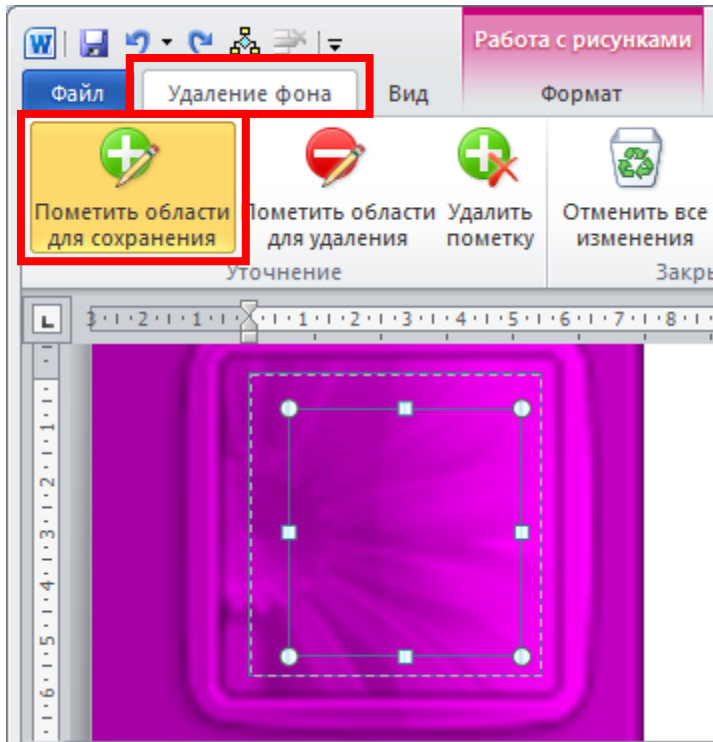
9)



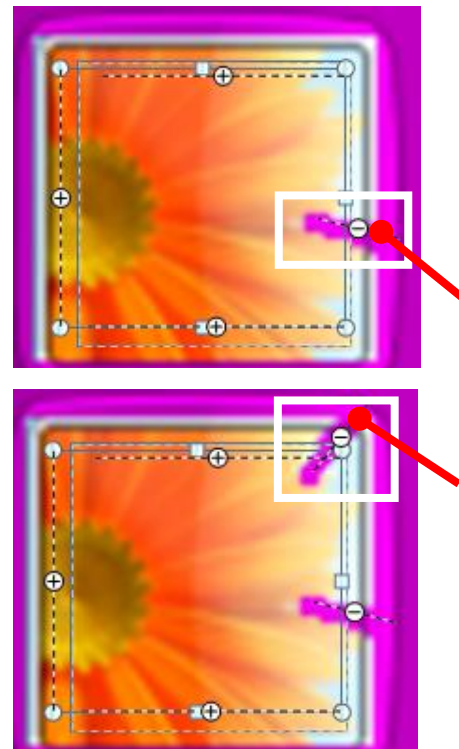
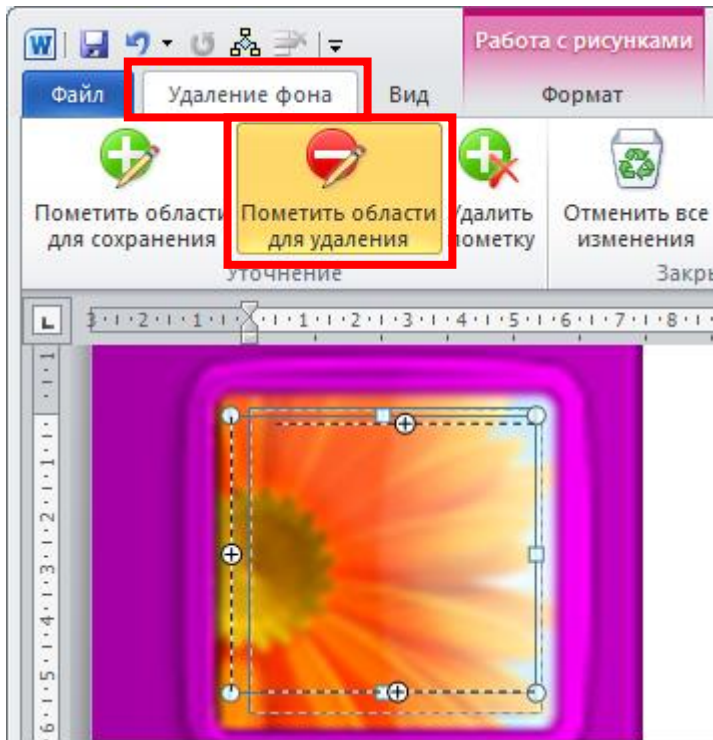
10)



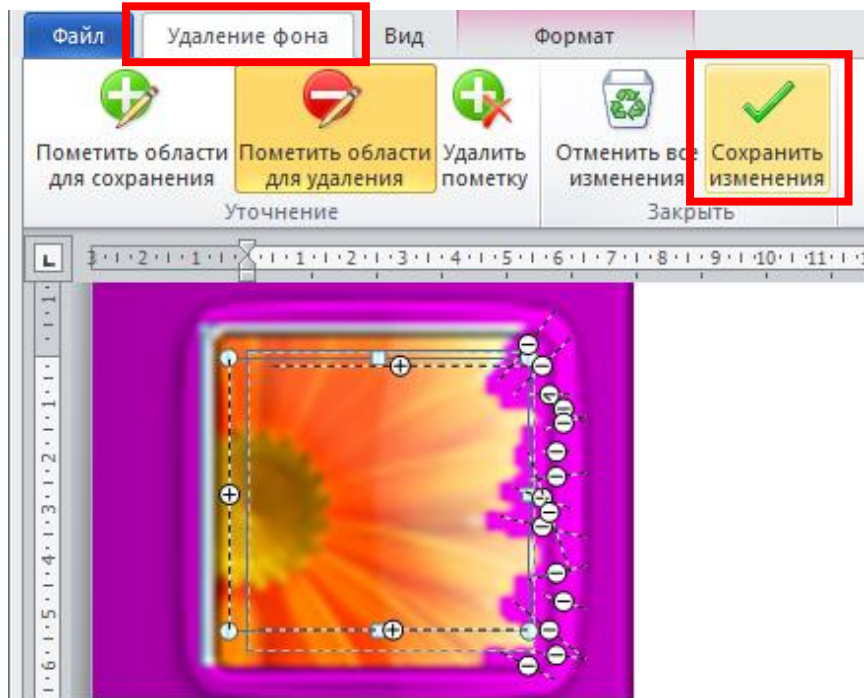
11)



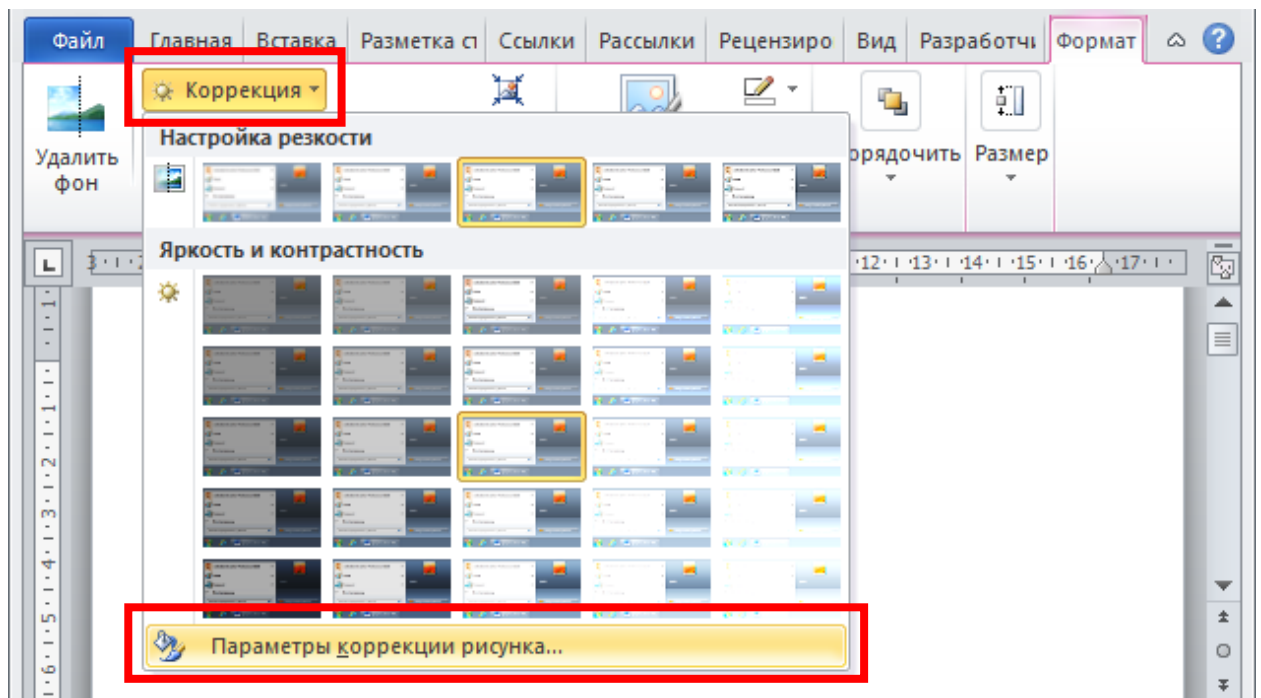
12)



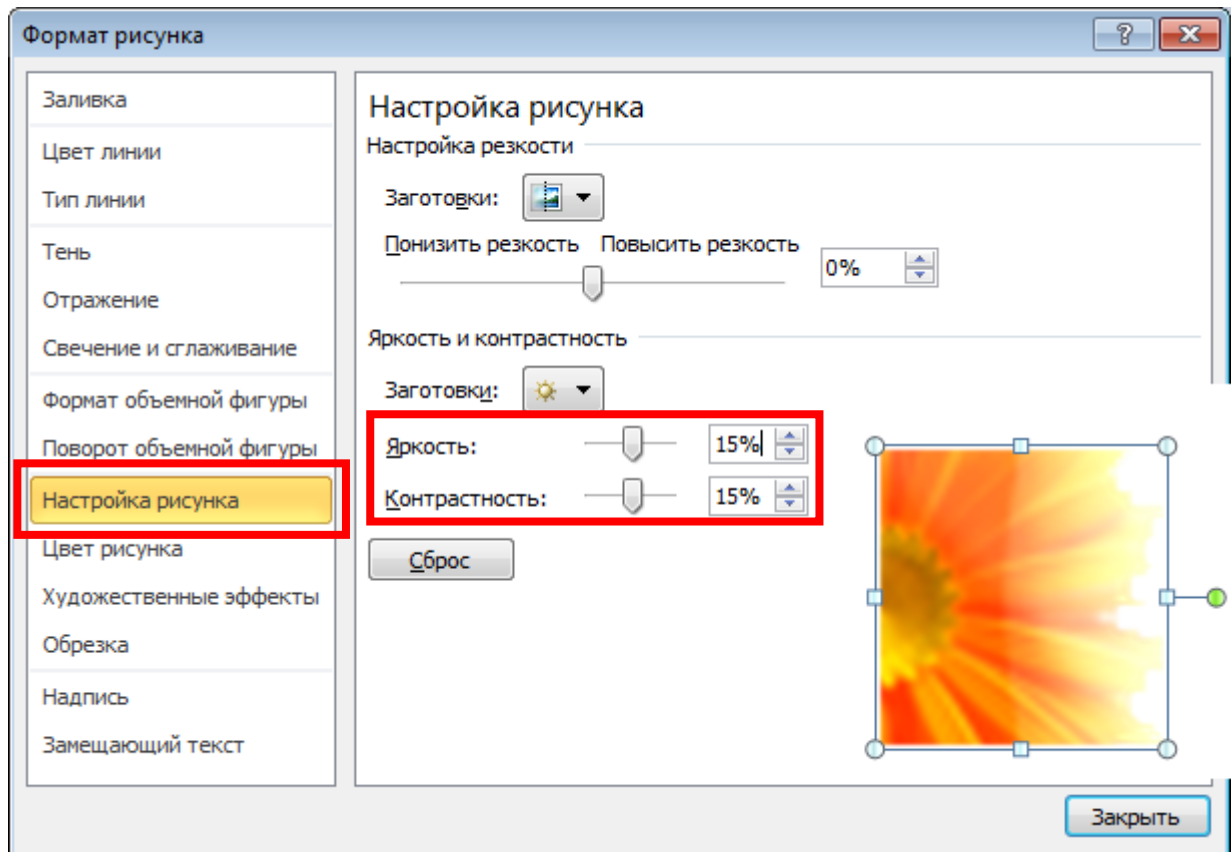
13)



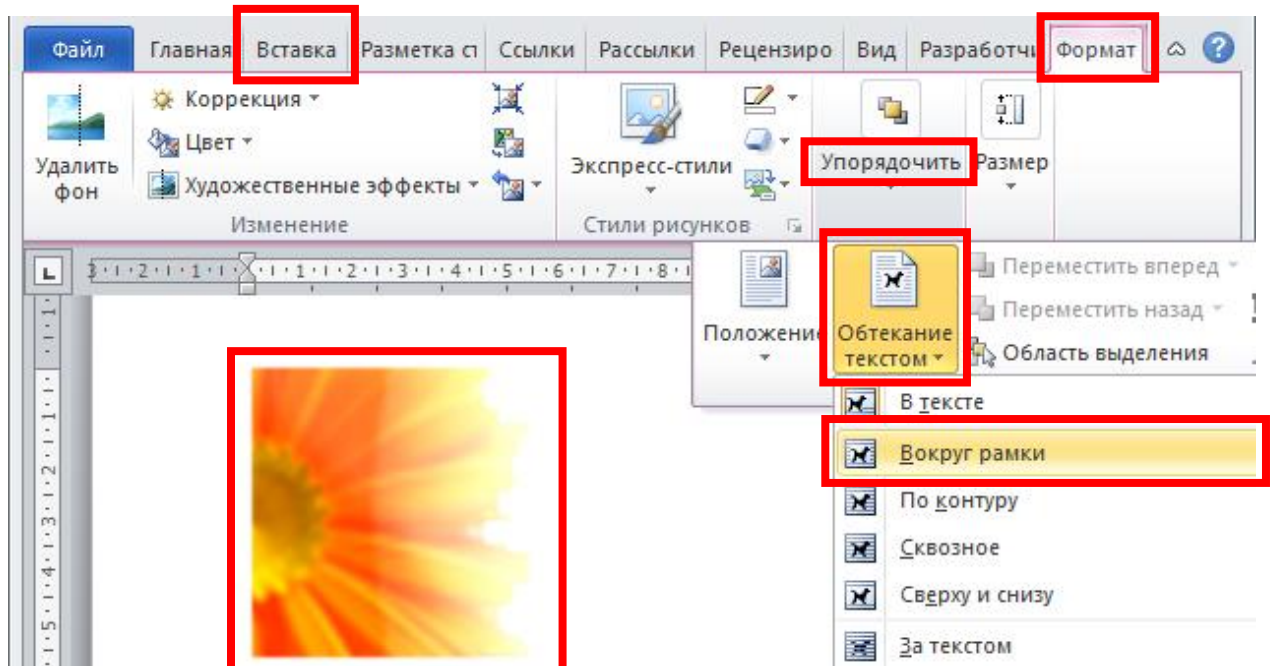
14)



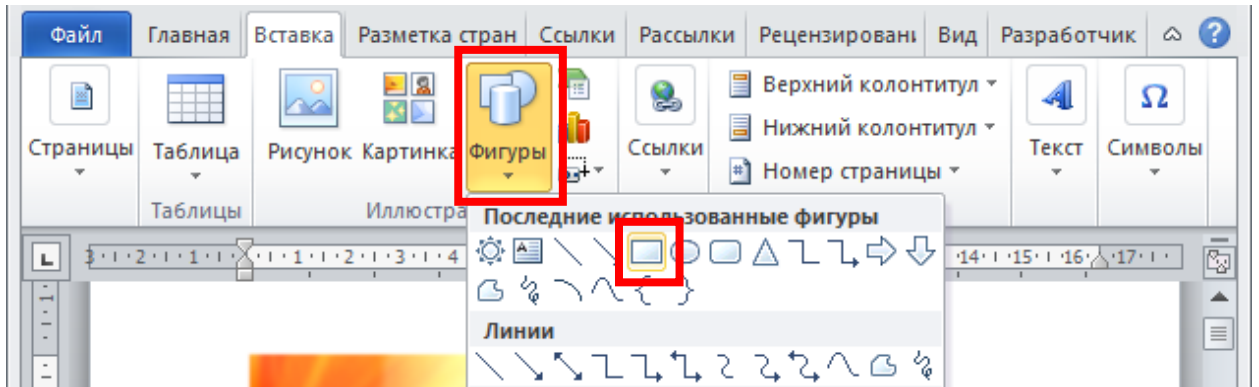
15)



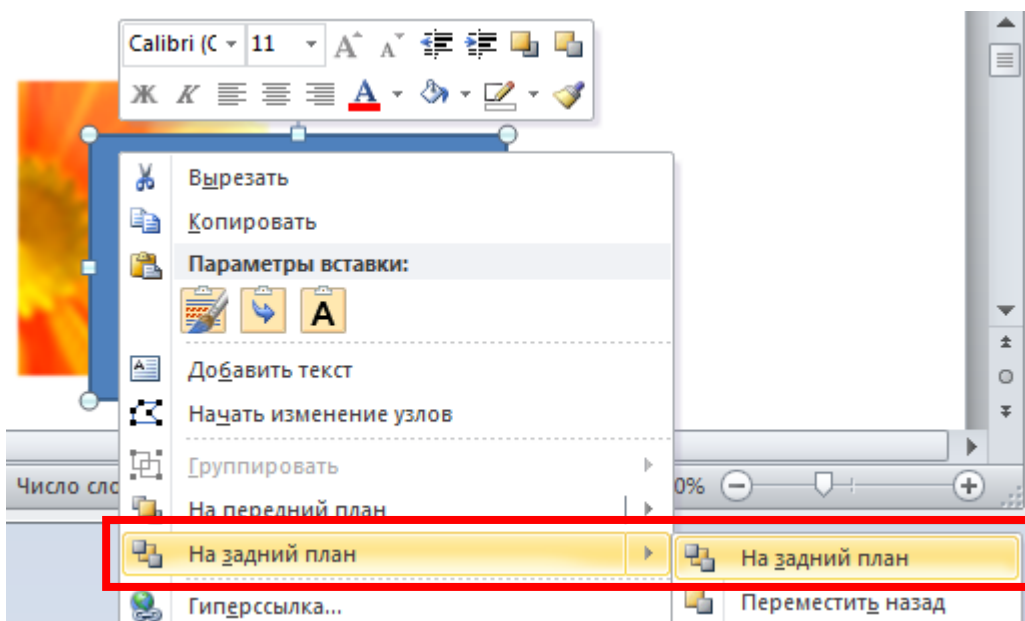
16)



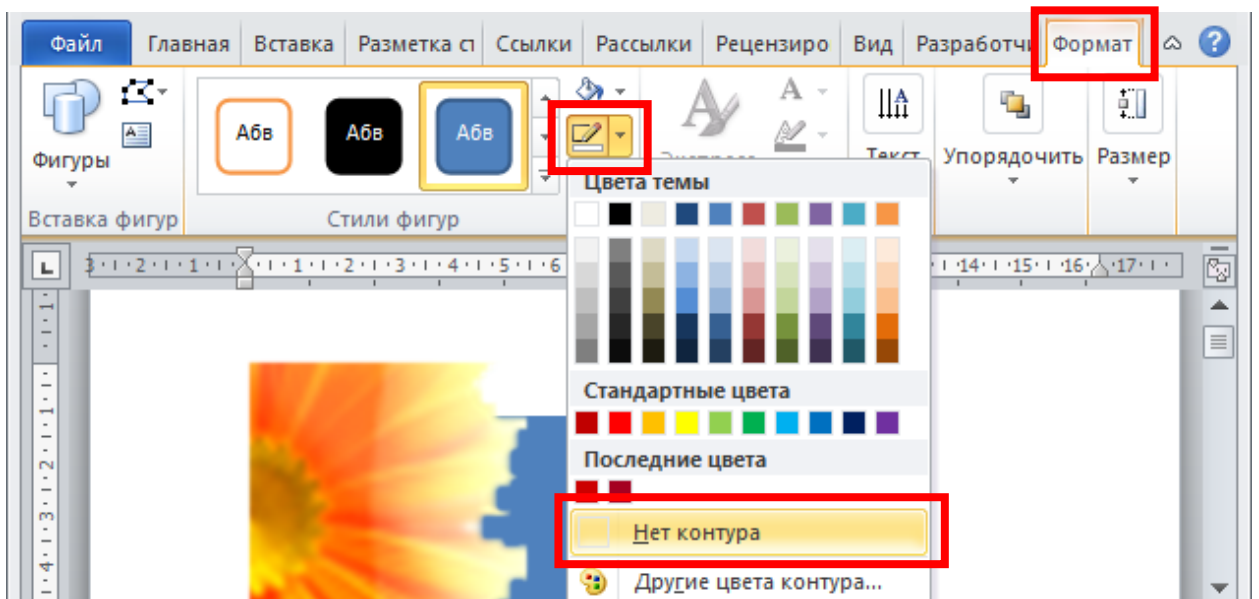
17)



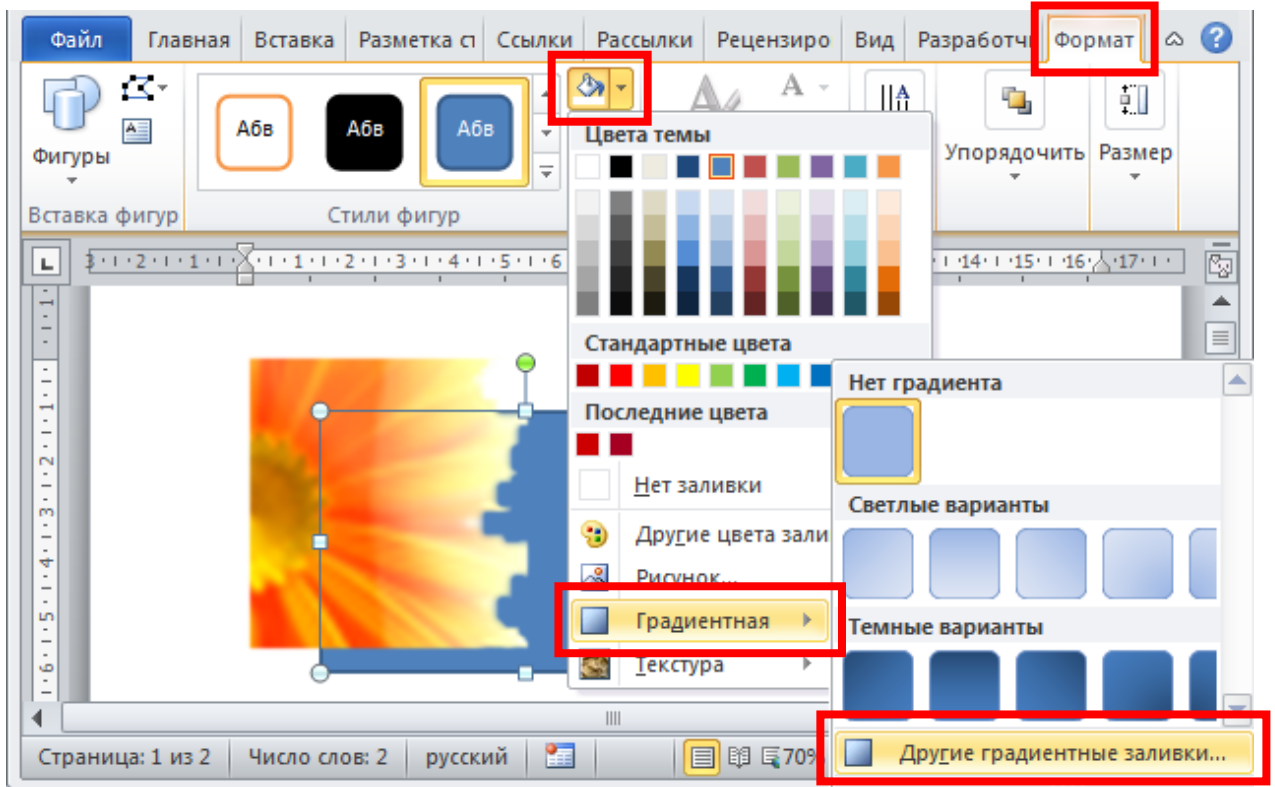
18)



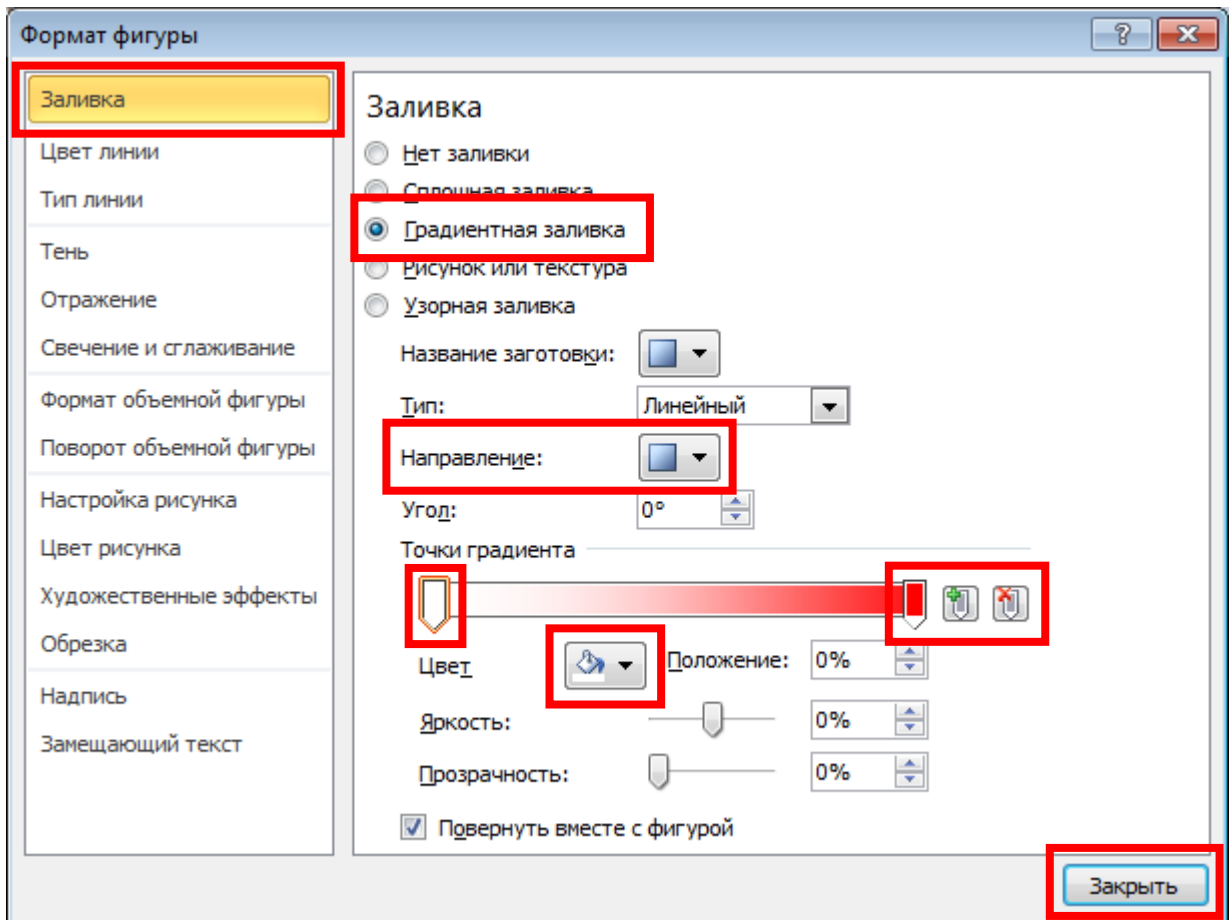
19)



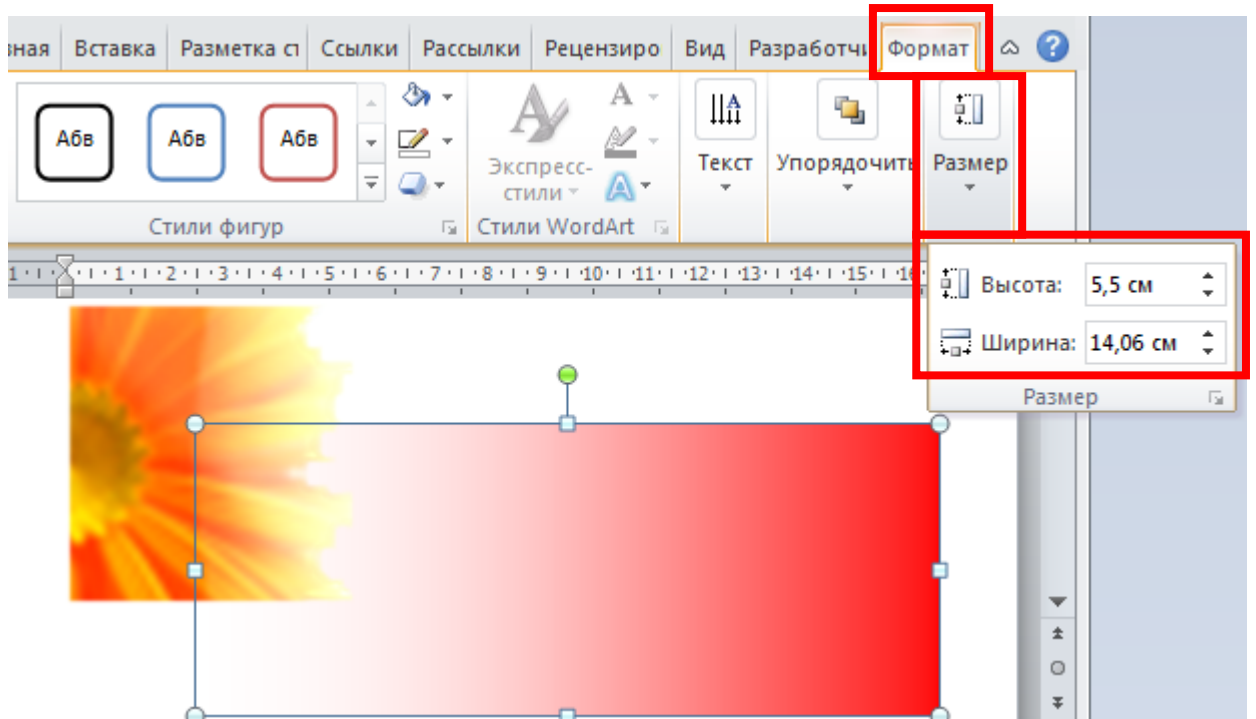
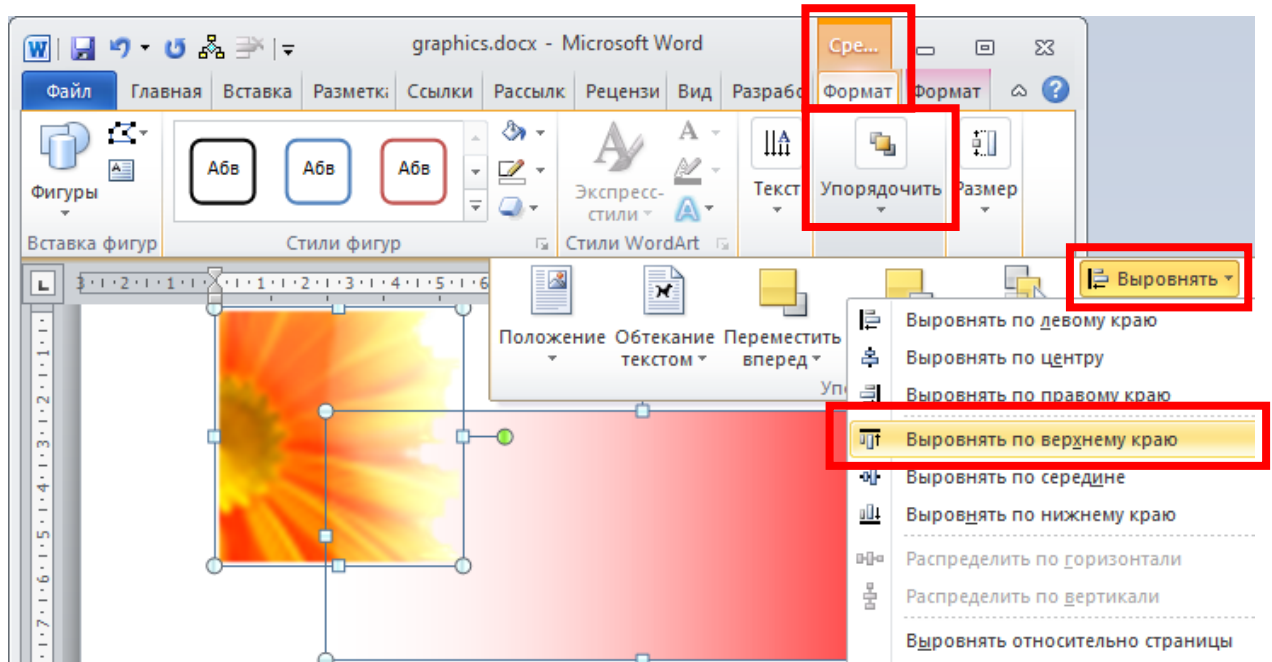
20)



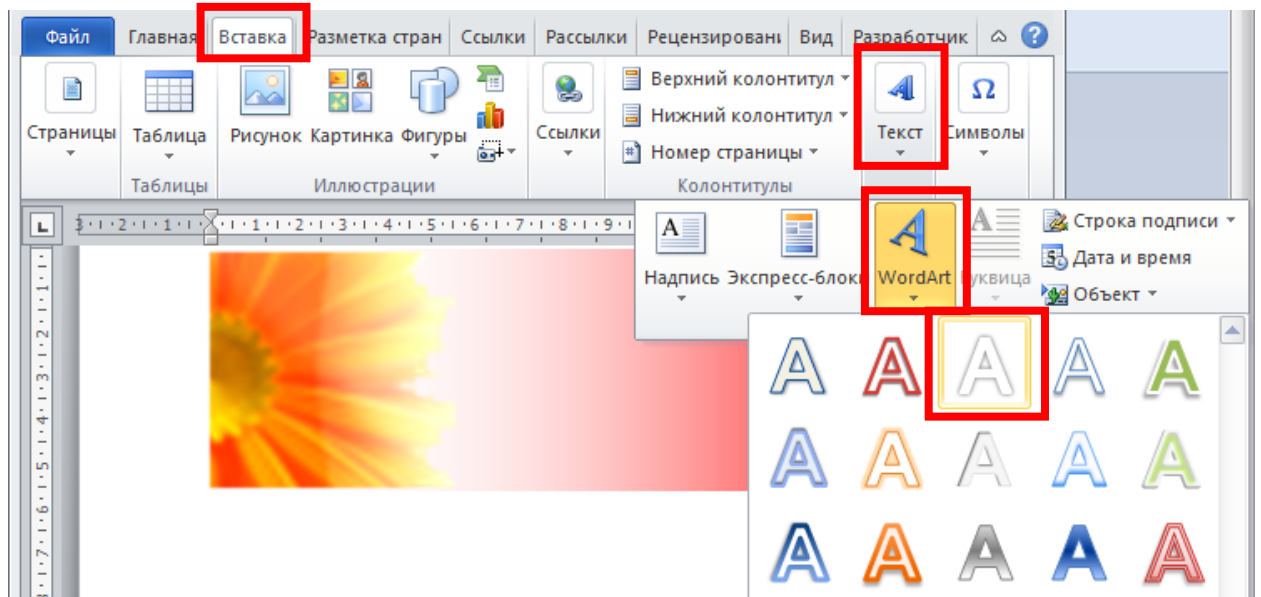
21)



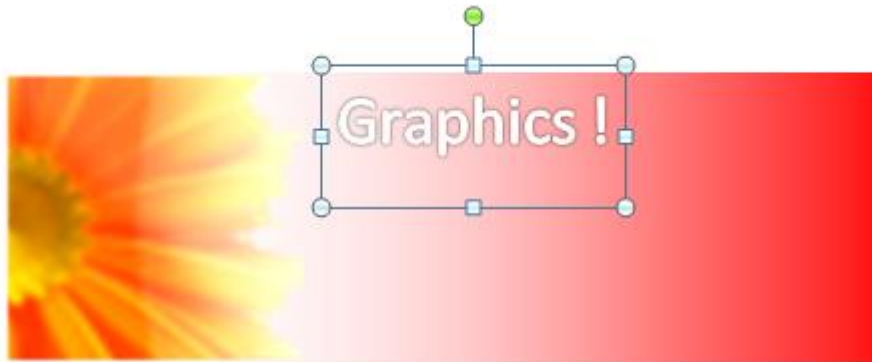
22)

23) Press **CTRL** and select all the objects you need.

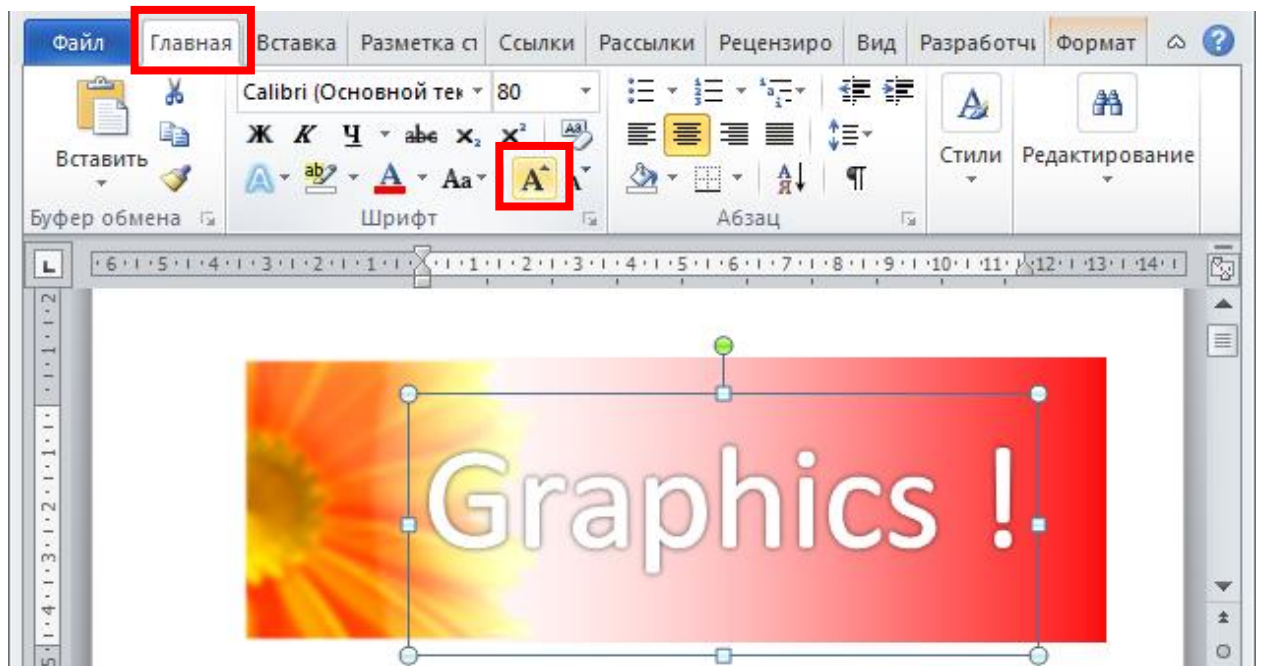
24)



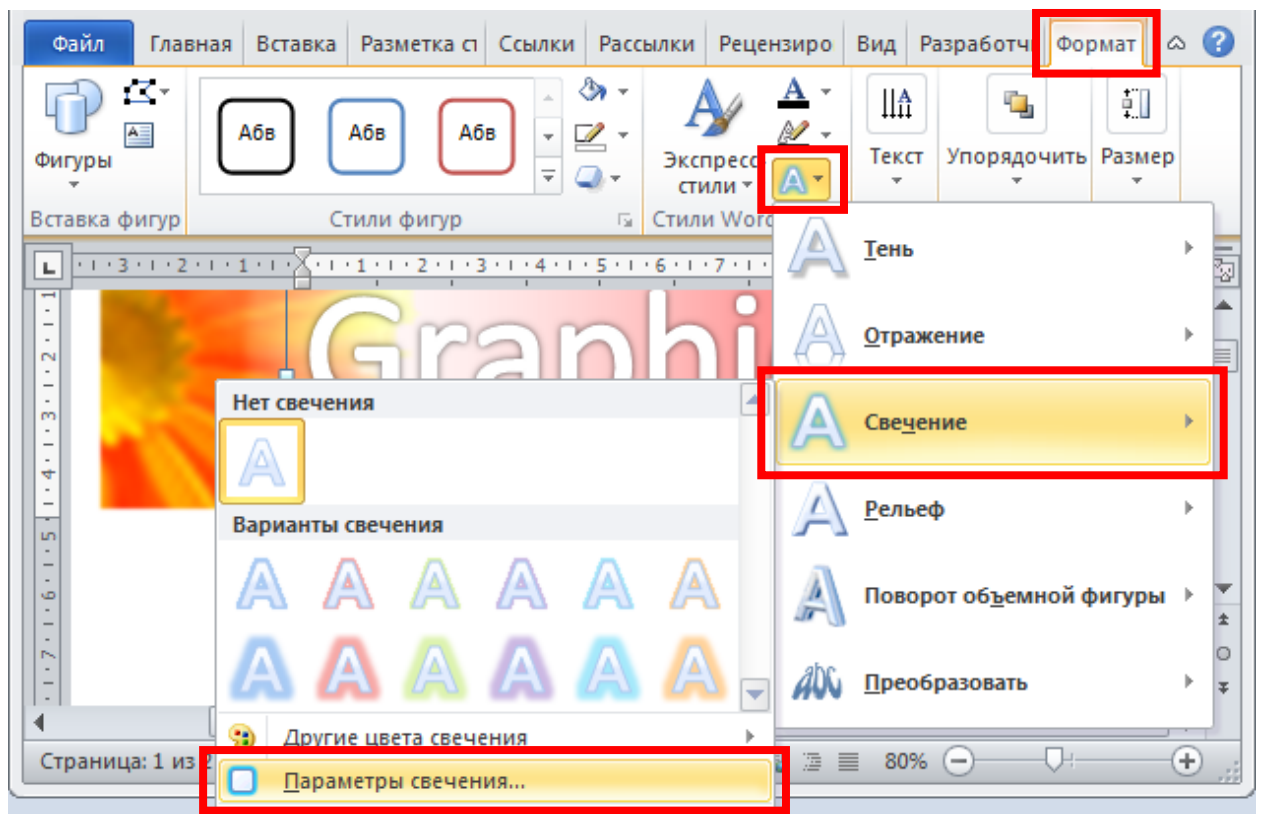
25)



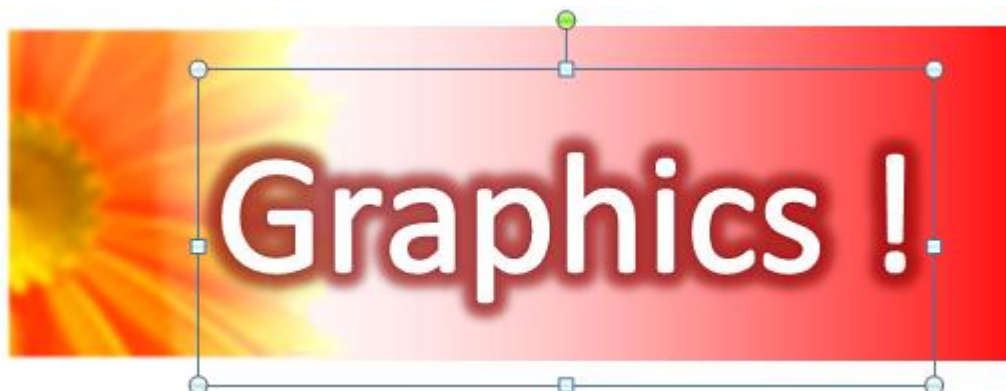
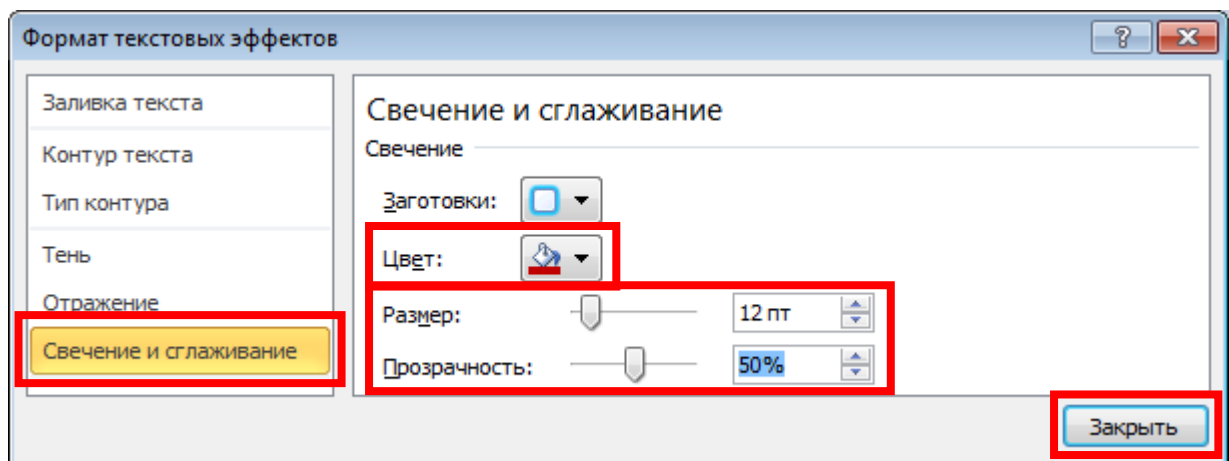
26)



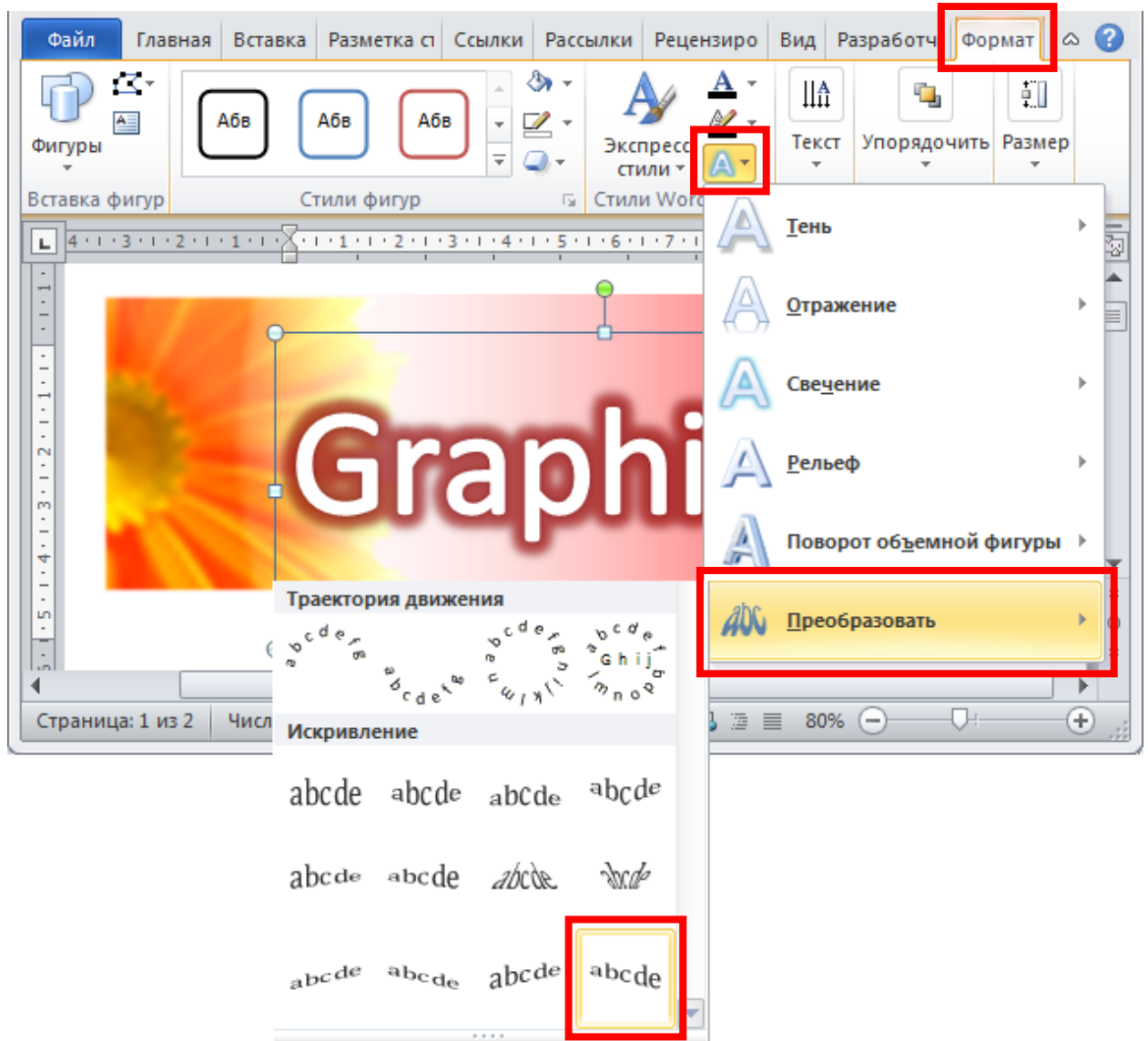
27)



28)



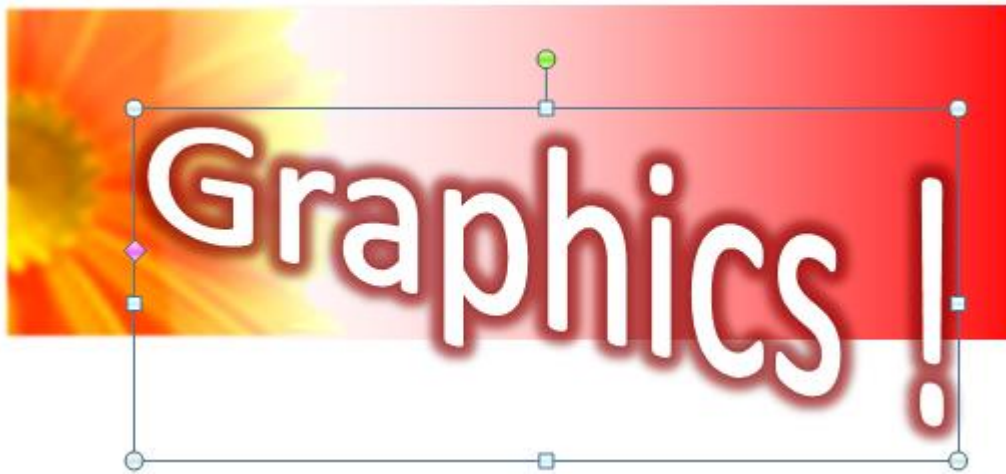
29)



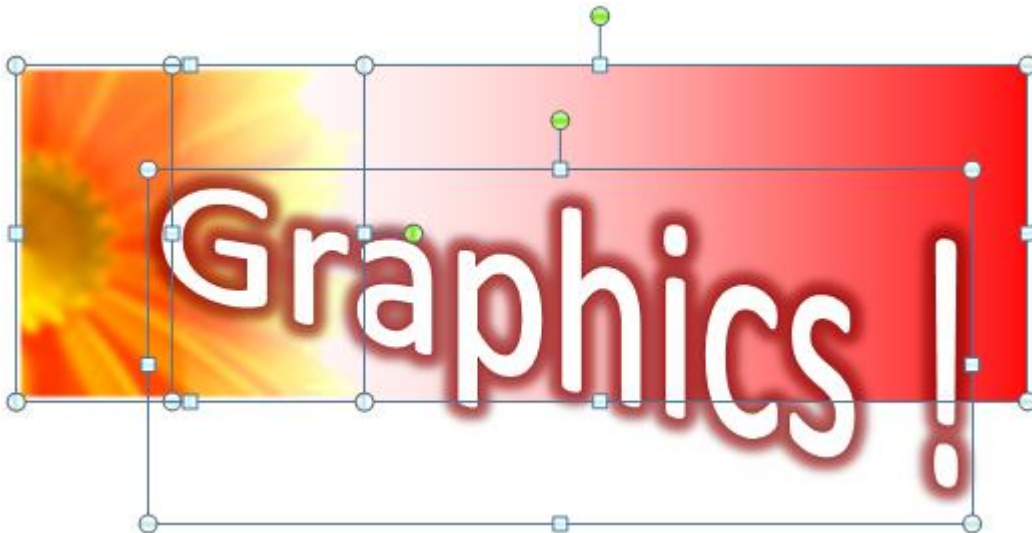
30)



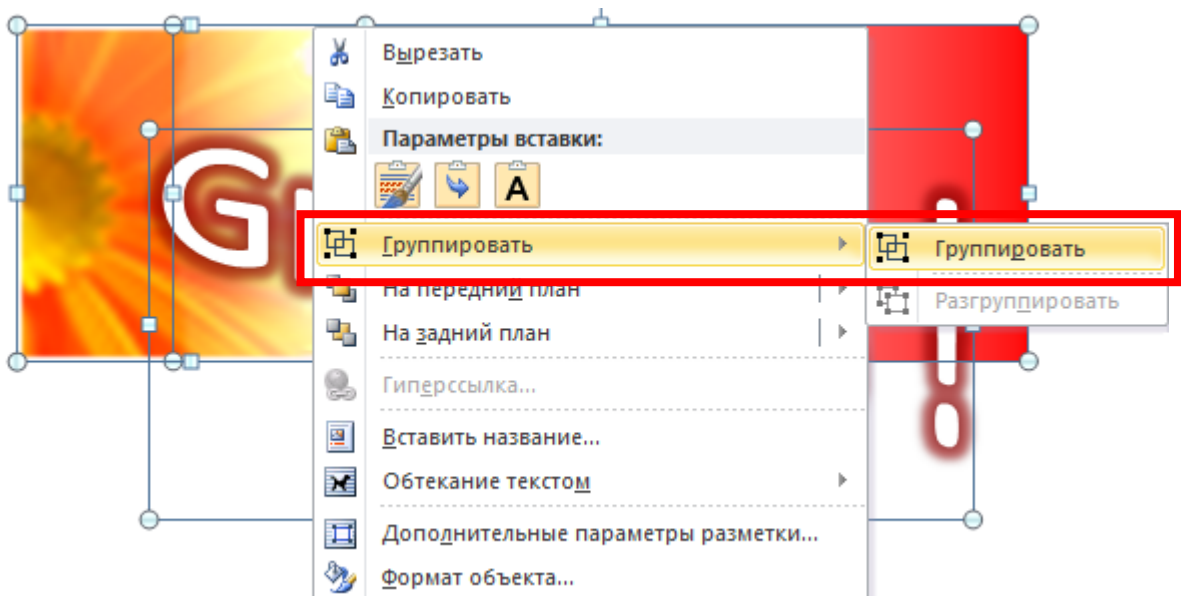
31) Select object and use keyboard commands: **UP, DOWN, RIGHT, LEFT**.

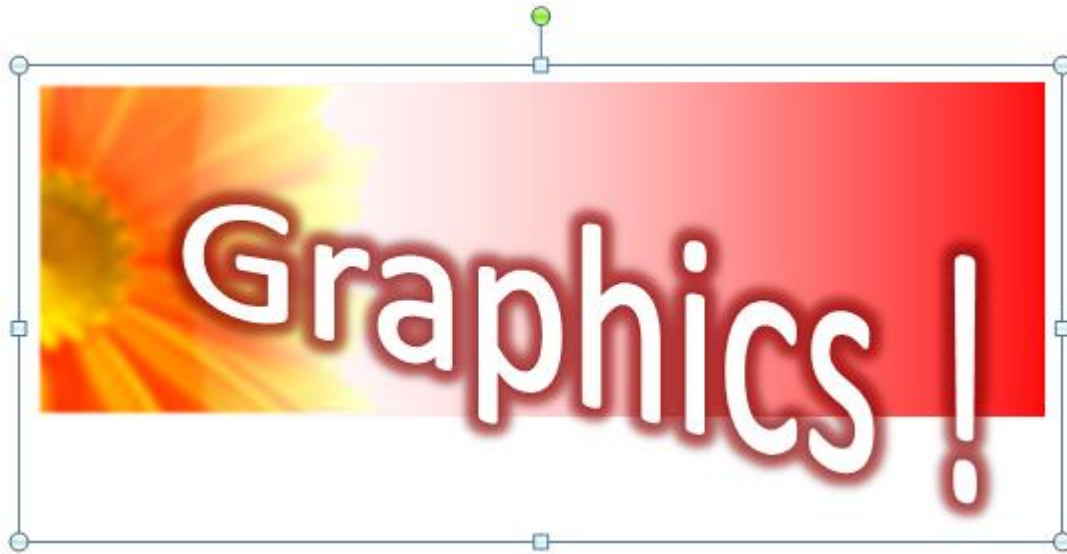


32) Press **CTRL** and select all the objects you need.



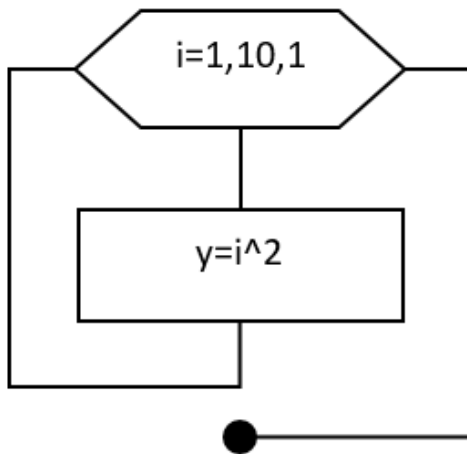
33)





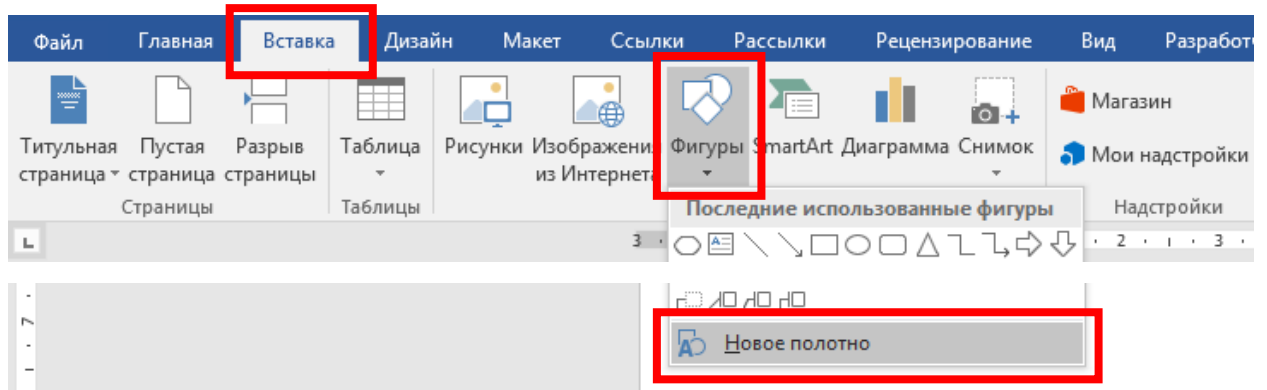
Example 2

Create scheme in MS Word using canvas object, autoshape figures and connection lines according to the following sample:

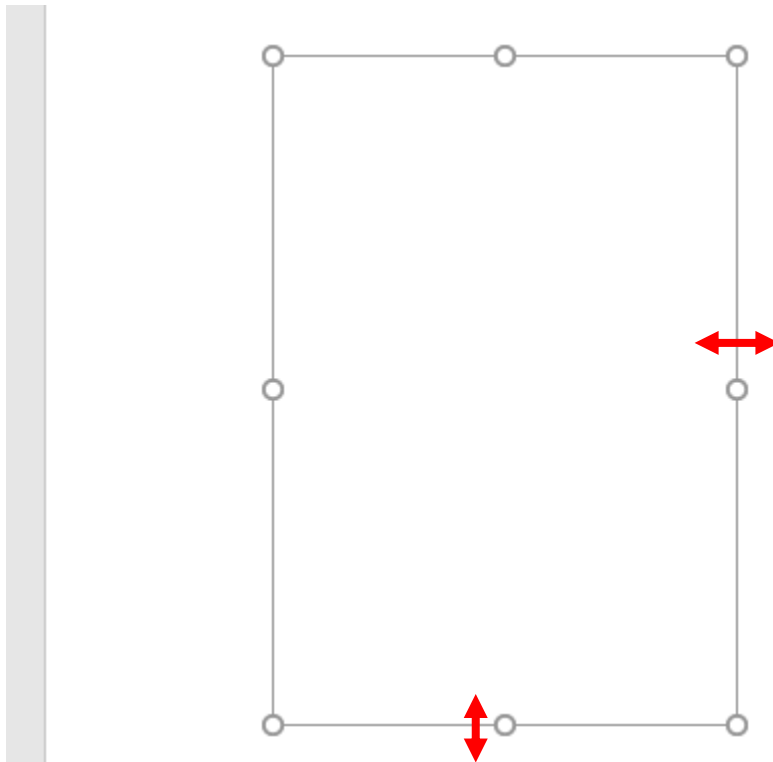


Solving

1)



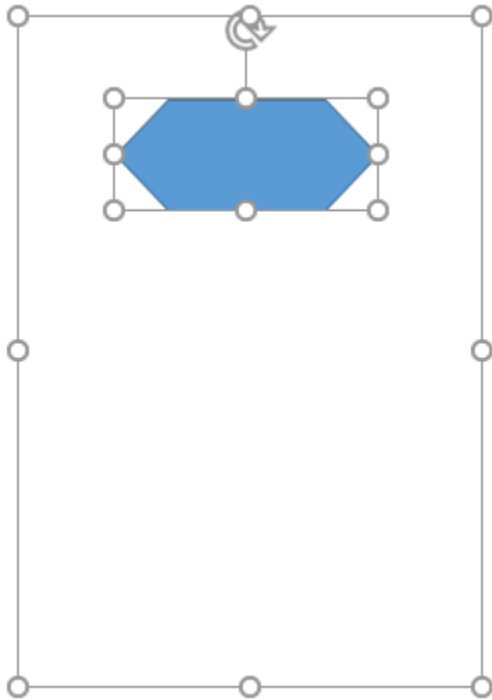
2)



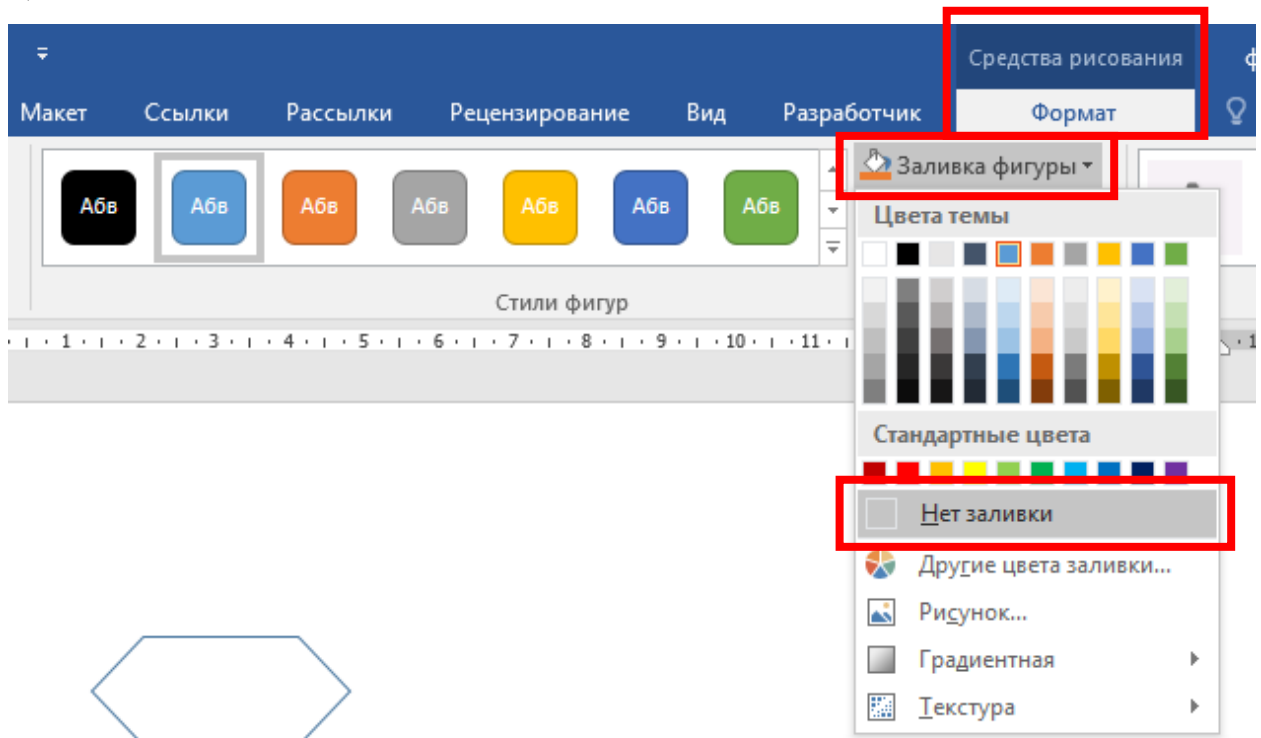
3)

The screenshot shows the Microsoft Word ribbon with the 'Вставка' (Insert) tab selected. The 'Фигуры' (Shapes) group is expanded, showing a gallery of shapes. The 'Основные фигуры' (Basic Shapes) section is visible, and a red box highlights a circle shape in the 'Блок-схема' (Flowchart) section. The ribbon also shows options for 'Титульная страница' (Cover Page), 'Пустая страница' (Blank Page), 'Разрыв страницы' (Page Break), 'Таблица' (Table), 'Рисунки' (Pictures), 'Изображения из Интернета' (Images from the Internet), 'SmartArt', 'Диаграмма' (Chart), and 'Снимок' (Screenshot).

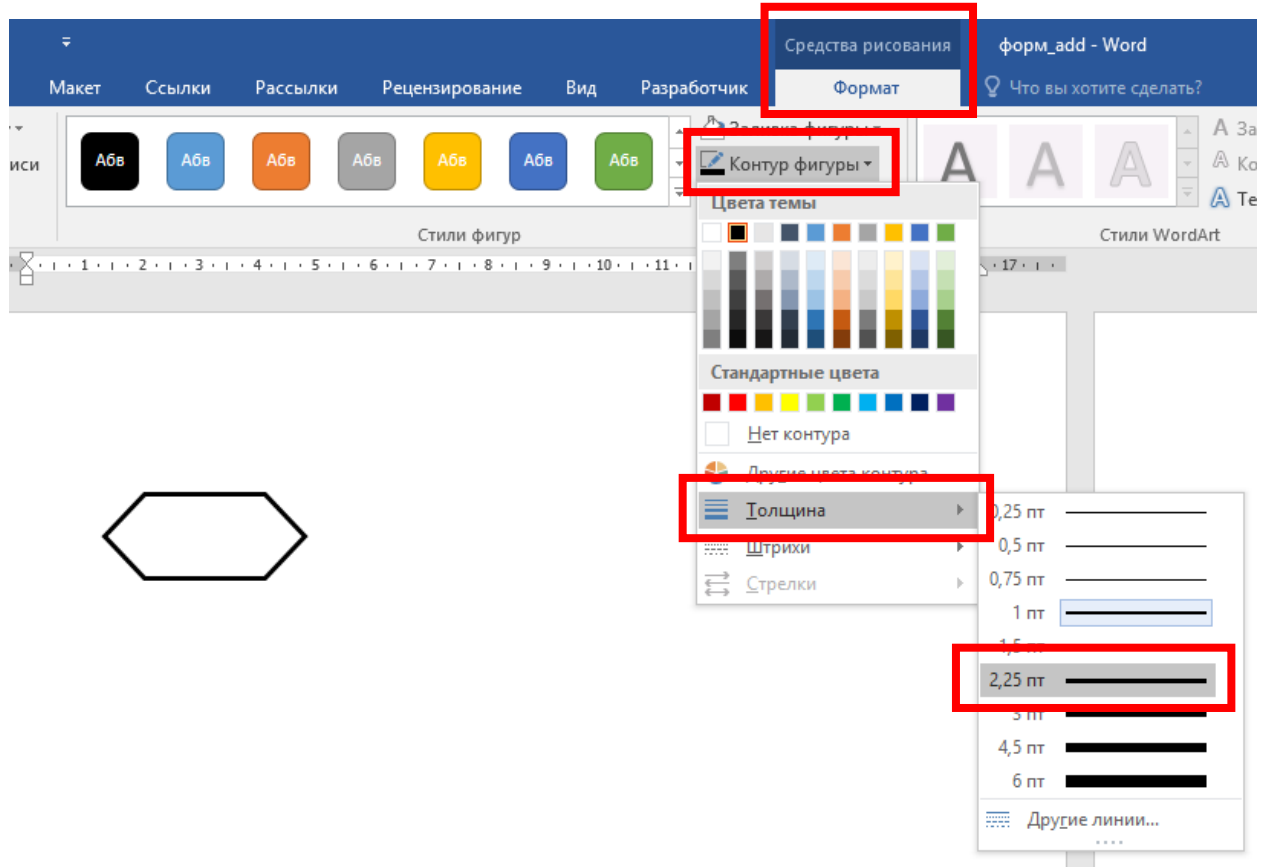
4)



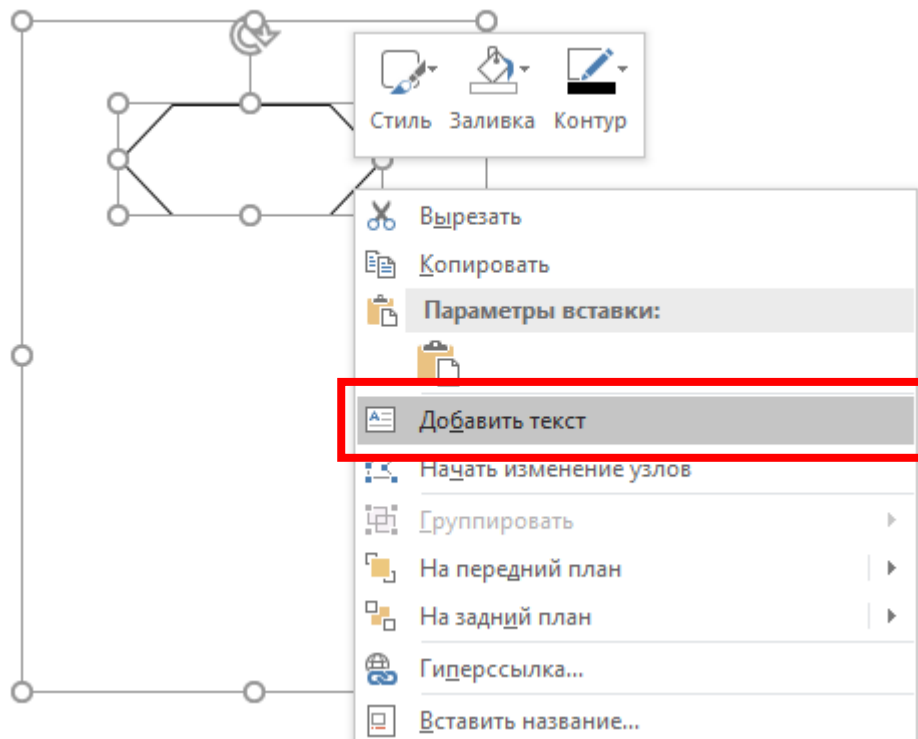
5)



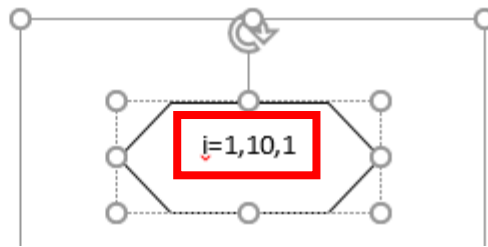
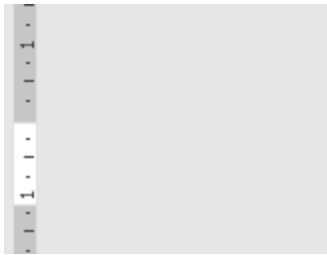
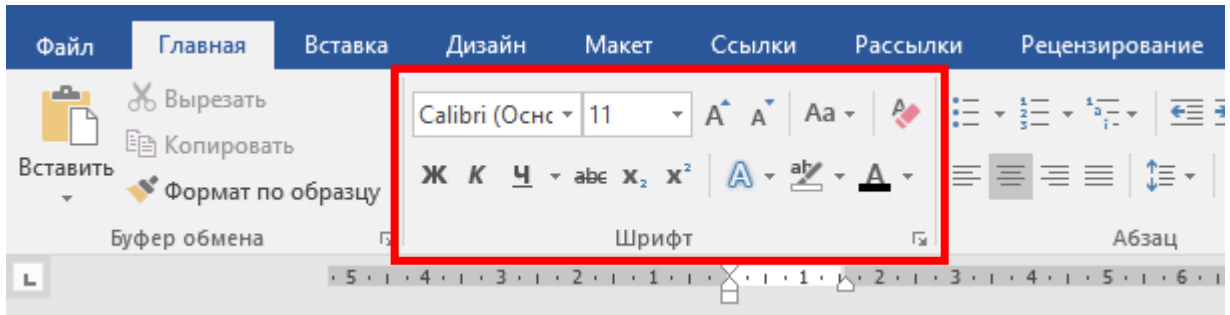
6)



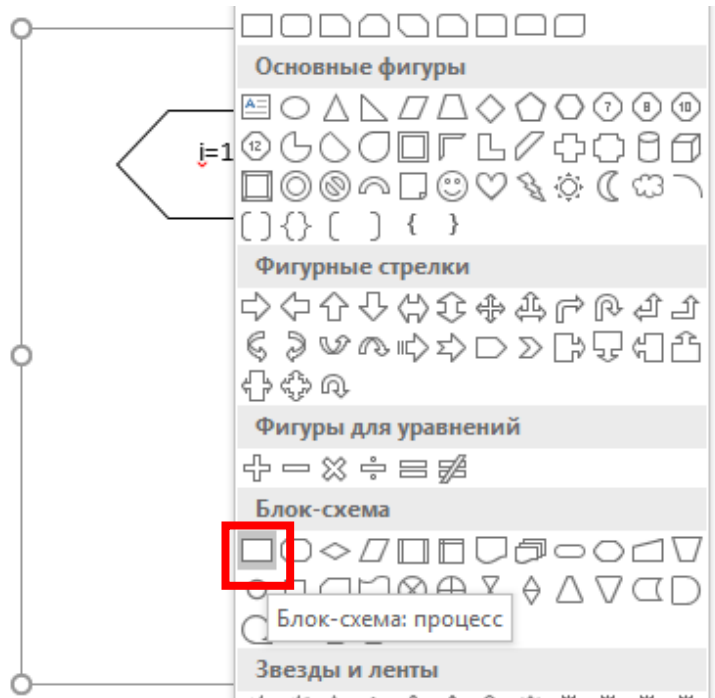
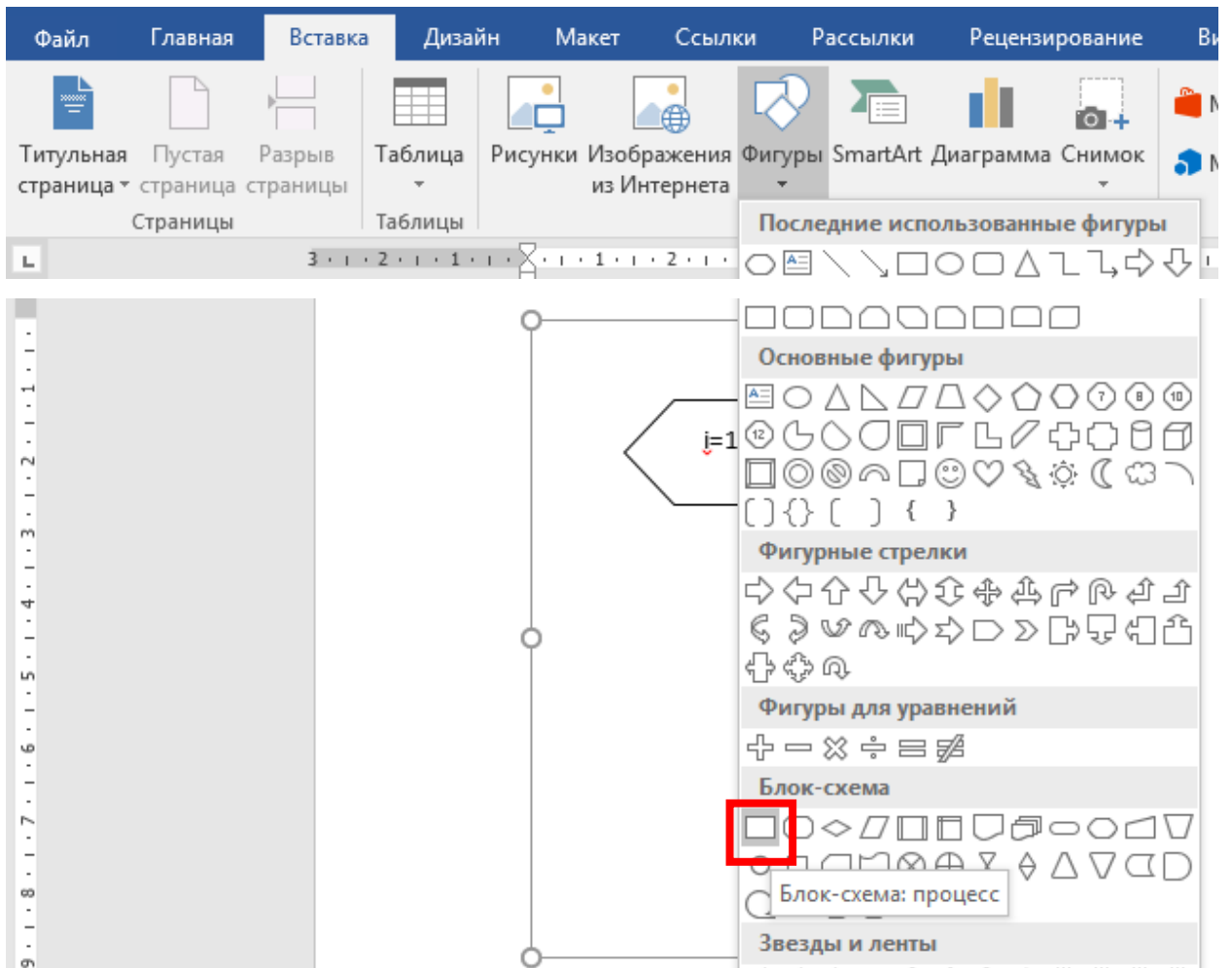
7)



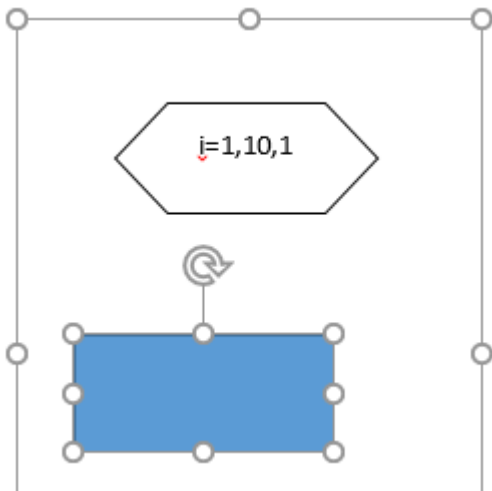
8)



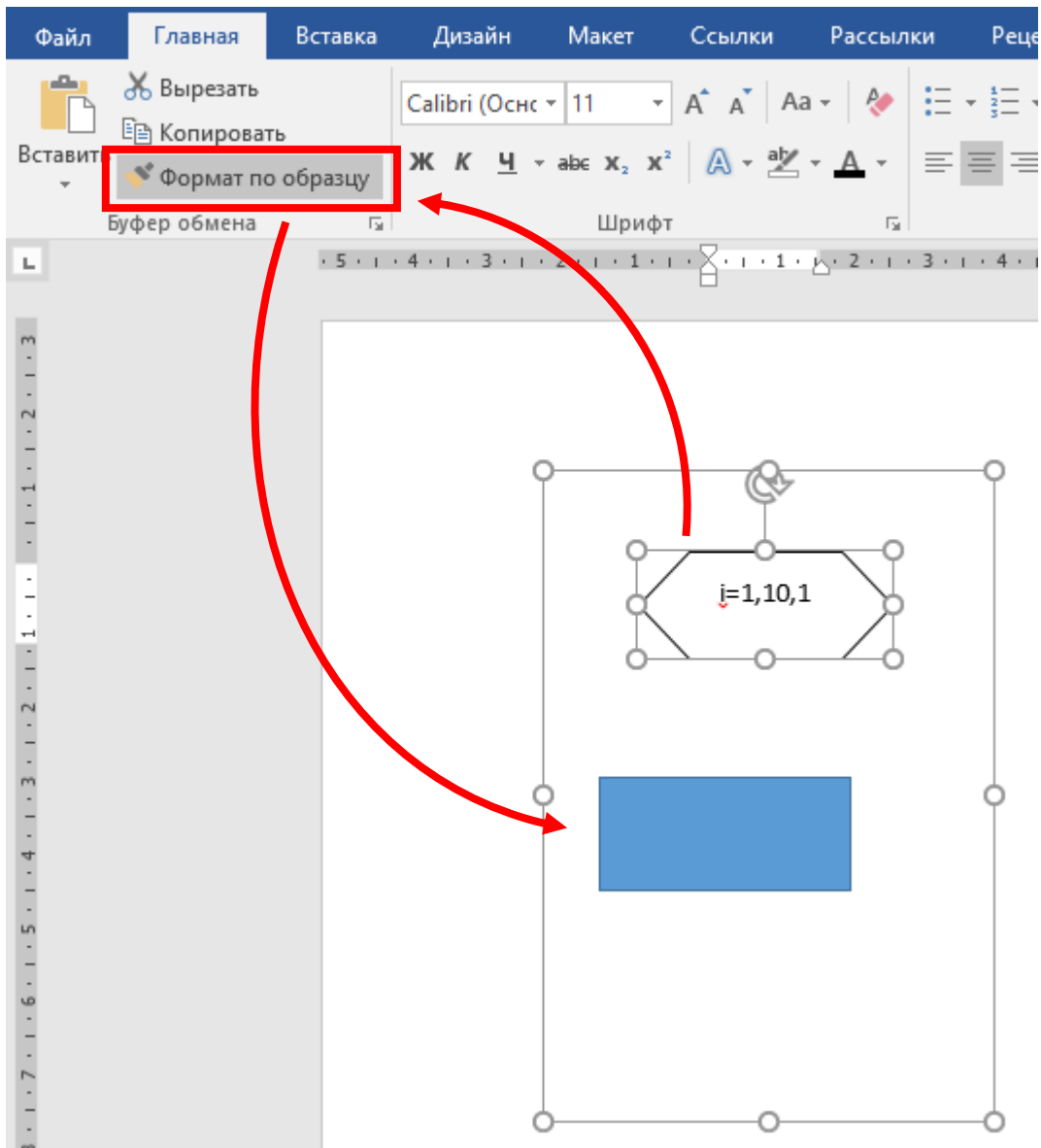
9)



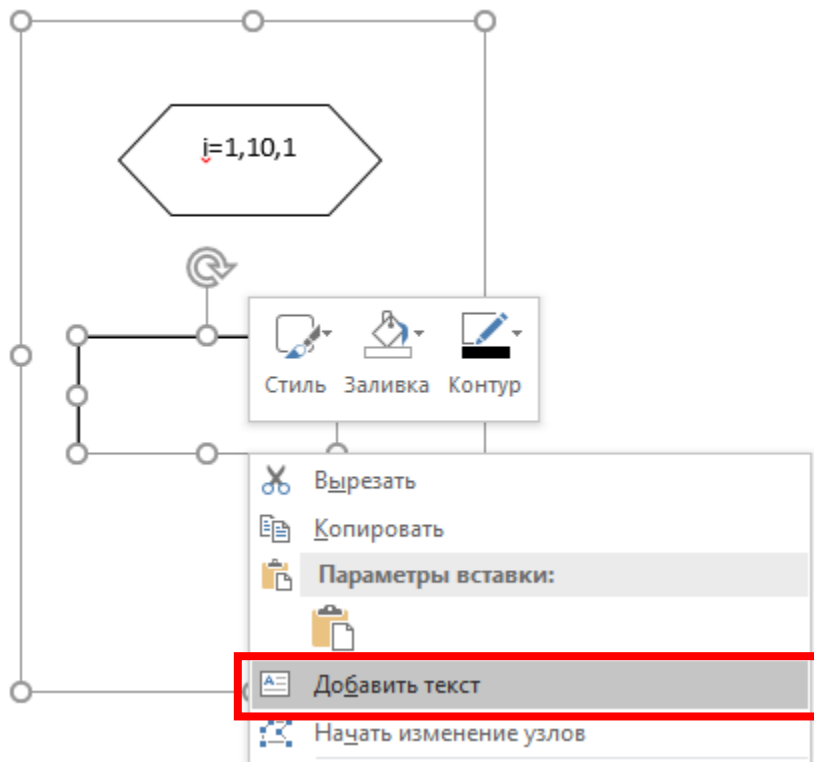
10)



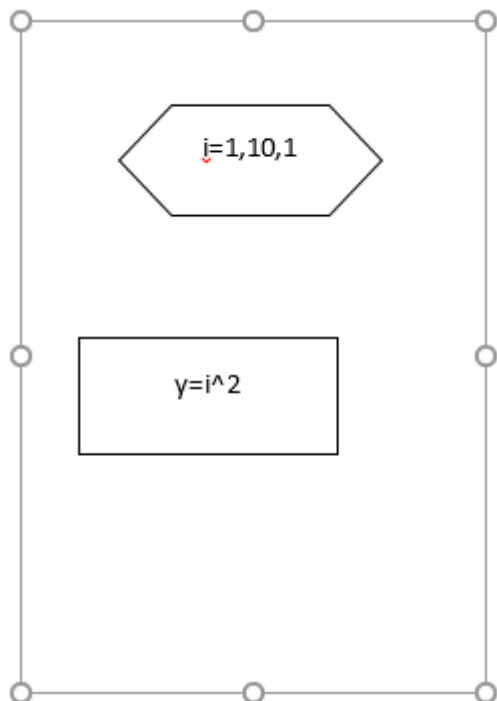
11)



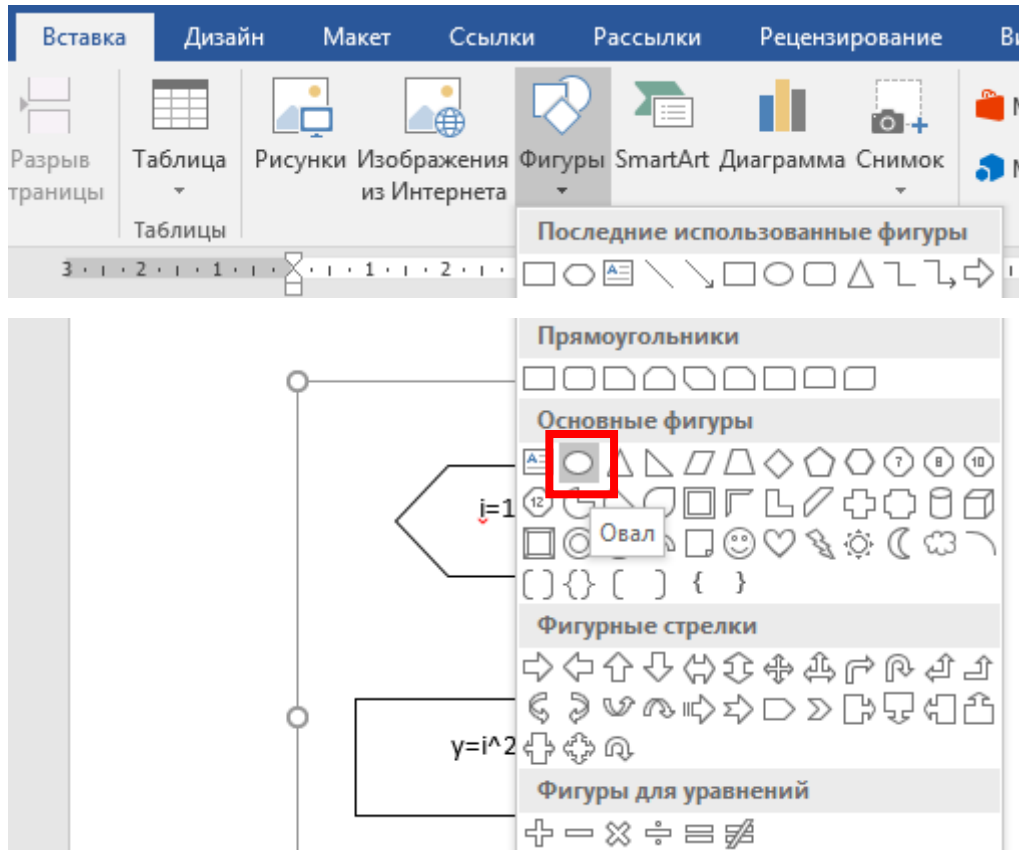
12)



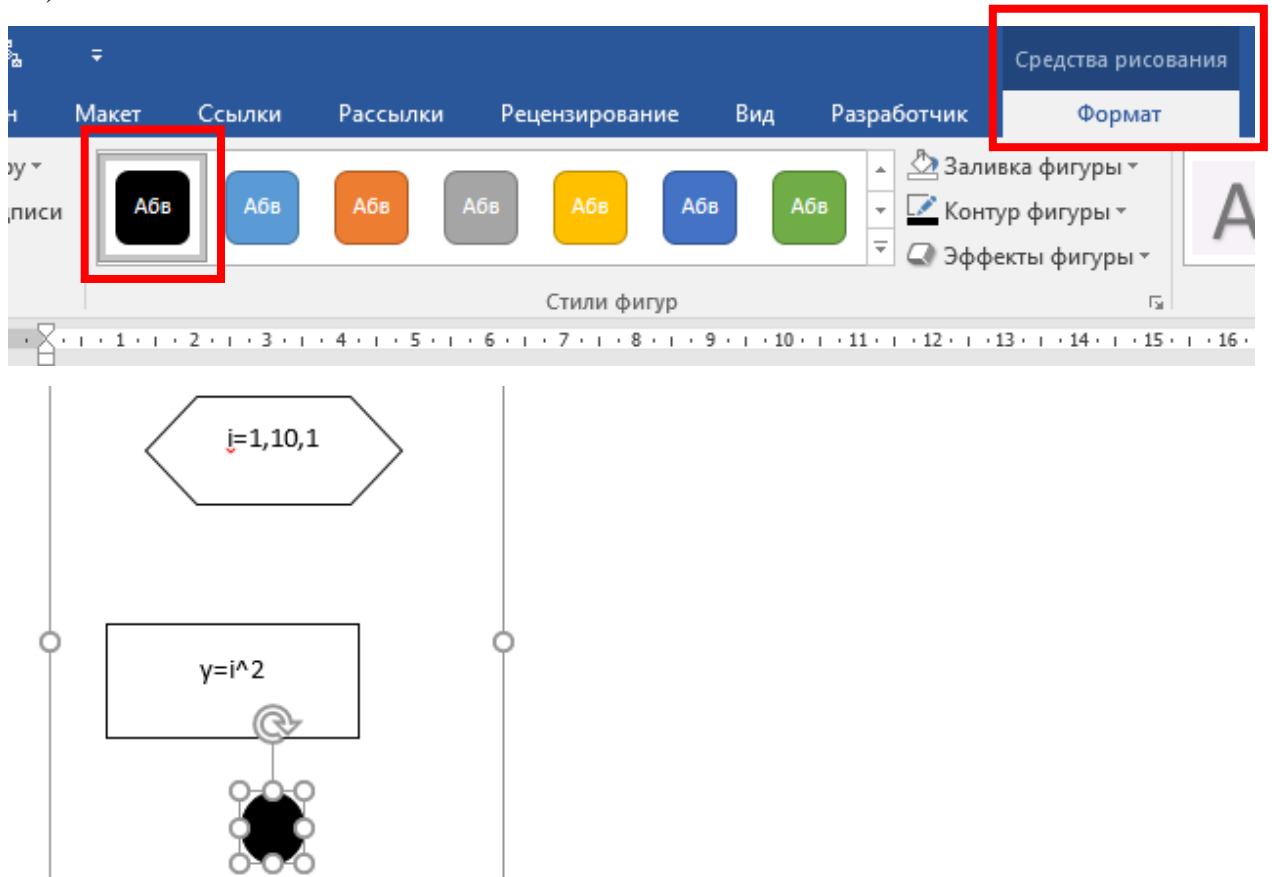
13)



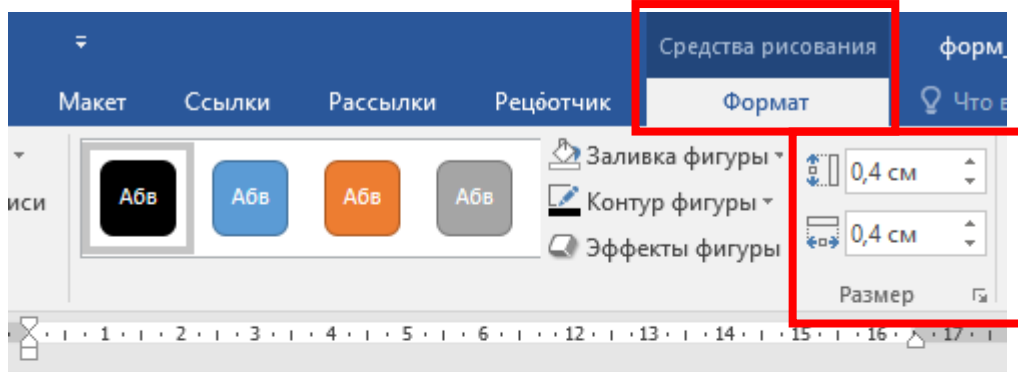
14)



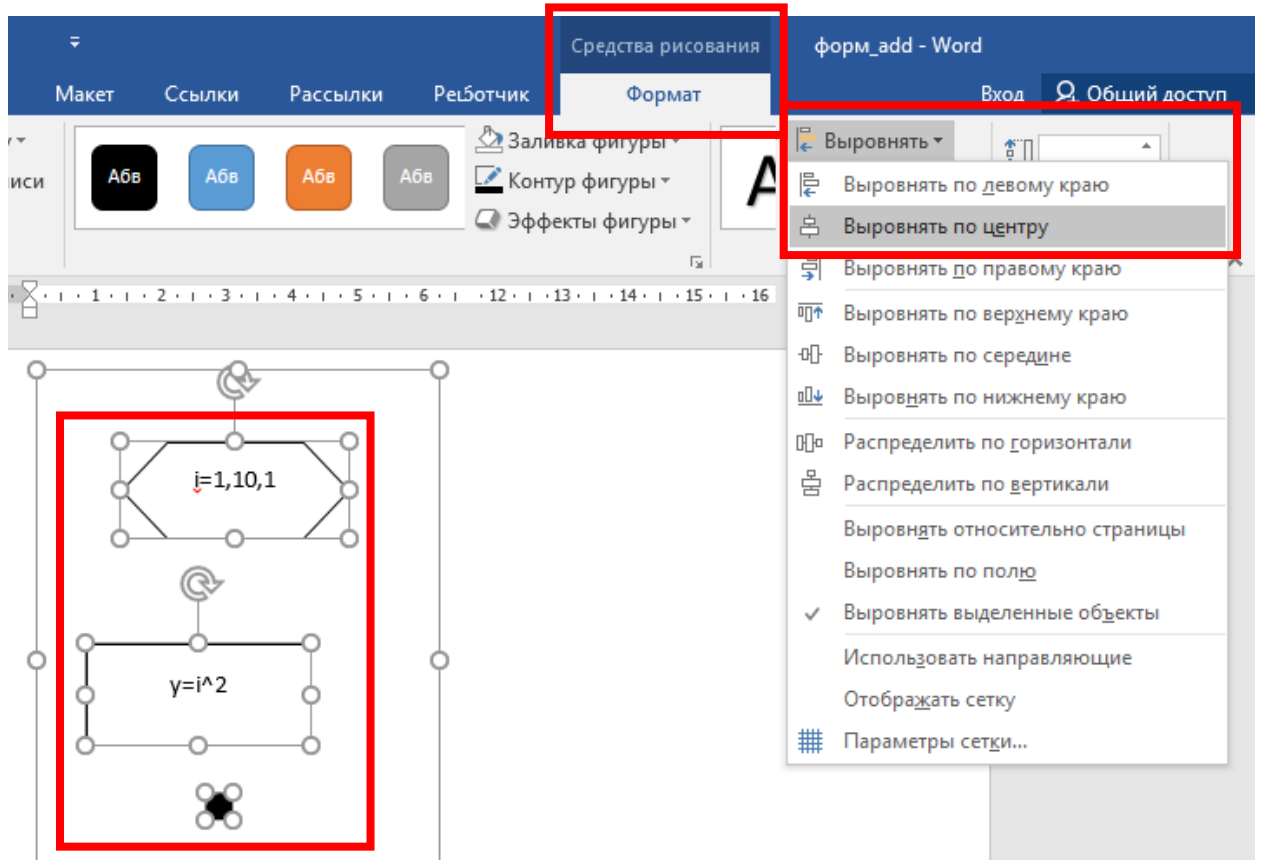
15)



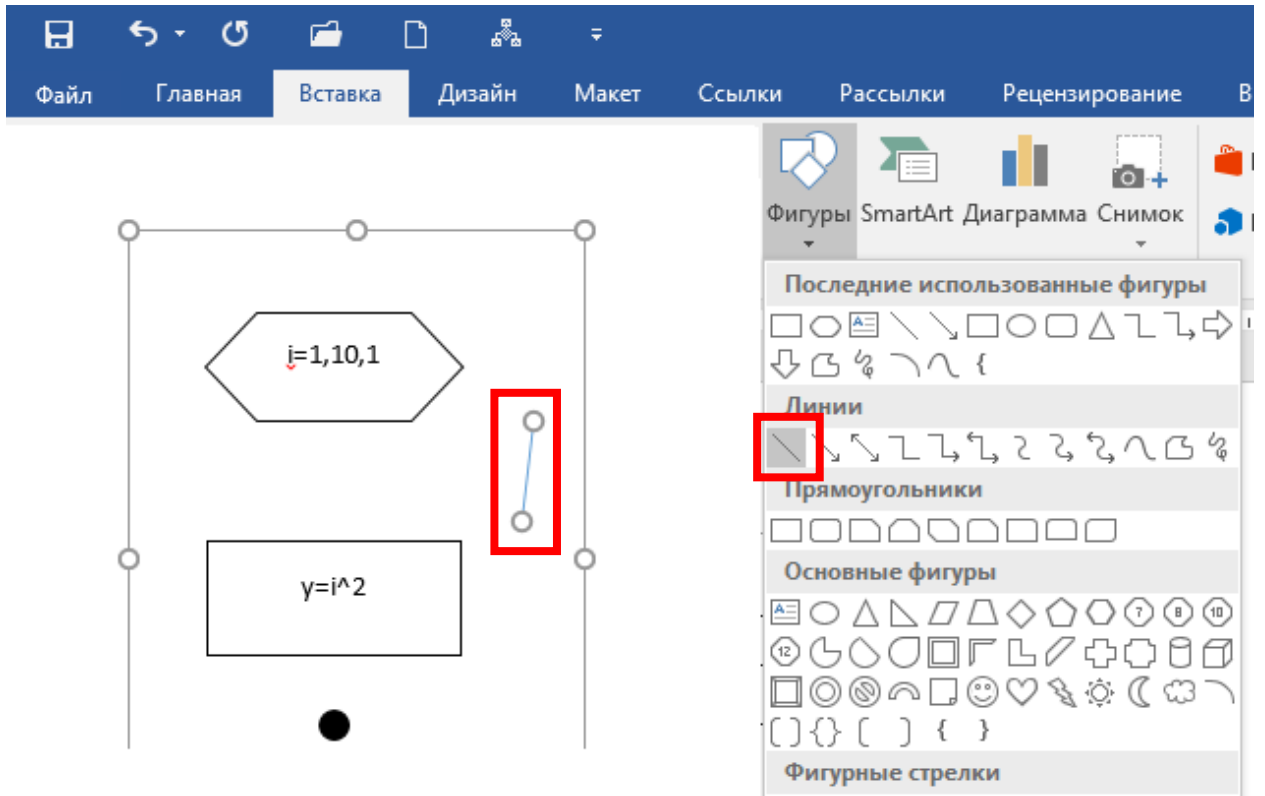
16)



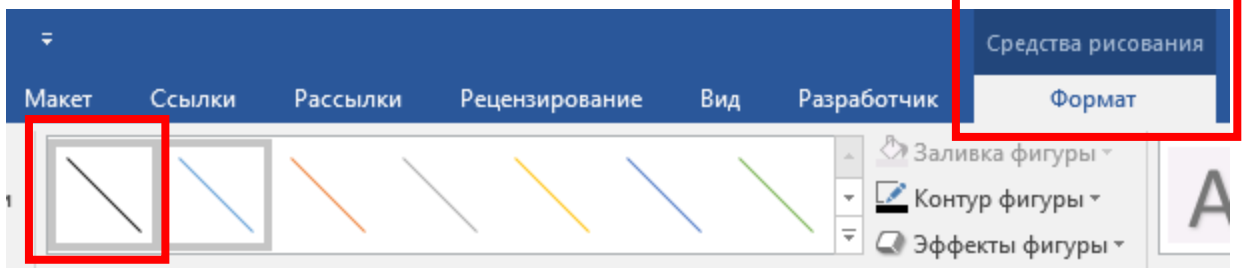
17)



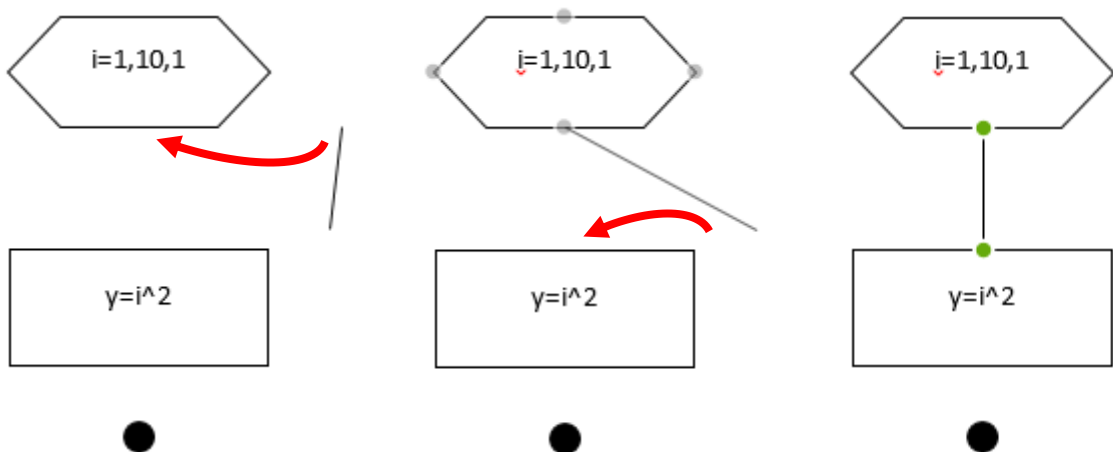
18)



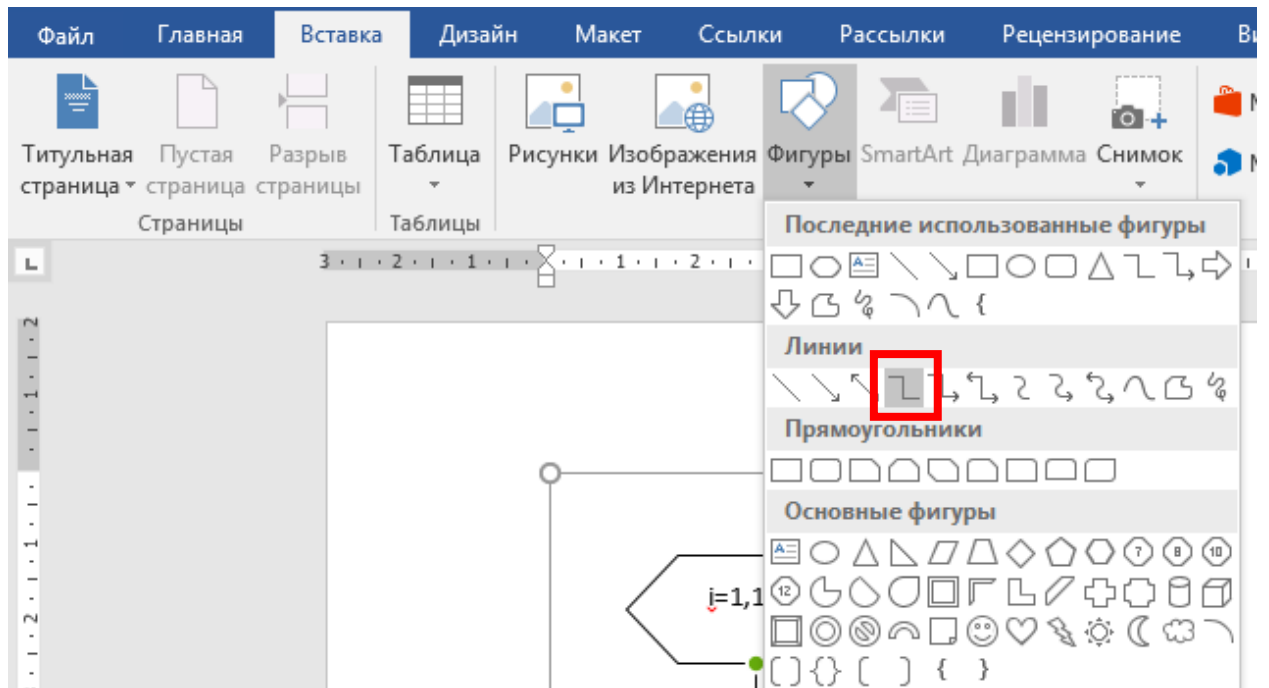
19)



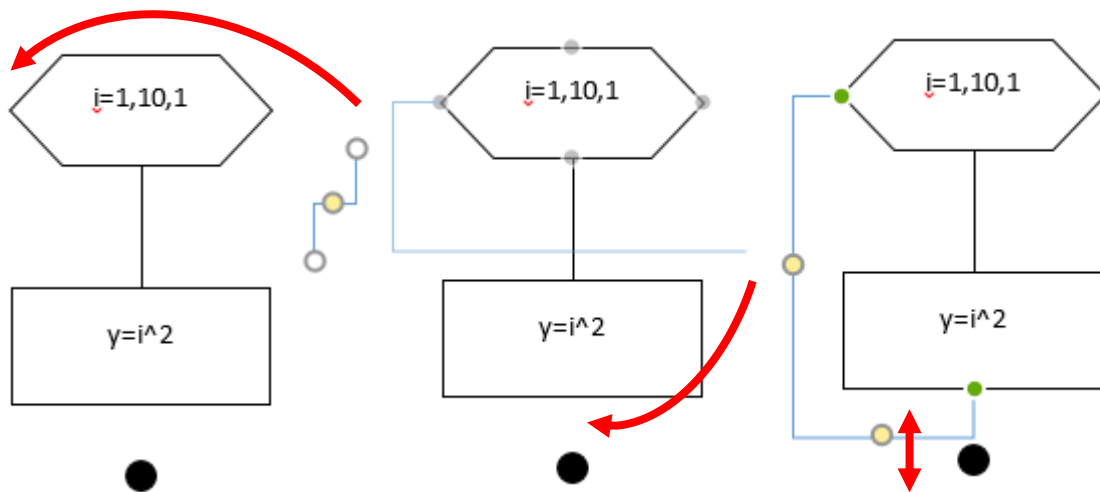
20)



21)



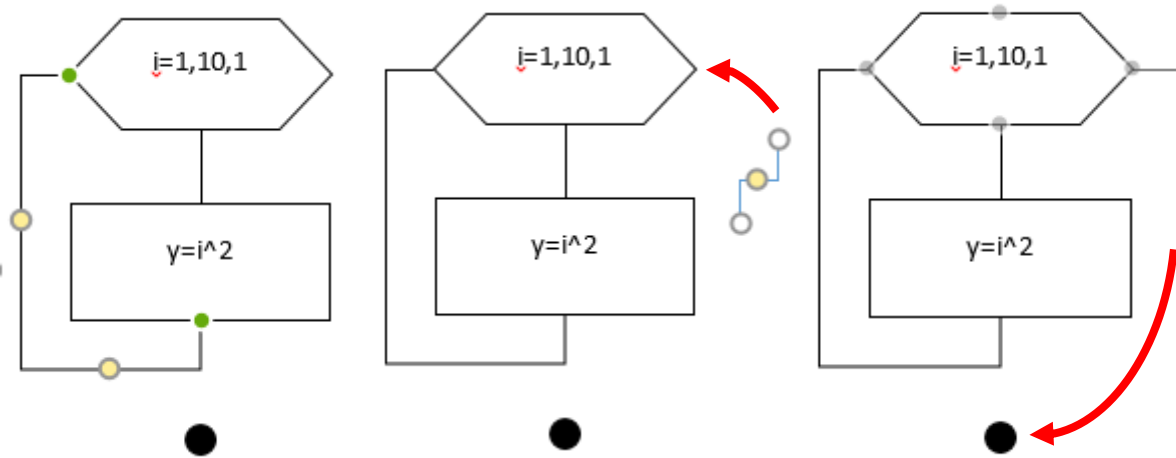
22)



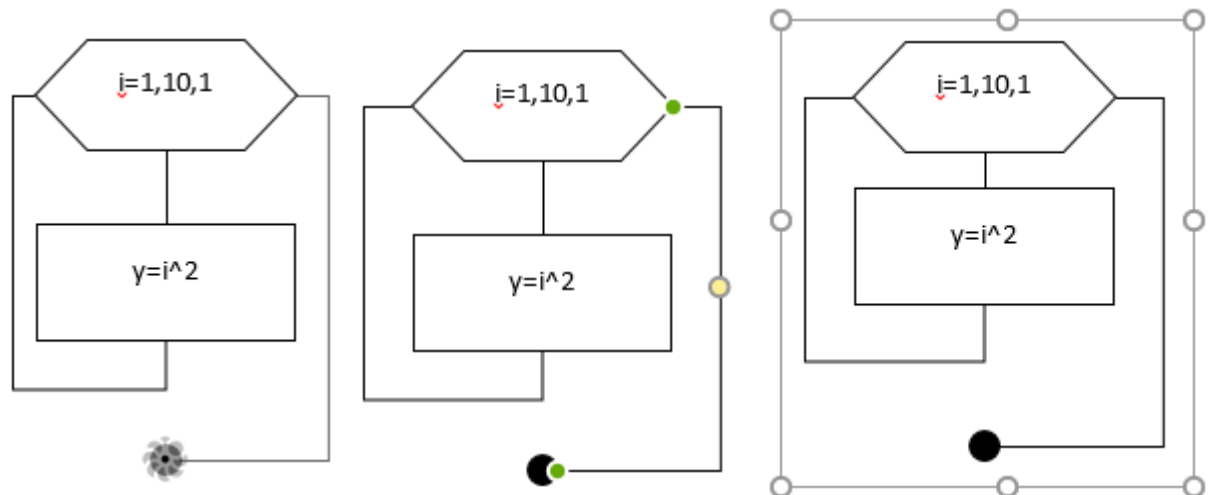
23)



24)



25)



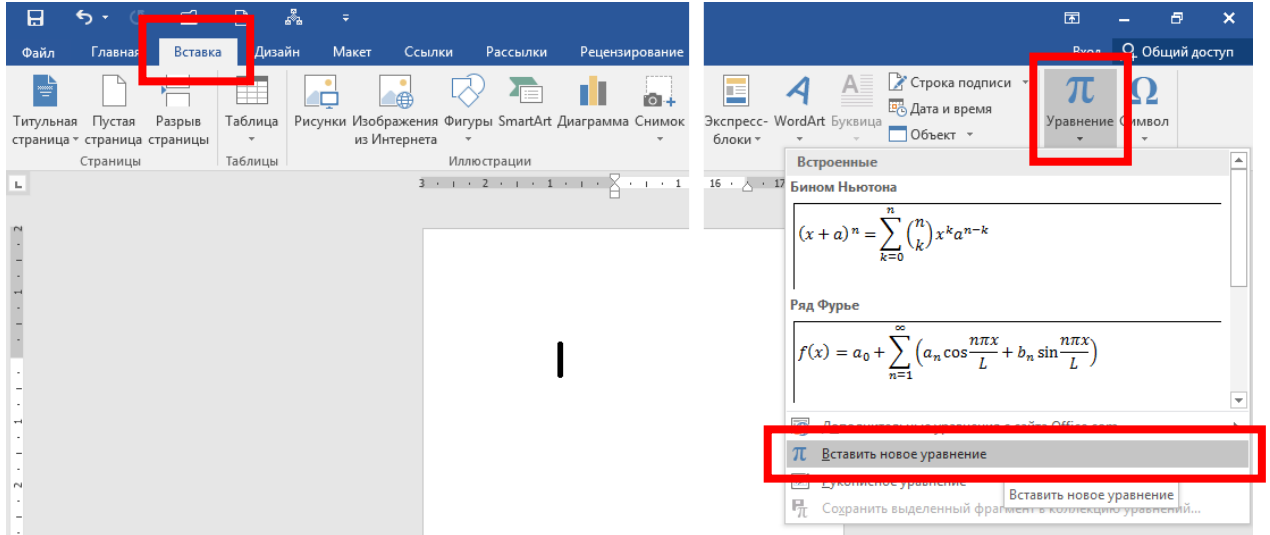
Example 3

Create a variant of math equation using MS Word Equation Editor according to the following sample:

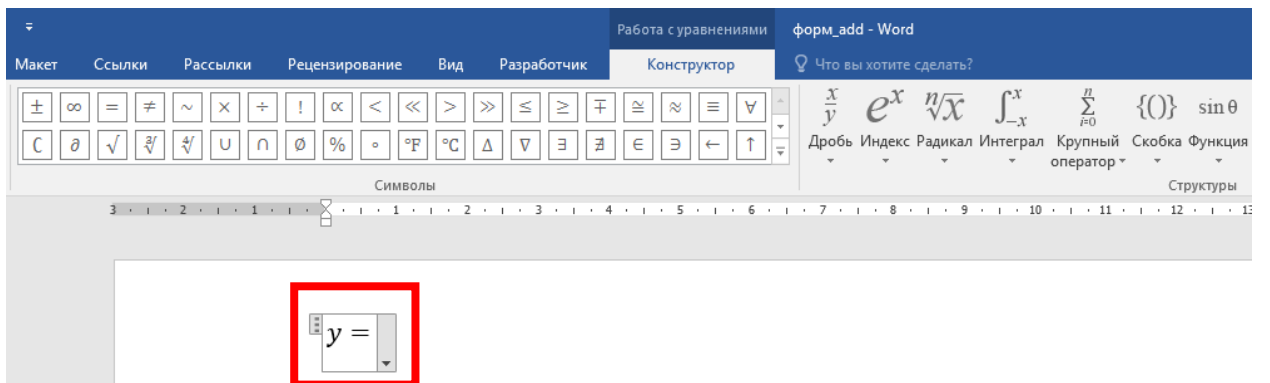
$$y = \int_2^{3^4} \frac{dx}{x}$$

Solving

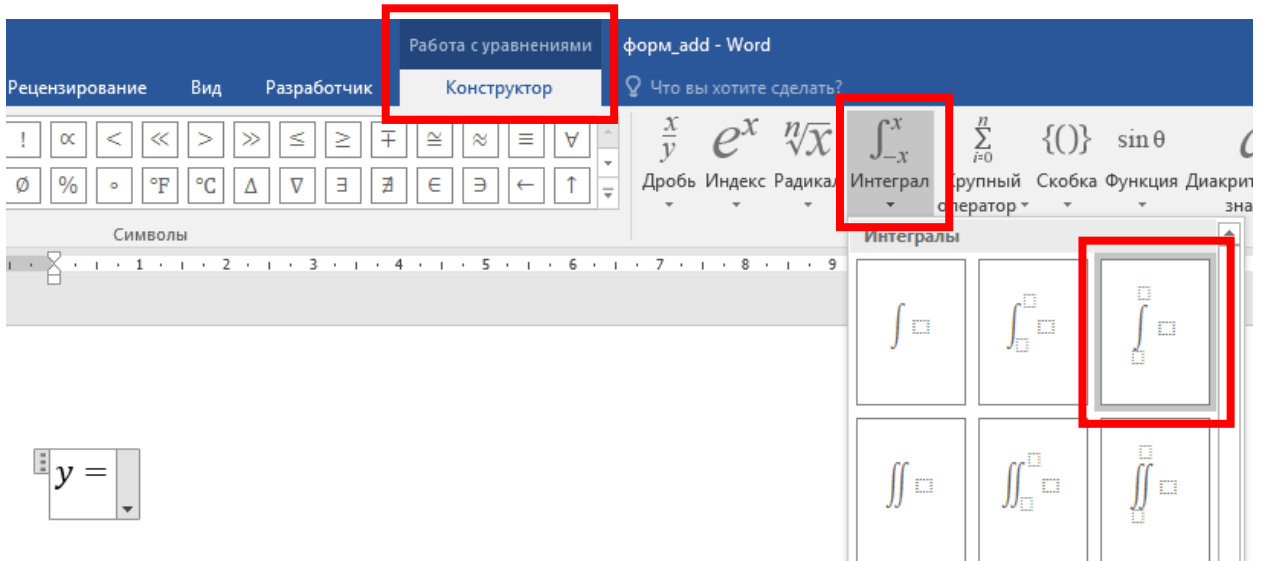
1)



2)



3)



4)

$$y = \int_2^{\square} \square$$

5)

Работа с уравнениями | форм_add - Word

Конструктор | Что вы хотите сделать?

$\frac{x}{y}$ e^x $\sqrt[n]{x}$ \int_{-x}^x $\sum_{i=0}^n$ $\{()\}$ $\sin \theta$

Дроби Индекс Корень Интеграл Крупный Скобка Функция Диакри

оператор

Верхние и нижние индексы

Обычные верхние и нижние индексы

x_{y^2} $e^{-i\omega t}$ x^2 $\frac{ny}{1}$

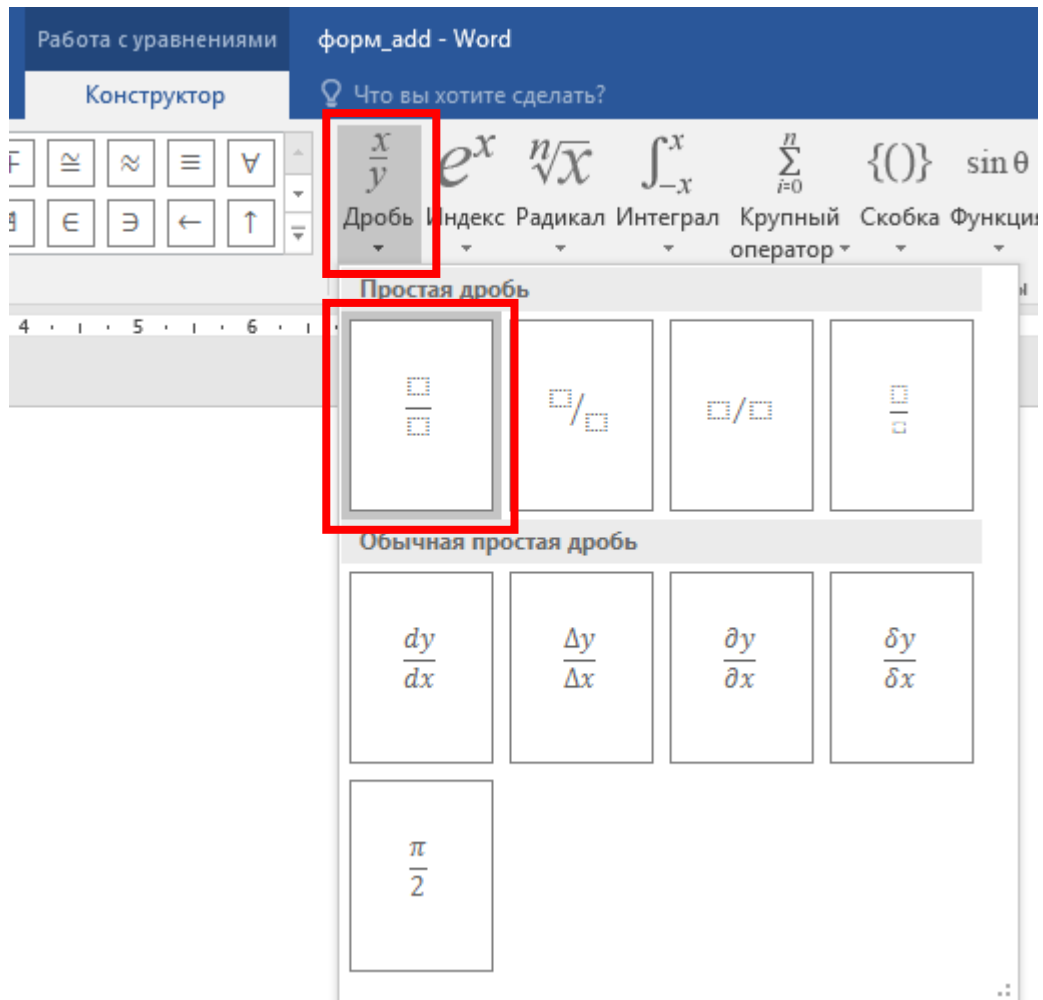
6)

$$y = \int_2^{\square} \square$$

7)

$$y = \int_2^{\square} \square$$

8)



9)

$$y = \int_2^{3^4} \frac{dx}{x}$$

10)

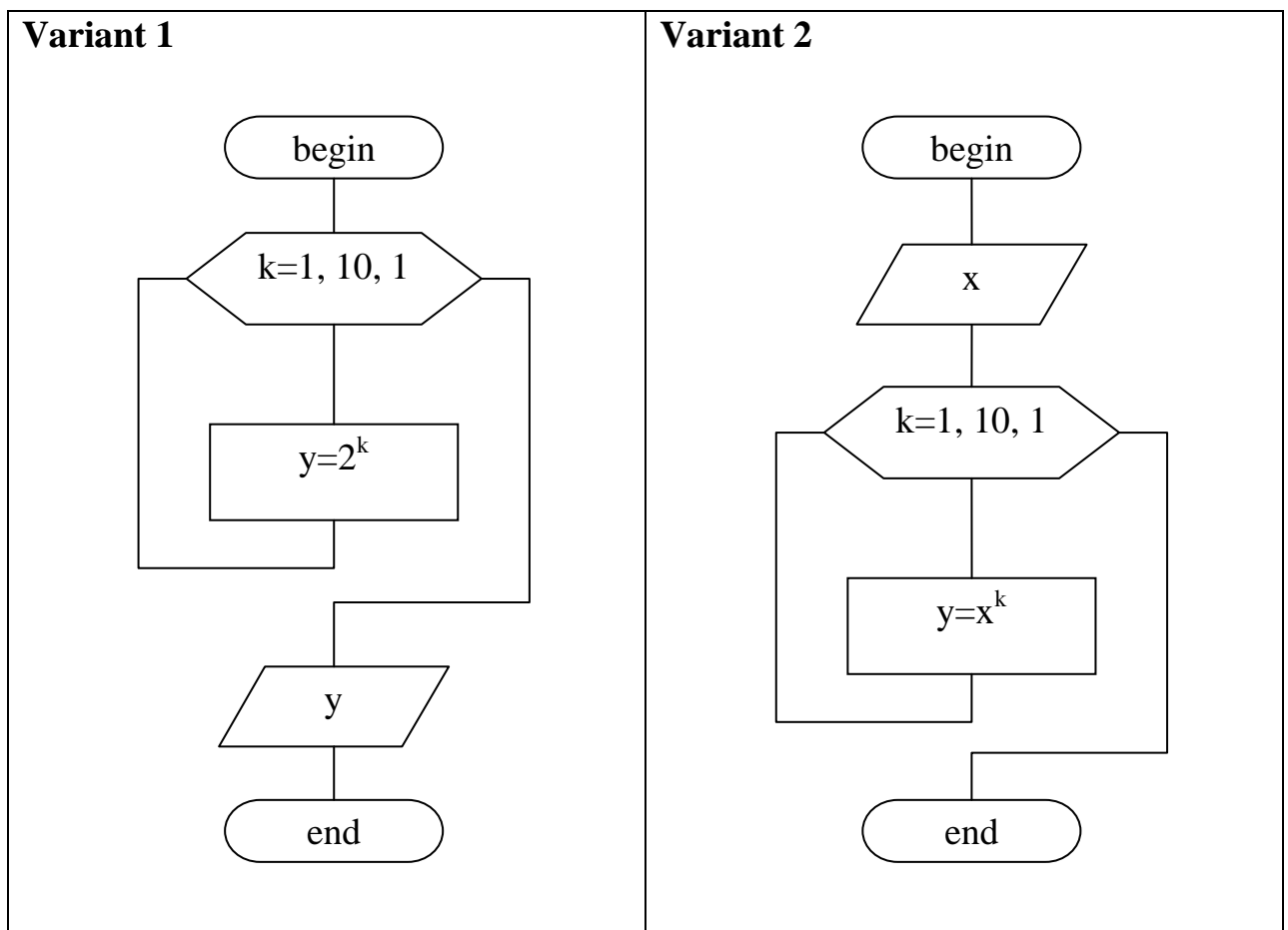
$$y = \int_2^{3^4} \frac{dx}{x}$$

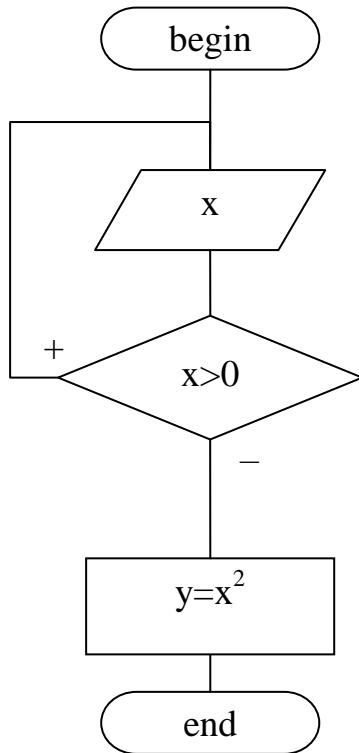
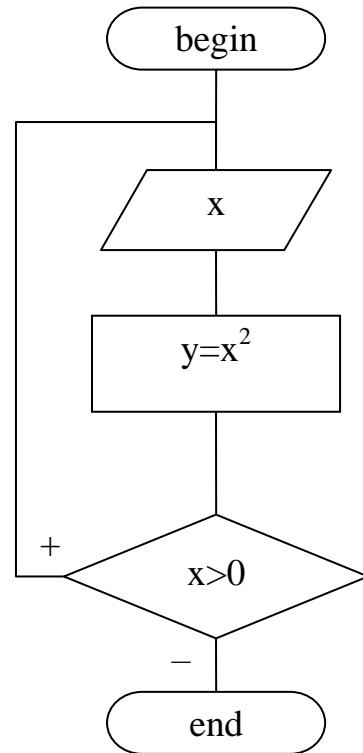
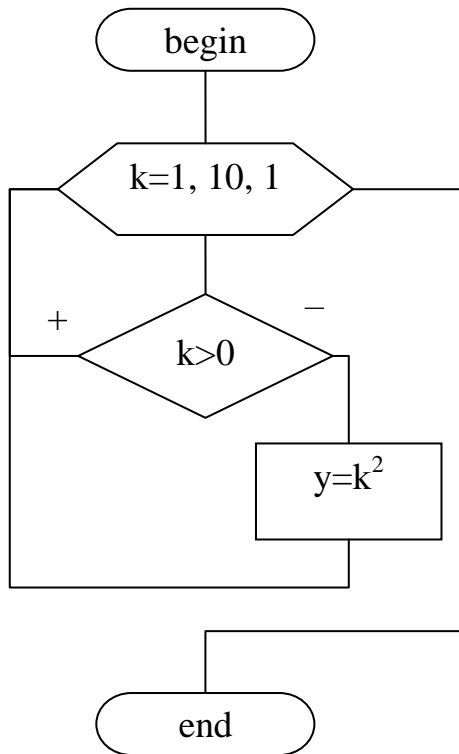
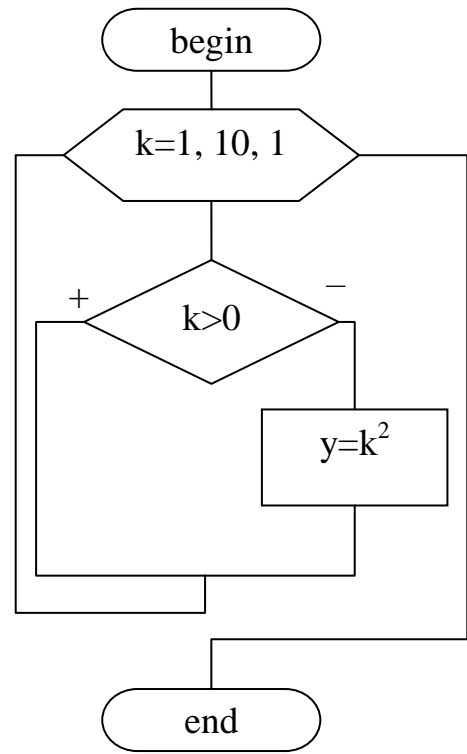
Practice (three tasks)

Task 1. Create (in MS Word) a sample of advertisement or logotype using following requirements:

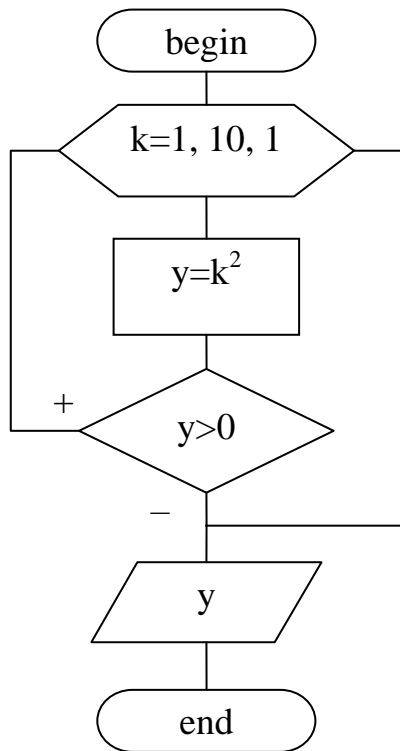
- raster image (s) must be included;
- vector autoshape (s) must be included;
- WordArt must be included;
- some elements must overlap each other;
- each element must have special effect;
- some elements must be rotated by the specified angle;
- all the elements must be connected to each other's (in rigid group).

Task 2. Create a variant of scheme using canvas object, autoshape figures and connection lines according to the following variants:

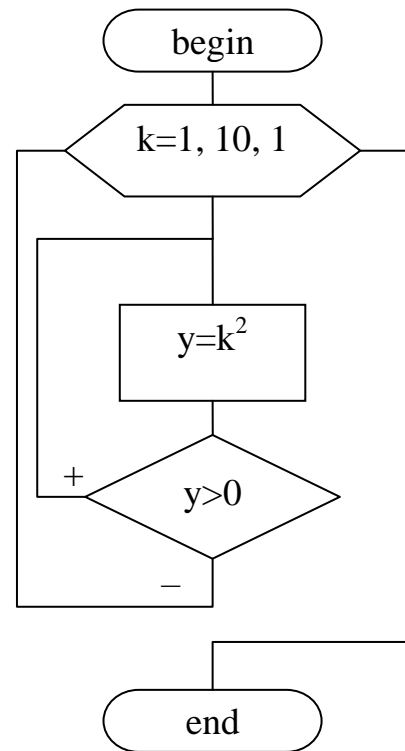


Variant 3**Variant 4****Variant 5****Variant 6**

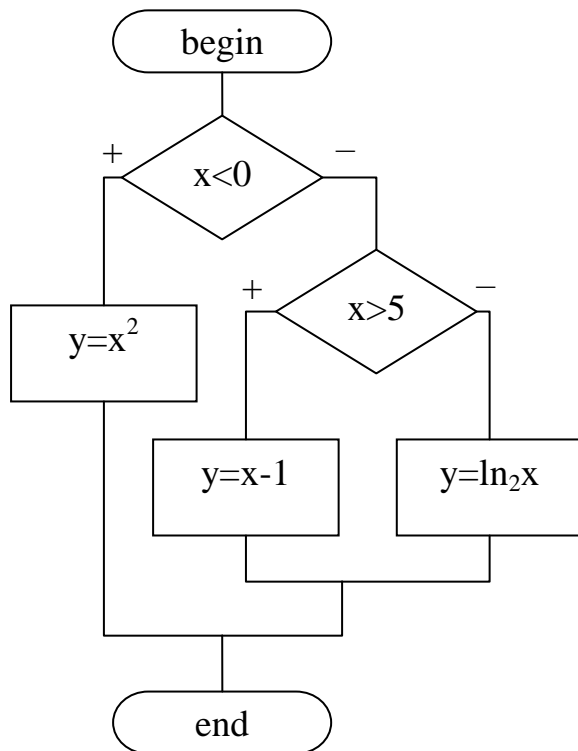
Variant 7



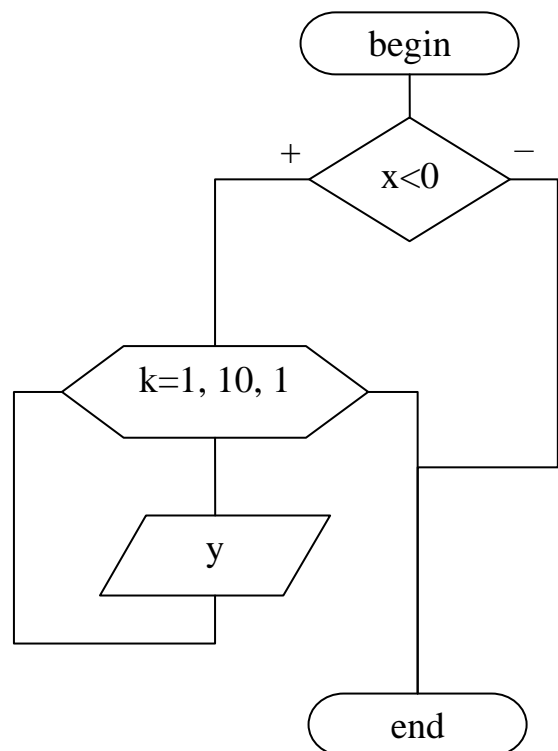
Variant 8



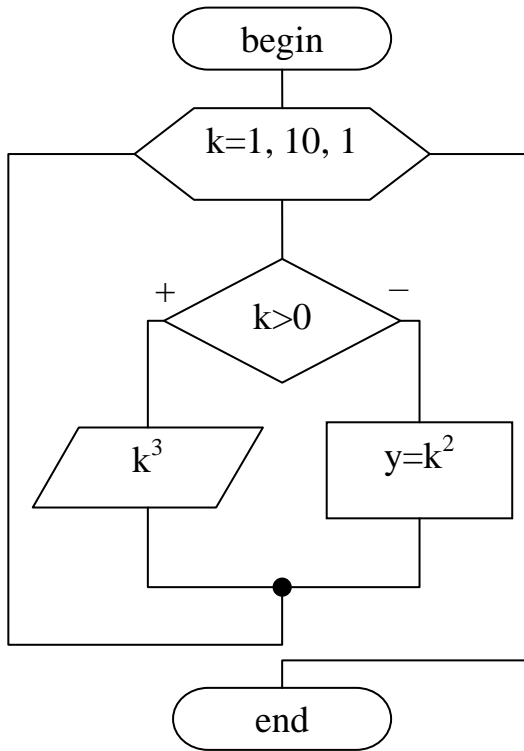
Variant 9



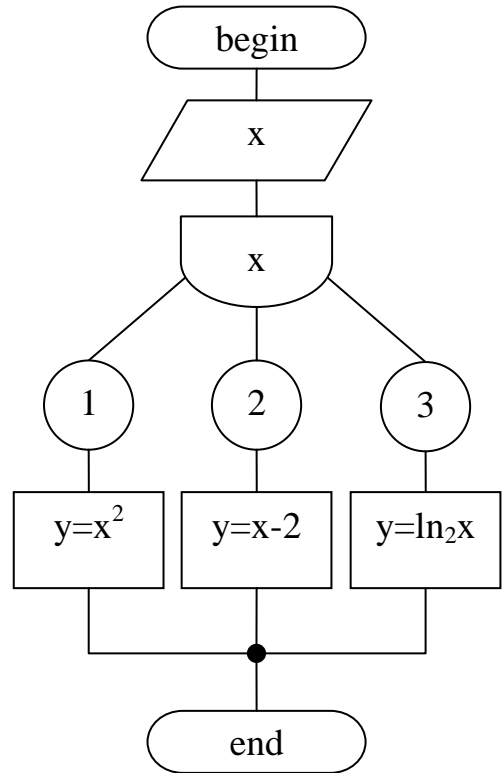
Variant 10



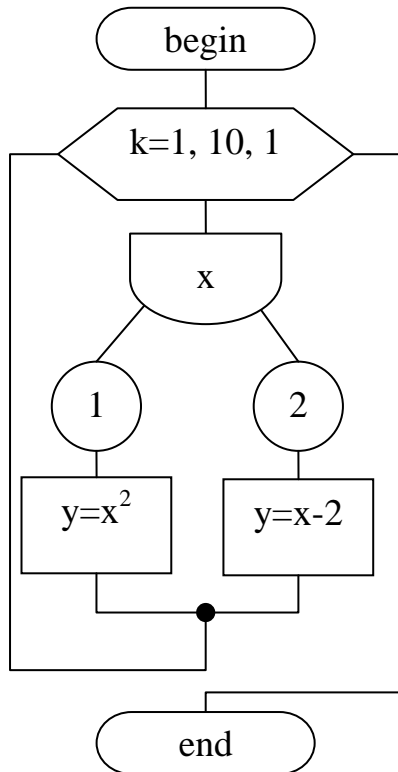
Variant 11



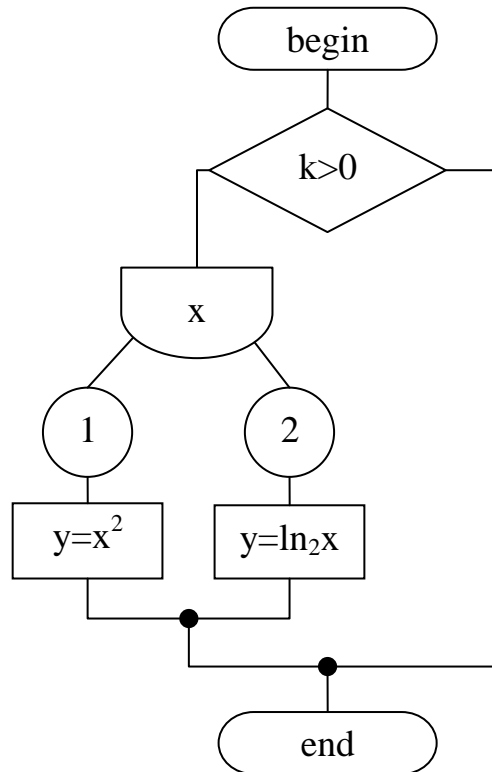
Variant 12

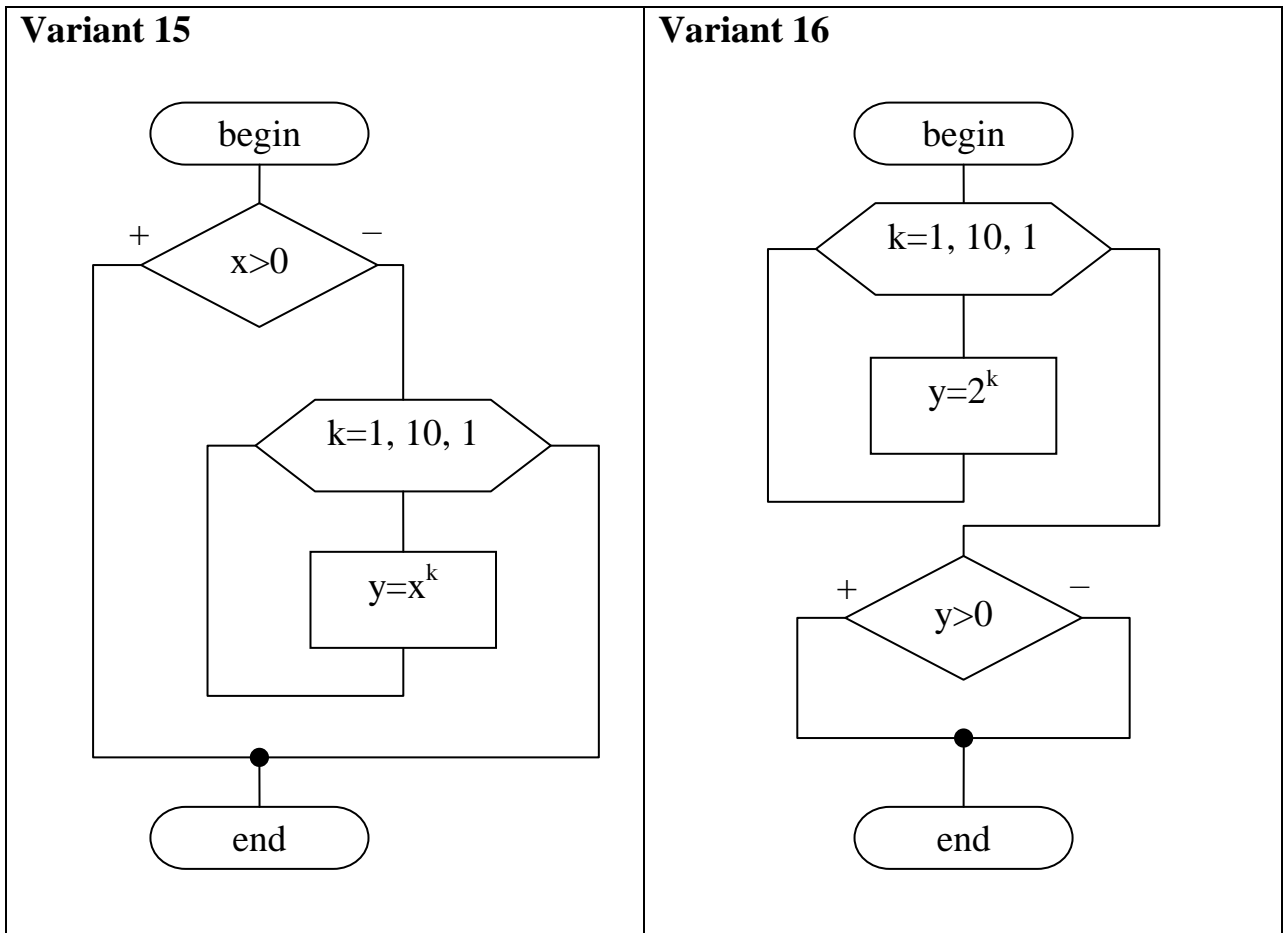


Variant 13



Variant 14





Task 3. Create a variant of math equation using MS Word Equation Editor according to the following samples:

| | |
|---|---|
| <p>Variant 1</p> $I = \int_1^2 \frac{\log_3 x}{x^2} dx$ | <p>Variant 2</p> $S = \sum_{i=1}^{10} \frac{(i+1)^2}{\sqrt{i}}$ |
| <p>Variant 3</p> $S = \sum_{i^2}^{10} \sqrt[5]{\frac{1}{i}}$ | <p>Variant 4</p> $I = \int_{\frac{1}{10}}^{10} \frac{x^2}{\sqrt[2]{x-1}} dx$ |
| <p>Variant 5</p> $I = \int_2^{2^3} \frac{x-1}{\log_2 x} dx$ | <p>Variant 6</p> $S = \sum_{i=1}^{\sqrt{100}} \frac{5^2}{\log_2^3 i}$ |

| | |
|---|---|
| Variant 7 $I = \int_5^{10} \frac{dx}{x^2 - \frac{1}{\sqrt{x}}}$ | Variant 8 $S = \sum_{i=1}^{\log_{10} 100} 2^{\frac{i}{\sqrt{5-i}}}$ |
| Variant 9 $S = \sum_{i=1}^{10^2} \sqrt[4]{i} - \frac{1}{i}$ | Variant 10 $S = \sum_{i=1^2}^{\log_2 4} \sqrt{\frac{1}{i}}$ |
| Variant 11 $S = \sum_{i=\sqrt{9}}^{3^2} \frac{1}{3 - \log_2 i}$ | Variant 12 $I = \int_{\sqrt{10}}^{5^2} 1 + \frac{x^2}{x + \log_3 9} dx$ |
| Variant 13 $I = \int_{10}^{\sqrt{200}} \frac{dx}{x^{2+\sqrt{x}}}$ | Variant 14 $I = \int_{2^2}^{\log_2 16} (1+x)^{\sqrt{x}} dx$ |
| Variant 15 $I = \int_{10}^{\frac{1}{\sqrt{5}}} 2^{x+\log_2 x} dx$ | Variant 16 $S = \sum_{i=1}^{10} \frac{\log_2 i}{\int_1^2 x^2 dx}$ |

Report

1. Write work title with number, your name (first & last) and name of your group.
2. Your task (variants of scheme and equation).
3. Sequence of 10 commands.

| N _o | Action | Command |
|----------------|-----------------------|--|
| 1 | Inserting an equation | MS Word > Insert > Symbols > Equation > Insert New Equation |

| | | |
|-----|-----|-----|
| ... | ... | ... |
|-----|-----|-----|

4. Result scheme according Task 1.
 5. Result equation according Task 2.
 6. Result scheme according Task 3.
- + Include result MS Word file.

Control questions

1. How to make screenshot in MS Windows?
2. How to change size and orientation of any graphic object in MS Word?
3. How to apply and adjust effects to a photo (bitmap) in MS Word?
4. How to define text wrapping for a graphic objects in MS Word?
5. How to change the sequence of graphic objects "levels"?
6. How to adjust the shape fill and shape outline in MS Word?
7. How to add a new shape object to MS Word document?
8. How to add WordArt object to MS Word document?
9. How to adjust effects of WordArt object?
10. How to make groups of objects in MS Word?
11. How to add canvas object to MS Word document?
12. How to add and adjust text in graphic objects?
13. How to align objects in MS Word document?
14. How to create connection lines between graphic objects?
15. How to create mathematical equations in MS Word document?

THEME № 5

ADDITIONAL FEATURES IN MS WORD

Summary

Levels in MS Word documents. Styles in text documents. Tables of content in text documents. Footnotes and page numbering in text documents.

Example

Create a MS Word document according to your variant of table of contents and format parameters.

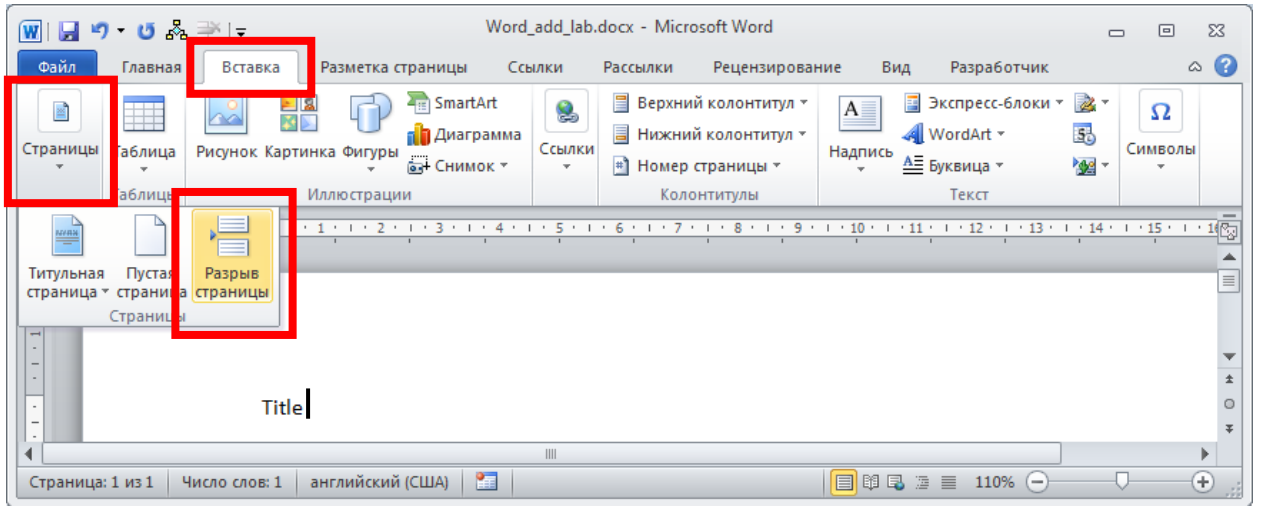
| | |
|--------------------------|----|
| [Title page | 1] |
| 1. Level1..... | 2 |
| 1.1. Level2..... | 2 |
| 2. Level1..... | 3 |
| [Table of contents | 4] |

Level1: 18 pt, Bold, Alignment-Center

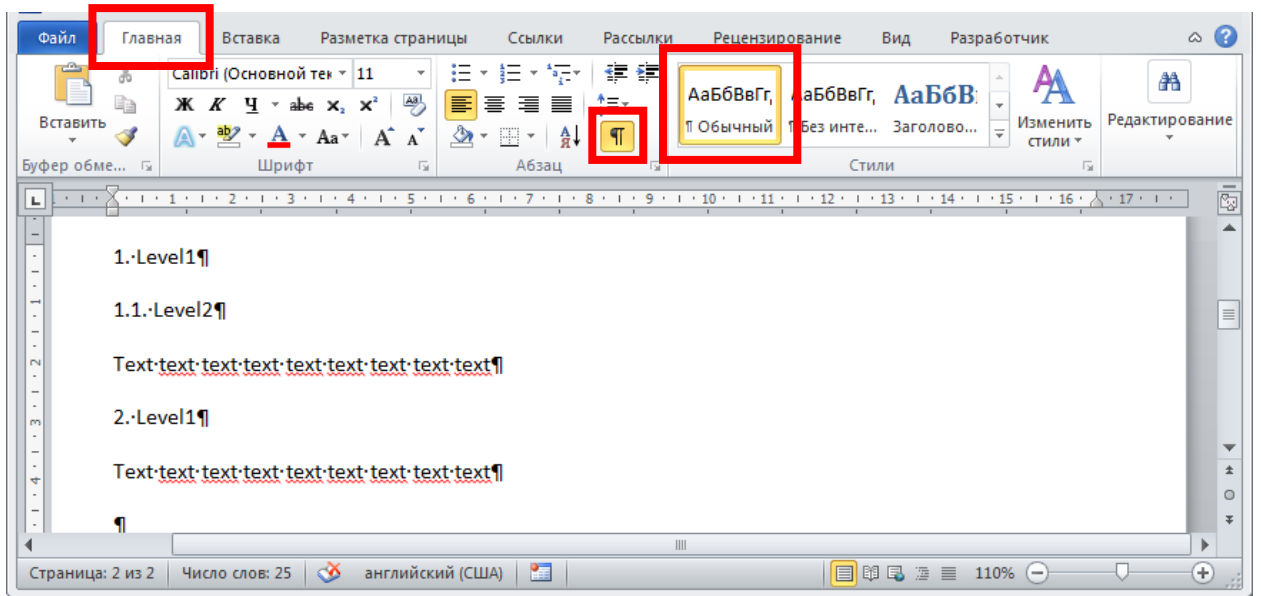
Level2: 16 pt, Italic, Green, Underline

Solving

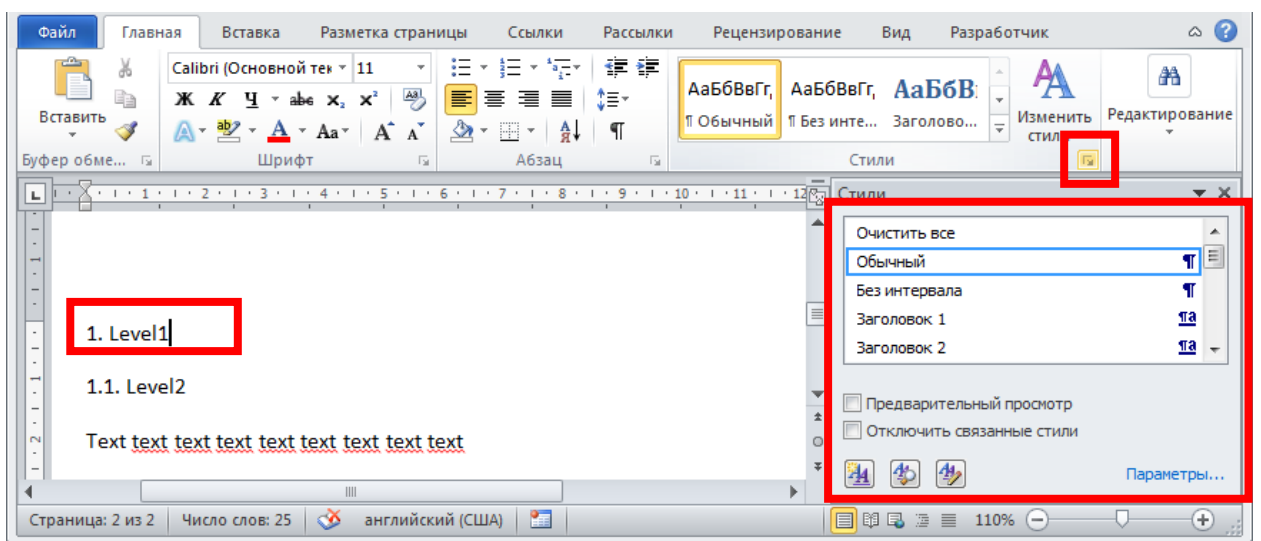
1) Run MS Word application, create and save new document.



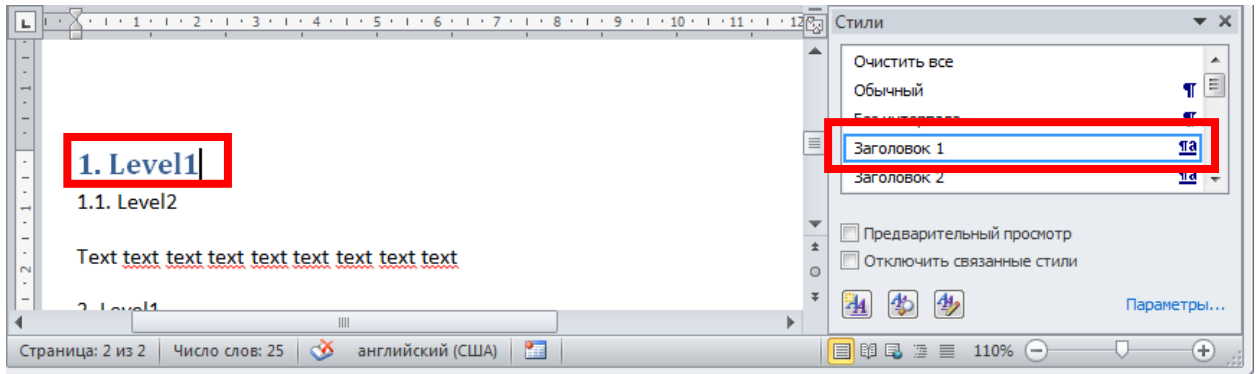
2)



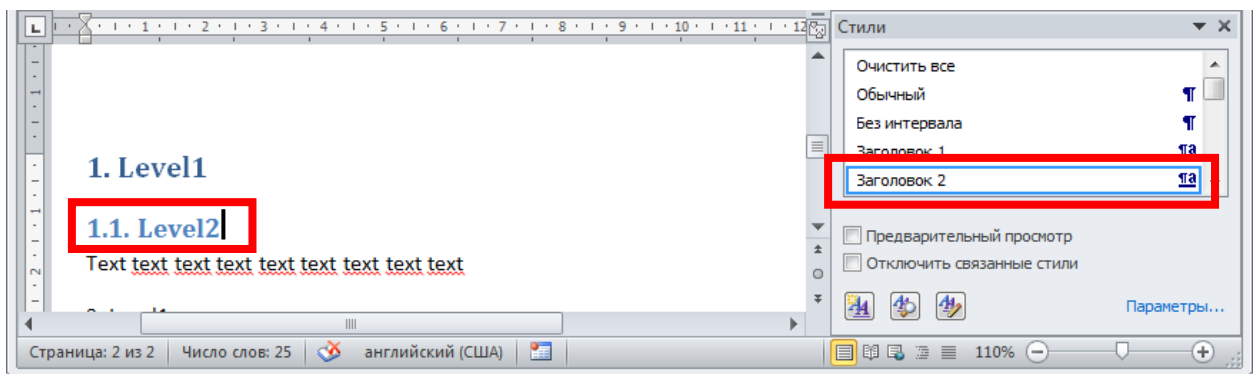
3)



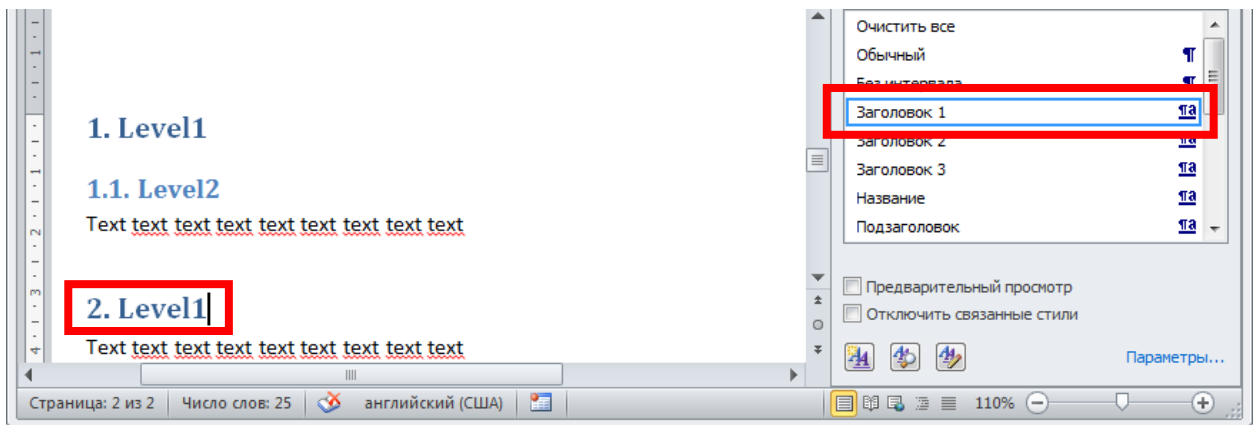
4)



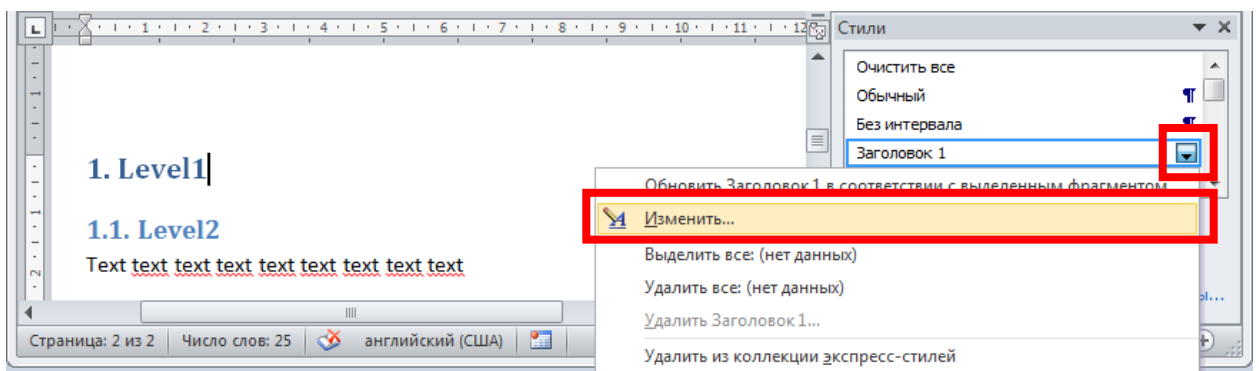
5)



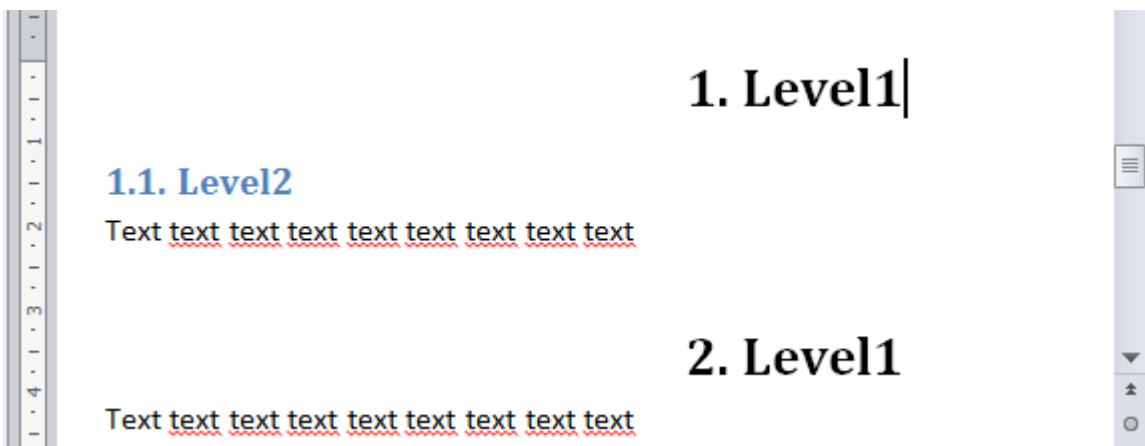
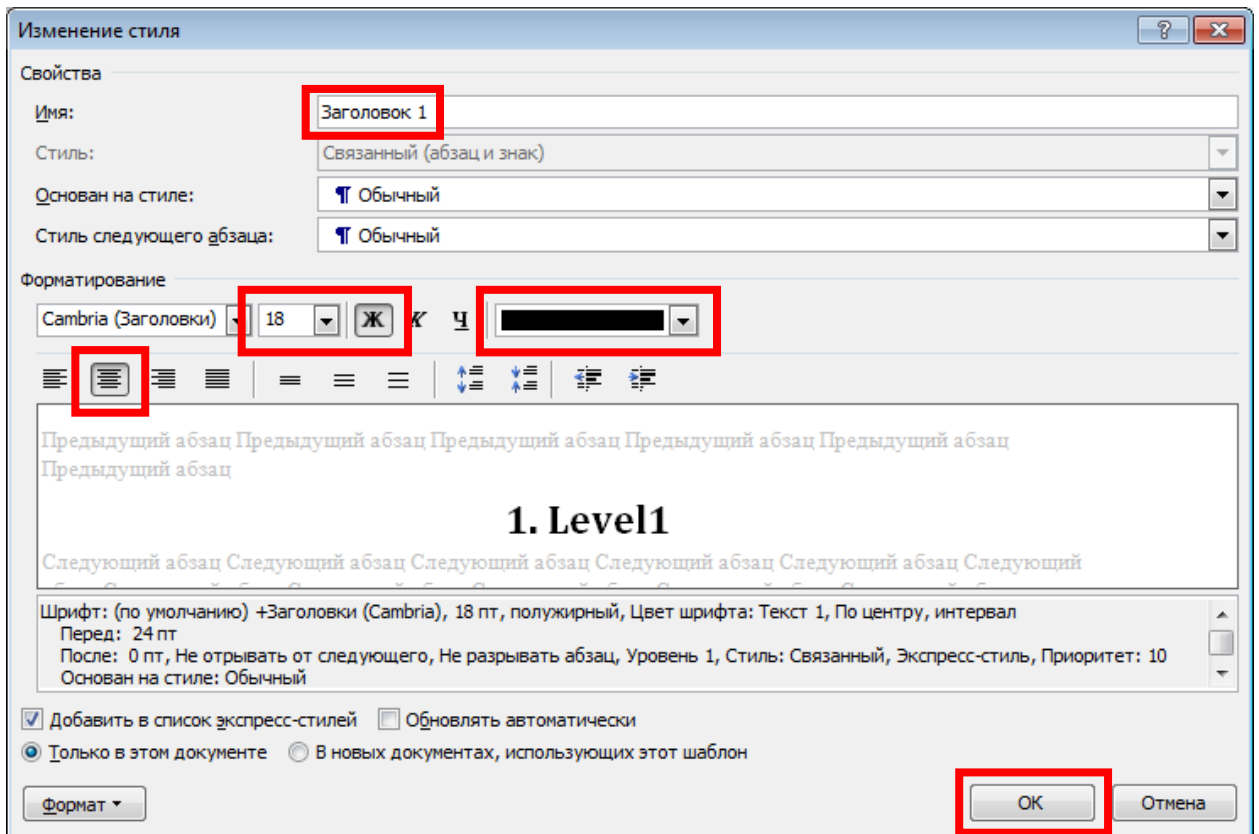
6)



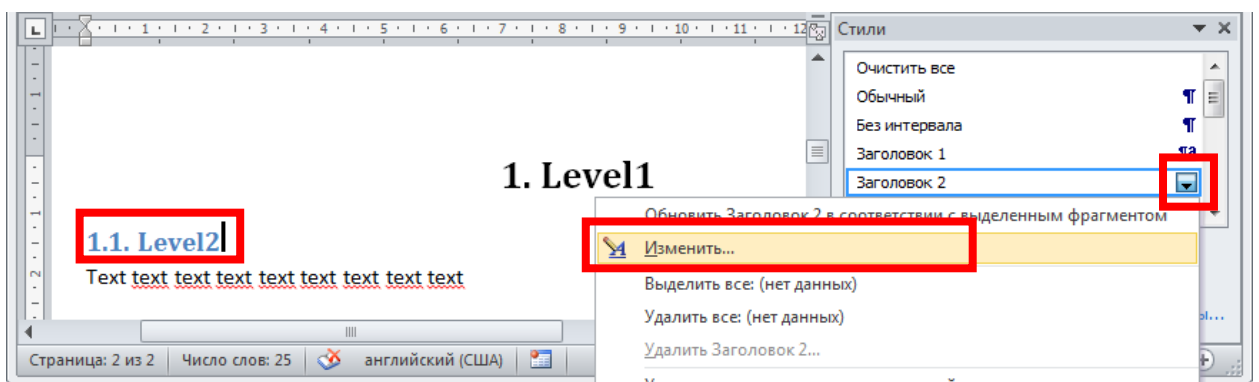
7)



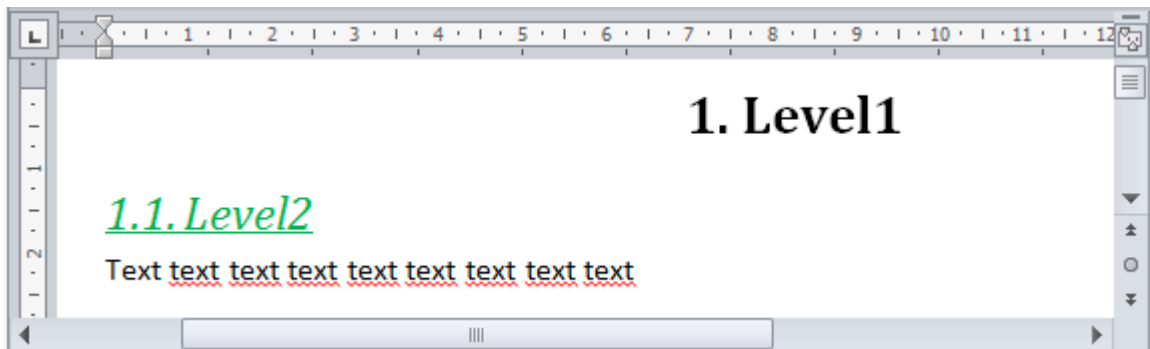
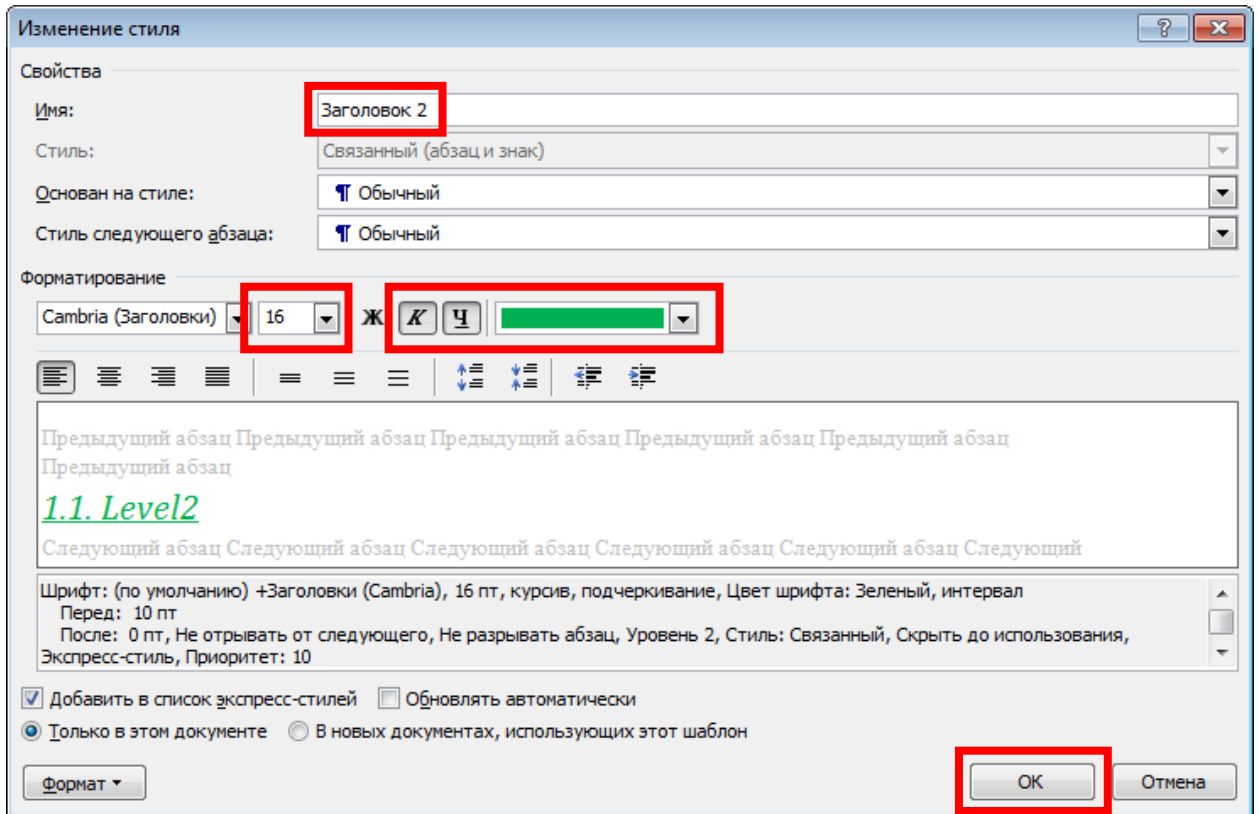
8)



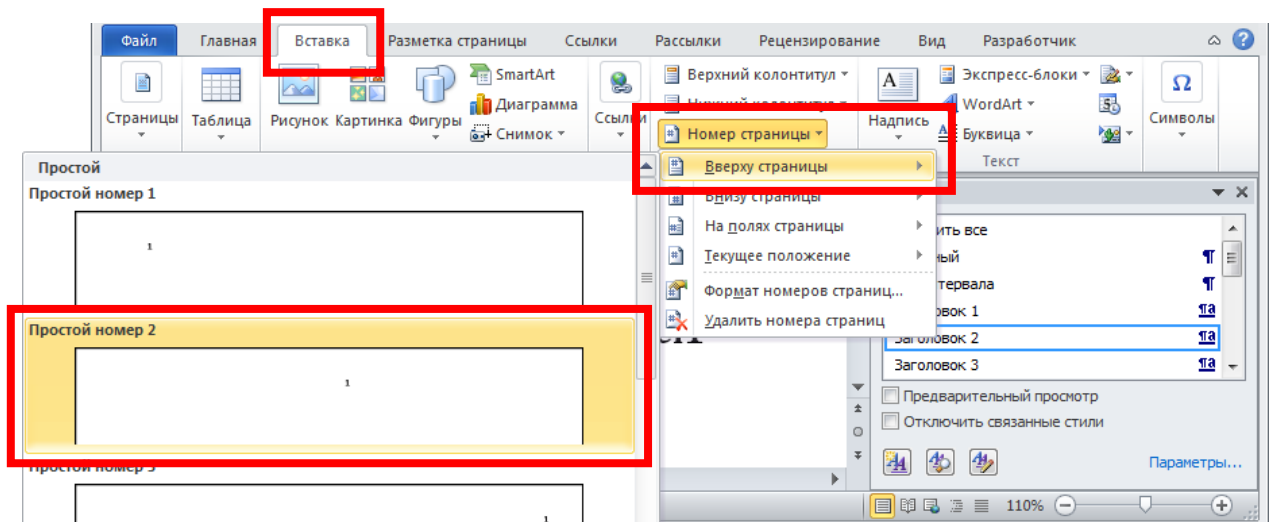
9)



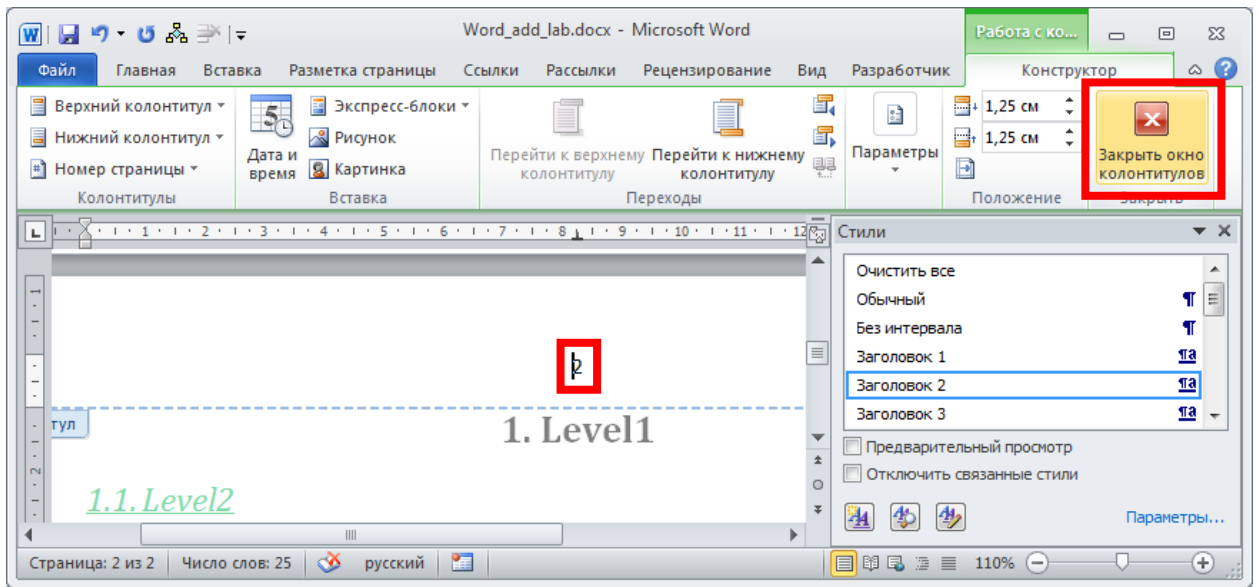
10)



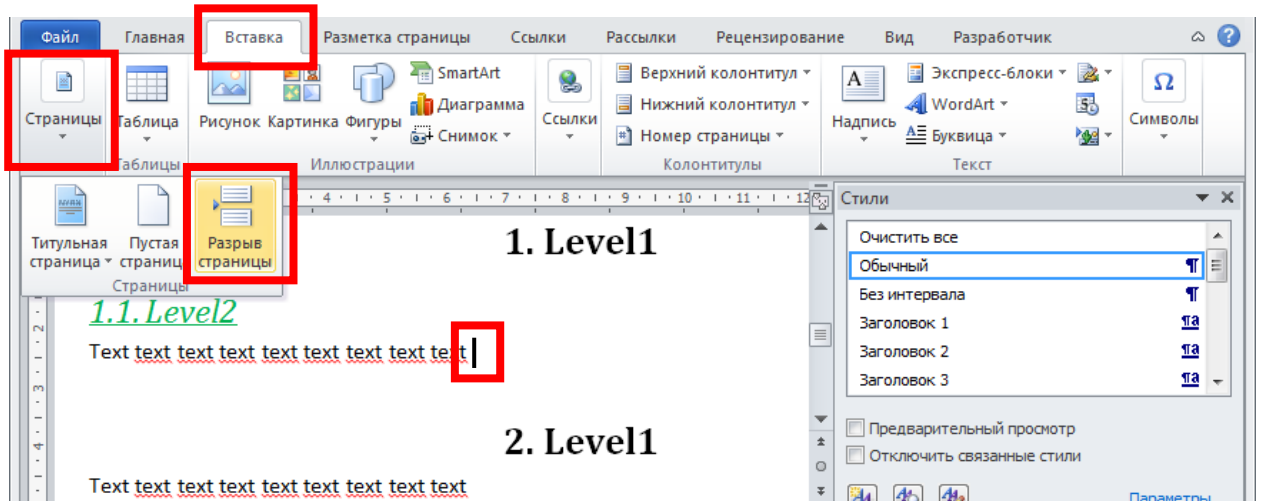
11)



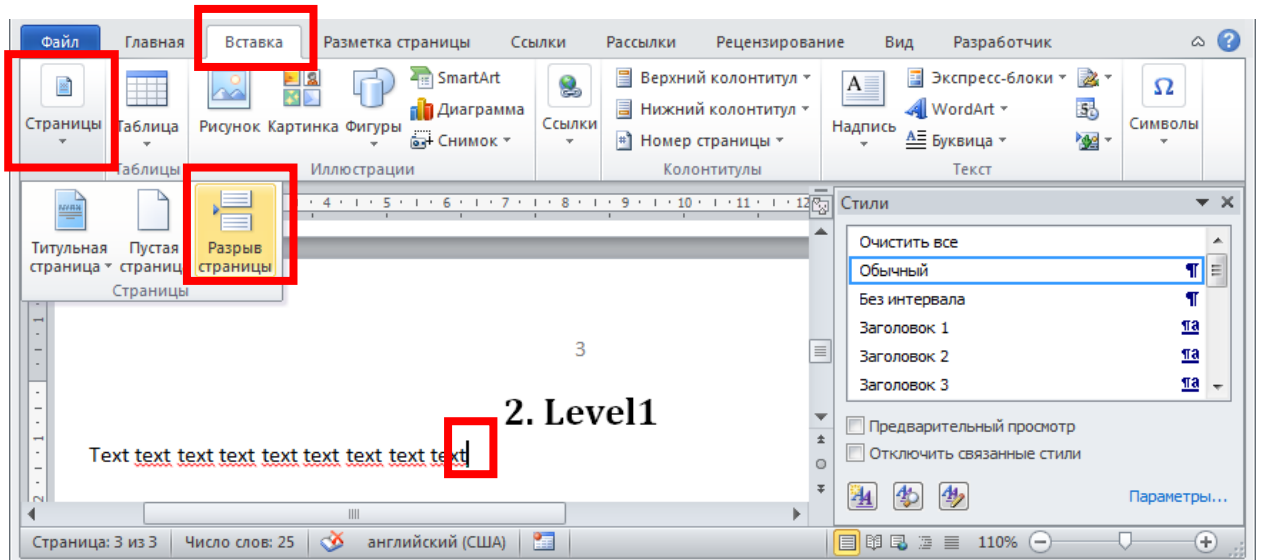
12)



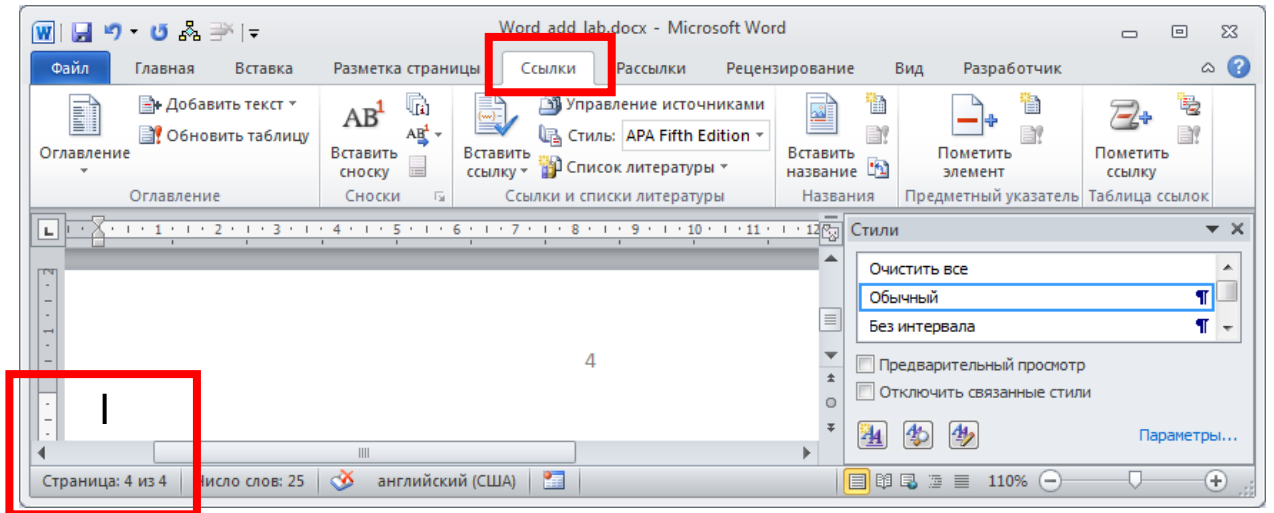
13)



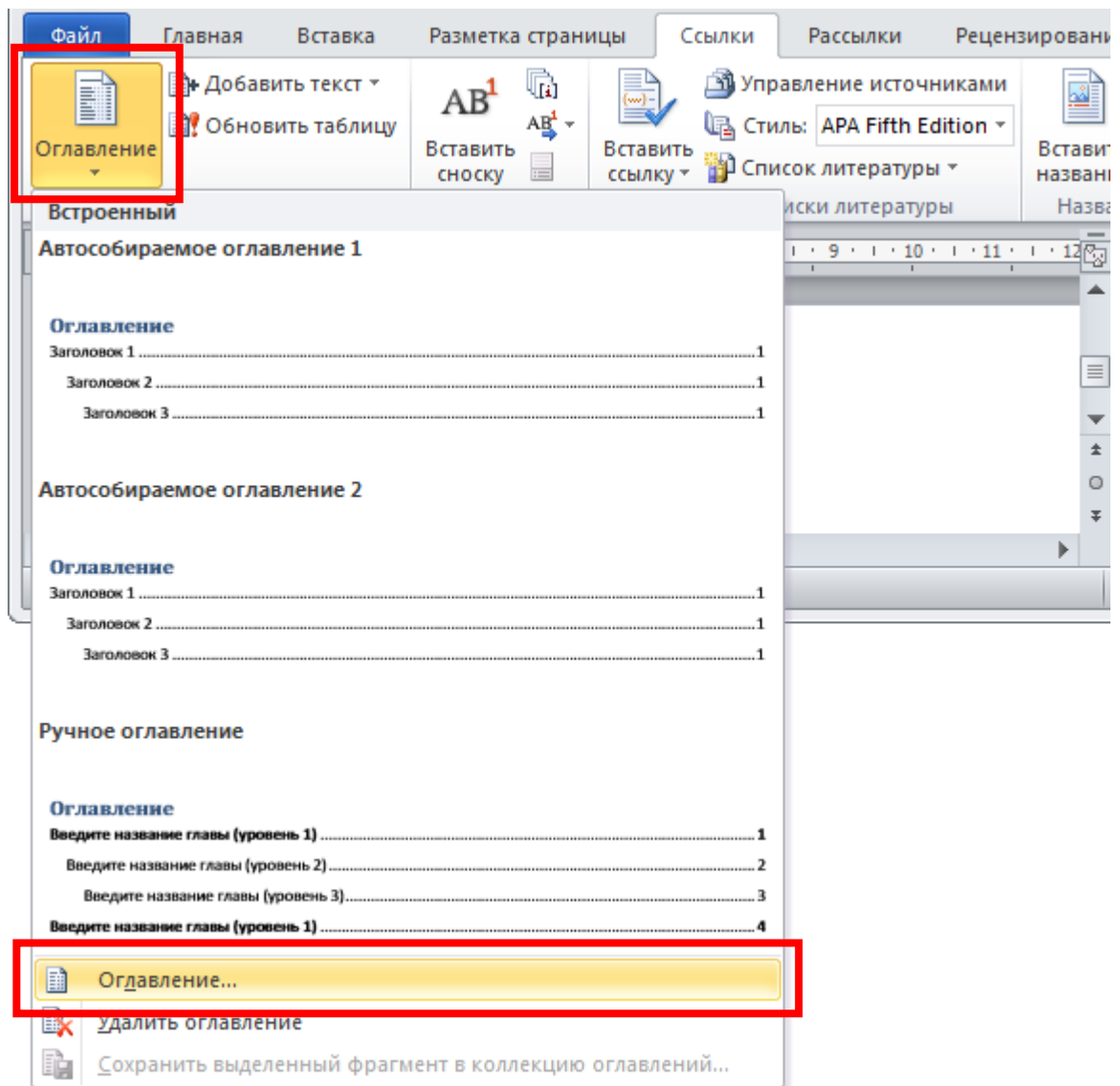
14)



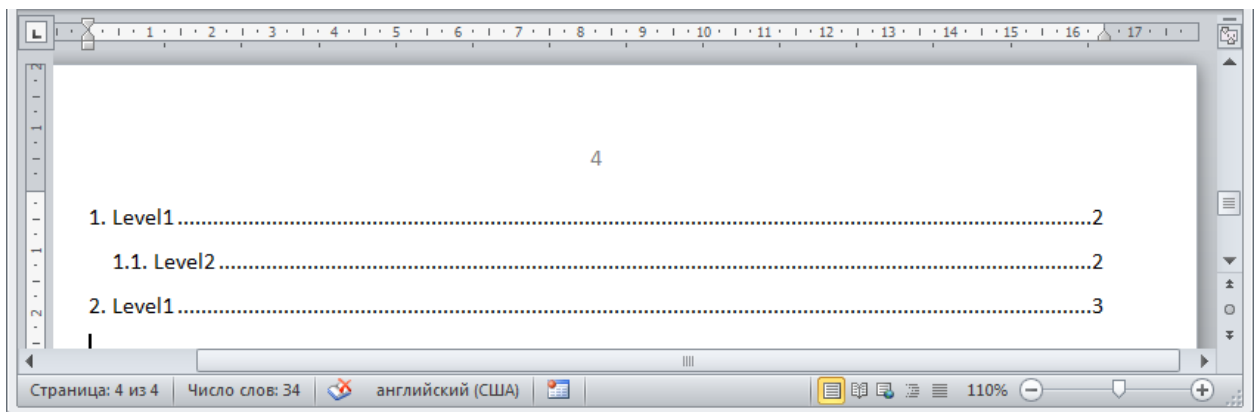
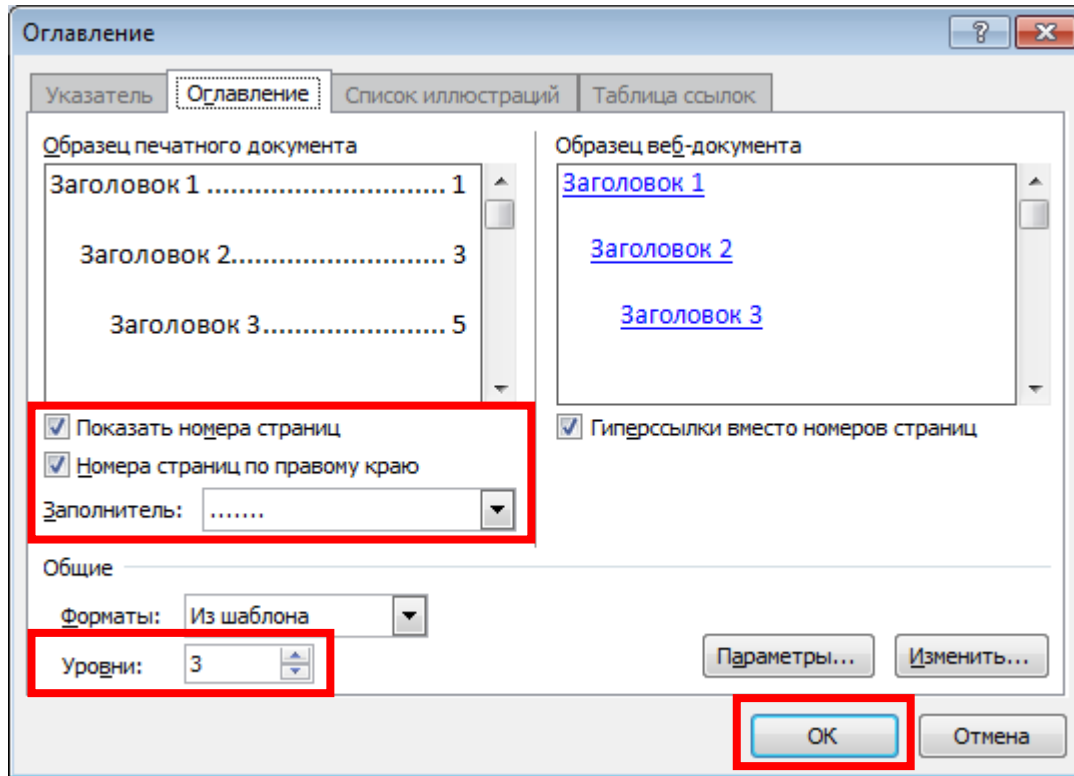
15)



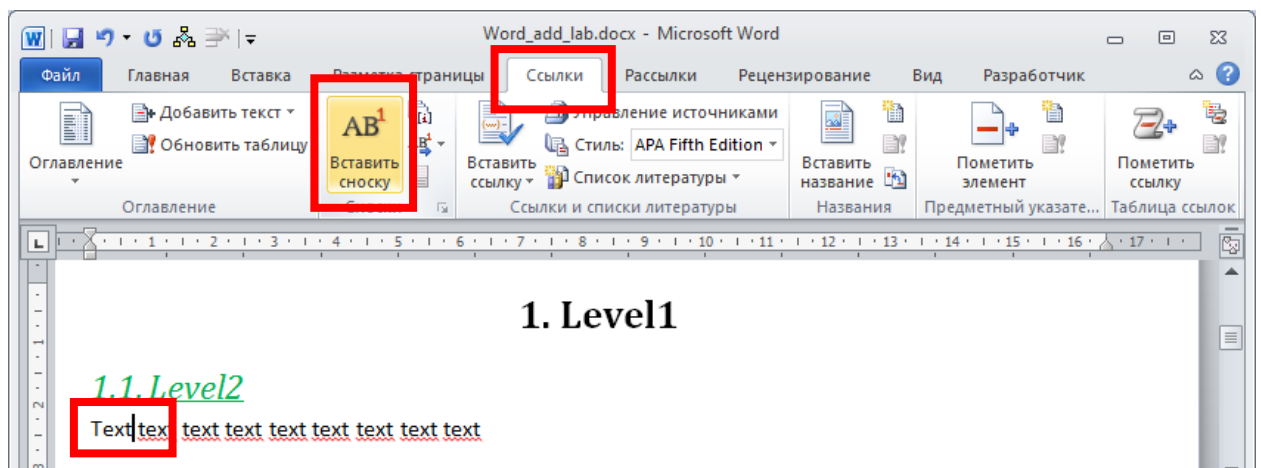
16)



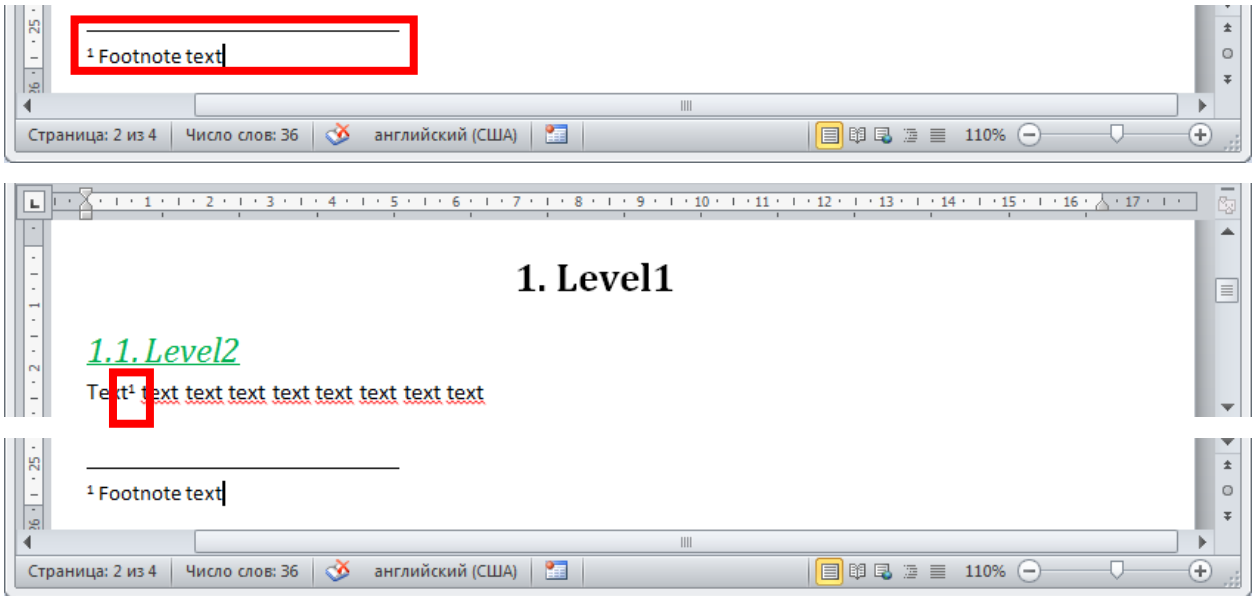
17)



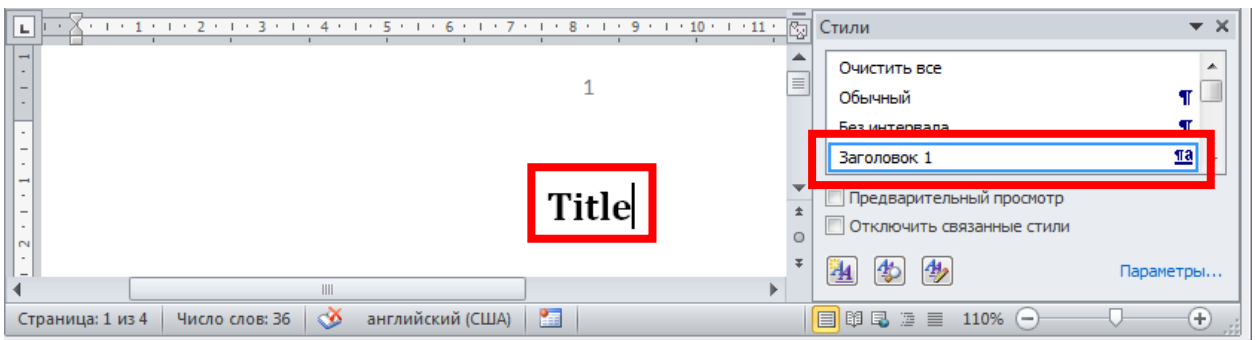
18)



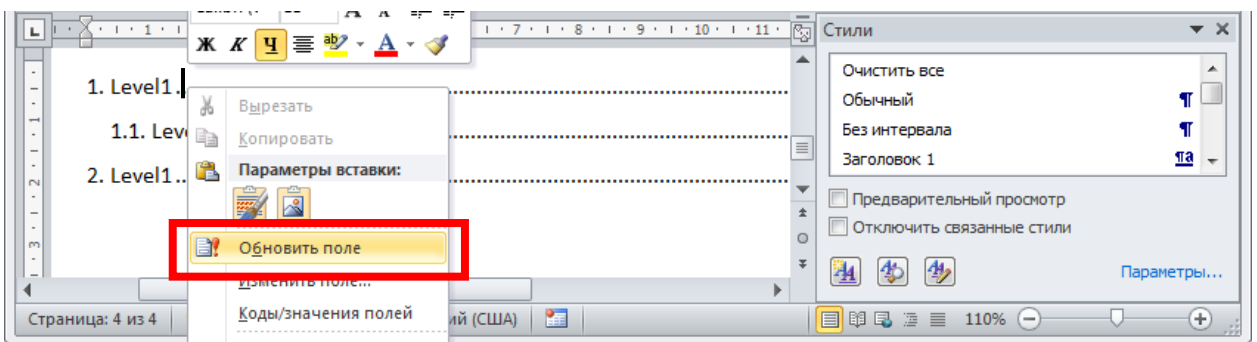
19)



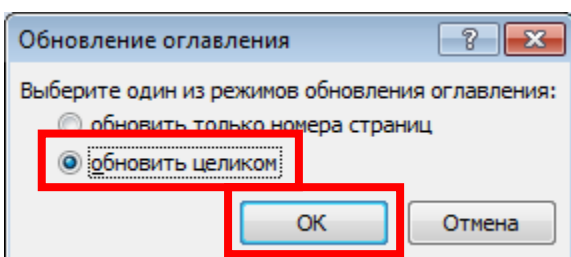
20)



21)



22)



| | |
|-------------------|---|
| Title | 1 |
| 1. Level1 | 2 |
| 1.1. Level2 | 2 |
| 2. Level1 | 3 |

Practice

Create a MS Word document according to your variant of table of contents and format parameters.

Important notes:

- You may use any text to fill you document.
- Add title page and table of contents in appropriate place of your document.
- Use style-tools to assign appropriate format parameters.
- Add page numbering in any place on each page except first one.
- Add three footnotes in random locations.

| Variant 1 | Variant 2 |
|---|---------------------------------------|
| [Title page..... 1] | [Title page..... 1] |
| 1. Level1 2 | 1. Level1 2 |
| 1.1. Level2..... 2 | 1.1. Level2 2 |
| 1.2. Level2..... 3 | 1.1.1. Level3 2 |
| 2. Level1 4 | 1.1.2. Level3 3 |
| 3. Level1 5 | 2. Level1 4 |
| [Table of contents 6] | [Table of contents 6] |
| Level1: 18 pt, Bold, Alignment-Center | Level1: 22 pt, Blue, Alignment-Center |
| Level2: 16 pt, Italic, Alignment-Center | Level2: 16 pt, Italic, Alignment-Left |
| | Level3: 14 pt, Underline |

| | |
|---|--|
| <p>Variant 3</p> <p>[Title page..... 1] [Table of contents.....2] 1. Level13 1.1. Level2.....3 1.2. Level2.....4 2. Level15 2.1. Level2.....5</p> <p>Level1: 20 pt, Bold, Alignment-Left Level2: 14 pt, Green, Alignment-Center</p> | <p>Variant 4</p> <p>[Title page.....1] [Table of contents2] 1. Level13 1.1. Level23 2. Level14 2.1. Level24 3. Level15</p> <p>Level1: 22 pt, Blue, Alignment-Left Level2: 16 pt, Bold, Alignment-Left</p> |
| <p>Variant 5</p> <p>[Title page..... 1] 1. Level12 1.1. Level2.....2 1.2. Level2.....3 2. Level14 3. Level15 [Table of contents.....6]</p> <p>Level1: 18 pt, Bold, Alignment-Center Level2: 16 pt, Italic, Alignment-Center</p> | <p>Variant 6</p> <p>[Title page.....1] [Table of contents2] 1. Level13 2. Level14 2.1. Level24 2.1.1. Level34 2.1.2. Level35</p> <p>Level1: 22 pt, Red, Alignment-Center Level2: 18 pt, Underline Level3: 16 pt, Bold</p> |

| | |
|--|--|
| <p>Variant 7</p> <p>[Title page..... 1] 1. Level12 1.1. Level2.....2 2. Level13 2.1. Level2.....3 2.1.1. Level3.....3 [Table of contents.....4]</p> <p>Level1: 18 pt, Green, Alignment-Left Level2: 16 pt, Italic, Alignment-Center Level3: 15 pt, Bold</p> | <p>Variant 8</p> <p>[Title page.....1] [Table of contents2] 1. Level13 1.1. Level23 1.2. Level24 1.2.1. Level34</p> <p>Level1: 22 pt, Green, Alignment-Center Level2: 20 pt, Bold, Alignment-Right Level3: 18 pt, Italic</p> |
| <p>Variant 9</p> <p>[Title page..... 1] [Table of contents.....2] 1. Level13 1.1. Level2.....3 2. Level14 2.1. Level2.....4 2.1.1. Level3.....4</p> <p>Level1: 18 pt, Italic, Alignment-Center Level2: 18 pt, Red, Alignment-Left Level3: 16 pt, Bold</p> | <p>Variant 10</p> <p>[Title page.....1] 1. Level12 1.1. Level22 1.2. Level23 1.3. Level24 2. Level15 [Table of contents6]</p> <p>Level1: 18 pt, Underline, Bold Level2: 16 pt, Red, Alignment-Center</p> |

| | |
|---|--|
| <p>Variant 11</p> <p>[Title page..... 1] 1. Level12 1.1. Level2.....2 2. Level13 2.1. Level2.....3 2.1.1. Level3.....3 [Table of contents.....4]</p> <p>Level1: 18 pt, Green, Alignment-Left Level2: 16 pt, Italic, Alignment-Center Level3: 15 pt, Bold</p> | <p>Variant 12</p> <p>[Title page.....1] [Table of contents2] 1. Level13 2. Level14 3. Level15 3.1. Level25</p> <p>Level1: 18 pt, Green, Underline Level2: 16 pt, Italic, Alignment-Left</p> |
| <p>Variant 13</p> <p>[Title page..... 1] 1. Level12 1.1. Level2.....2 2. Level13 2.1. Level2.....3 3. Level14 [Table of contents.....5]</p> <p>Level1: 20 pt, Underline, Green Level2: 16 pt, Red, Alignment-Right</p> | <p>Variant 14</p> <p>[Title page.....1] 1. Level12 1.1. Level22 1.2. Level23 1.2.1. Level33 1.3. Level24 [Table of contents5]</p> <p>Level1: 18 pt, Bold, Alignment-Left Level2: 16 pt, Red, Alignment-Center Level3: 14 pt, Italic</p> |

| Variant 15 | Variant 16 |
|--|--|
| [Title page..... 1] | [Title page..... 1] |
| [Table of contents..... 2] | 1. Level1 2 |
| 1. Level1 3 | 1.1. Level2 2 |
| 2. Level1 4 | 1.2. Level2 3 |
| 2.1. Level2..... 4 | 2. Level1 4 |
| 2.1.1. Level3 4 | 2.1. Level2 4 |
| 2.1.1.1. Level4..... 4 | 2.1.1. Level3 4 |
| Level1: 18 pt, Green, Alignment-Center | [Table of contents 5] |
| Level2: 16 pt, Italic, Alignment-Right | Level1: 20 pt, Underline, Green |
| Level3: 15 pt, Bold | Level2: 16 pt, Italic, Alignment-Right |
| Level4: 14 pt, Underline | Level3: 15 pt, Bold |

Report

1. Write work title with number, your name (first & last) and name of your group.
2. Your task (variant of table of contents and format parameters).
3. Sequence of 8 commands.

| № | Action | Command |
|----------|-------------------------------|--|
| 1 | Inserting a table of contents | MS Word > References > Table of Contents |
| ... | ... | ... |

Control questions

1. How to make page break in MS Word?
2. How to define the levels for paragraphs in text document?
3. How to change parameters for appropriate style (level)?
4. How to make table of contents.
5. How to make footnotes in text document?
6. How to define page numbering in text document?

THEME № 6

BASICS OF MS EXCEL

Summary

Equations in MS Excel. Standard functions. Filling automation. Graphs.

Example

Create a graphic for $f(x)$ -function (using MS Excel) by the following data:

$$f(x) = \sin(3x^2 - 4x - 5), \quad x \in [1,68;1,7], \quad \text{step for } x=0,001$$

Solving

- 1) Run MS Excel, create new workbook and save it.
- 2) Use first worksheet

| | A | B | C | D | E |
|---|------|---|---|--------|---|
| 1 | x | | | x step | |
| 2 | 1,68 | | | 0,001 | |

3)

| | A | B | C | D | E |
|---|-------|---|---|--------|---|
| 1 | x | | | x step | |
| 2 | 1,68 | | | 0,001 | |
| 3 | 1,681 | | | | |

4)

| | A | B | C | D | E |
|---|-------|---|---|--------|---|
| 1 | x | | | x step | |
| 2 | 1,68 | | | 0,001 | |
| 3 | 1,681 | | | | |
| 4 | | | | | |

5)

| | A | B | C | D | E |
|----|-------|---|---|--------|---|
| 1 | x | | | x step | |
| 2 | 1,68 | | | 0,001 | |
| 3 | 1,681 | | | | |
| 4 | 1,682 | | | | |
| 21 | 1,699 | | | | |
| 22 | 1,7 | | | | |
| 23 | | | | | |

Formula bar: $=A21+D\$2$

6)

| | A | B | C | D | E |
|---|-------|------------|---|--------|---|
| 1 | x | y | | x step | |
| 2 | 1,68 | 0,11097827 | | 0,001 | |
| 3 | 1,681 | | | | |
| 4 | 1,682 | | | | |
| 5 | 1,683 | | | | |
| 6 | 1,684 | | | | |
| 7 | 1,685 | | | | |
| 8 | 1,686 | | | | |
| 9 | 1,687 | | | | |

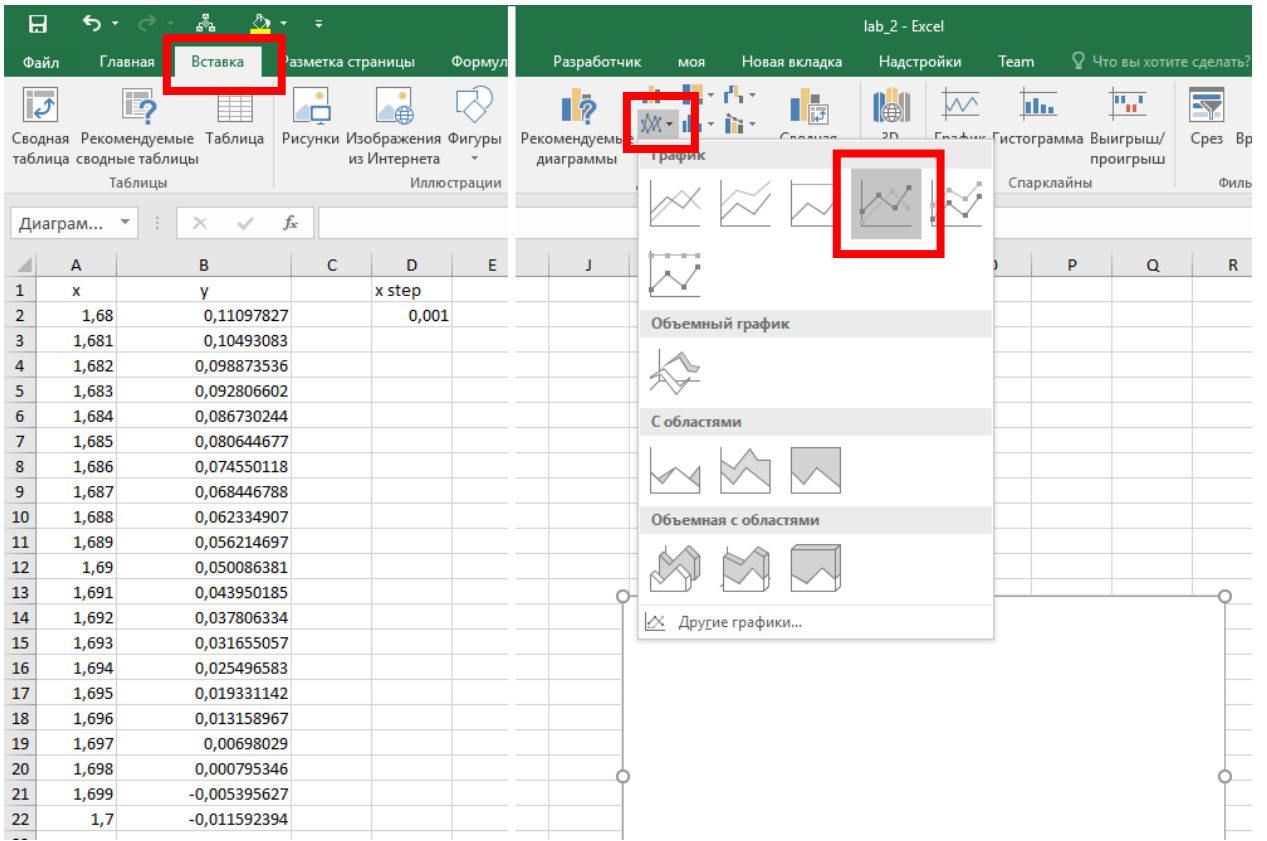
Formula bar: $=\text{SIN}(3*A2^2-4*A2-5)$

7)

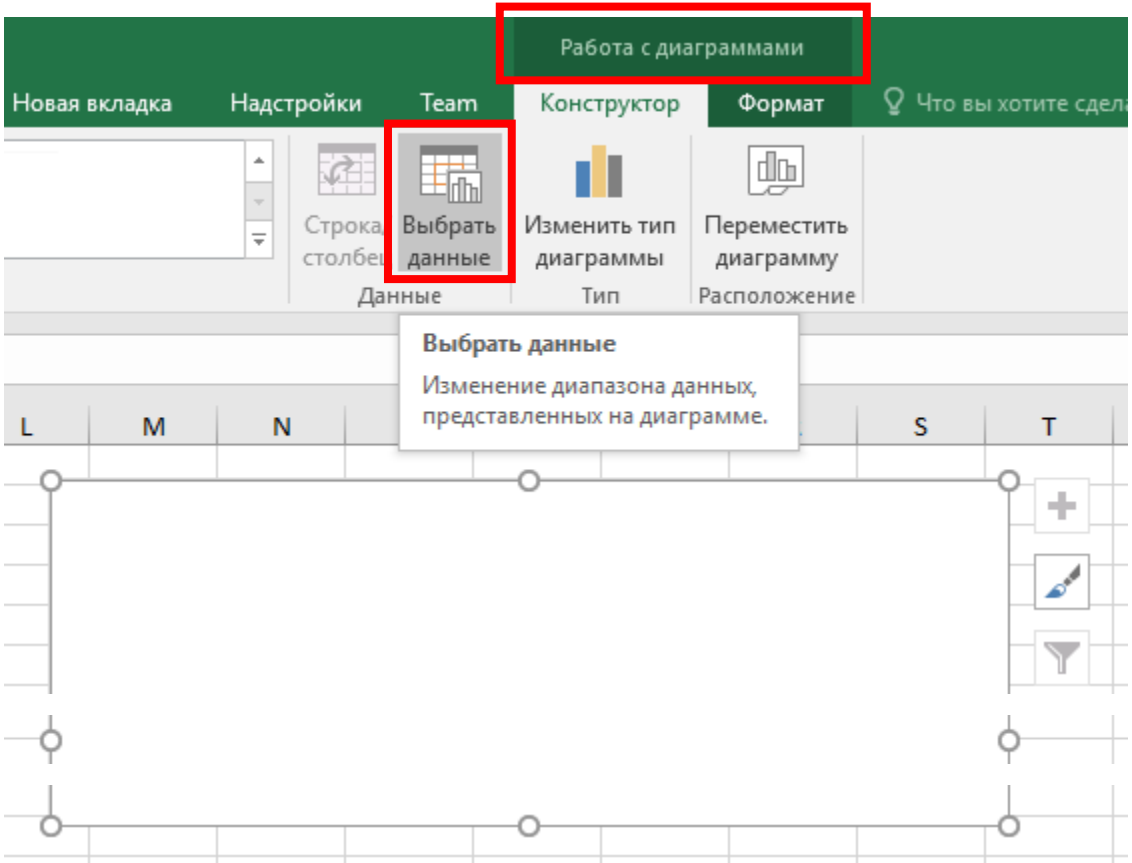
| | A | B | C | D | E |
|----|-------|--------------|---|--------|---|
| 1 | x | y | | x step | |
| 2 | 1,68 | 0,11097827 | | 0,001 | |
| 3 | 1,681 | 0,10493083 | | | |
| 4 | 1,682 | 0,098873536 | | | |
| 20 | 1,698 | 0,000795346 | | | |
| 21 | 1,699 | -0,005395627 | | | |
| 22 | 1,7 | -0,011592394 | | | |

Formula bar: $=\text{SIN}(3*A22^2-4*A22-5)$

8)



9)



10)

| | A | B | C | D | E | F | G | H | I | J | K | L |
|----|-------|--------------|---|--------|---|---|---|---|---|---|---|---|
| 1 | x | y | | x step | | | | | | | | |
| 2 | 1,68 | 0,11097827 | | 0,001 | | | | | | | | |
| 3 | 1,681 | 0,10493083 | | | | | | | | | | |
| 4 | 1,682 | 0,098873536 | | | | | | | | | | |
| 5 | 1,683 | 0,092806602 | | | | | | | | | | |
| 6 | 1,684 | 0,086730244 | | | | | | | | | | |
| 7 | 1,685 | 0,080644677 | | | | | | | | | | |
| 8 | 1,686 | 0,074550118 | | | | | | | | | | |
| 9 | 1,687 | 0,068446788 | | | | | | | | | | |
| 10 | 1,688 | 0,062334907 | | | | | | | | | | |
| 11 | 1,689 | 0,056214697 | | | | | | | | | | |
| 12 | 1,69 | 0,050086381 | | | | | | | | | | |
| 13 | 1,691 | 0,043950185 | | | | | | | | | | |
| 14 | 1,692 | 0,037806334 | | | | | | | | | | |
| 15 | 1,693 | 0,031655057 | | | | | | | | | | |
| 16 | 1,694 | 0,025496583 | | | | | | | | | | |
| 17 | 1,695 | 0,019331142 | | | | | | | | | | |
| 18 | 1,696 | 0,013158967 | | | | | | | | | | |
| 19 | 1,697 | 0,00698029 | | | | | | | | | | |
| 20 | 1,698 | 0,000795346 | | | | | | | | | | |
| 21 | 1,699 | -0,005395627 | | | | | | | | | | |
| 22 | 1,7 | -0,011592394 | | | | | | | | | | |

Выбор источника данных

Диапазон данных для диаграммы:

Строка/столбец

Элементы легенды (ряды)

Добавить Изменить Удалить

Подписи горизонтальной оси (категории)

Изменить

Скрытые и пустые ячейки

OK Отмена

11)

| | A | B | C | D | E | F | G | H |
|----|-------|--------------|---|--------|---|---|---|---|
| 1 | x | y | | x step | | | | |
| 2 | 1,68 | 0,11097827 | | 0,001 | | | | |
| 3 | 1,681 | 0,10493083 | | | | | | |
| 4 | 1,682 | 0,098873536 | | | | | | |
| 5 | 1,683 | 0,092806602 | | | | | | |
| 6 | 1,684 | 0,086730244 | | | | | | |
| 7 | 1,685 | 0,080644677 | | | | | | |
| 8 | 1,686 | 0,074550118 | | | | | | |
| 9 | 1,687 | 0,068446788 | | | | | | |
| 10 | 1,688 | 0,062334907 | | | | | | |
| 11 | 1,689 | 0,056214697 | | | | | | |
| 12 | 1,69 | 0,050086381 | | | | | | |
| 13 | 1,691 | 0,043950185 | | | | | | |
| 14 | 1,692 | 0,037806334 | | | | | | |
| 15 | 1,693 | 0,031655057 | | | | | | |
| 16 | 1,694 | 0,025496583 | | | | | | |
| 17 | 1,695 | 0,019331142 | | | | | | |
| 18 | 1,696 | 0,013158967 | | | | | | |
| 19 | 1,697 | 0,00698029 | | | | | | |
| 20 | 1,698 | 0,000795346 | | | | | | |
| 21 | 1,699 | -0,005395627 | | | | | | |
| 22 | 1,7 | -0,011592394 | | | | | | |

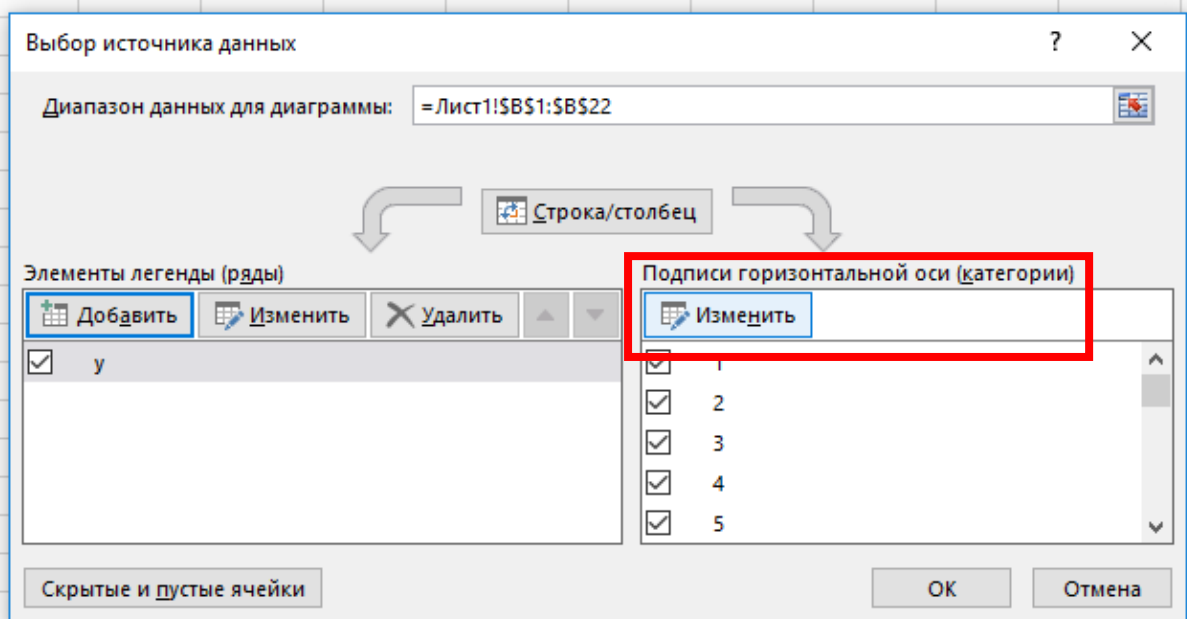
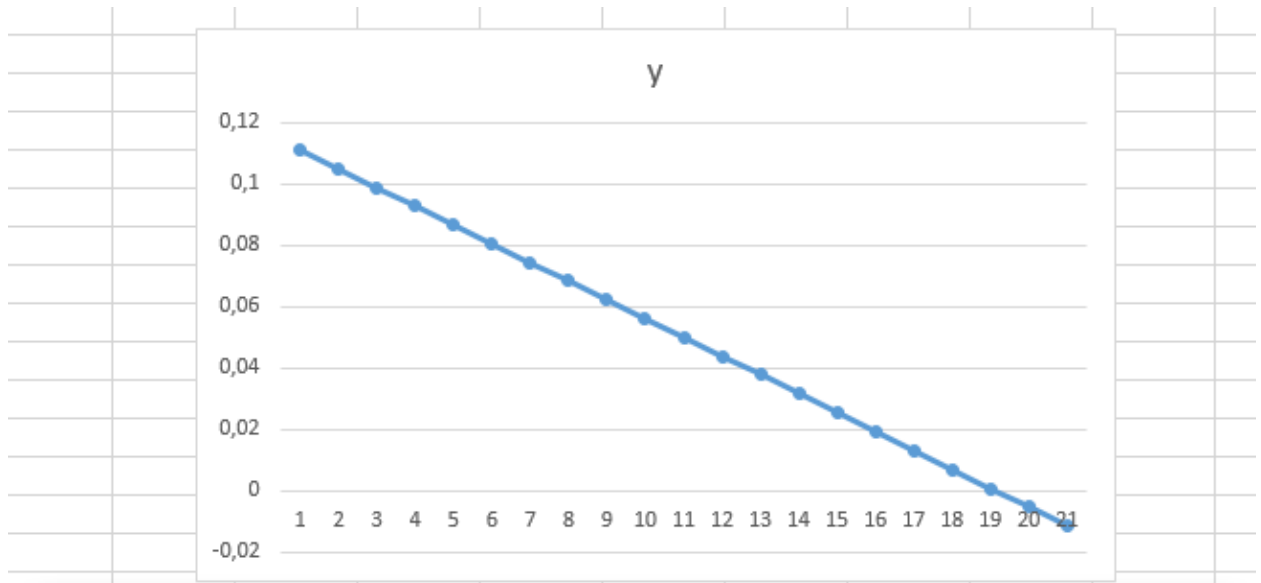
Изменение ряда

Имя ряда: = y

Значения: = 0,11097827; 0,...

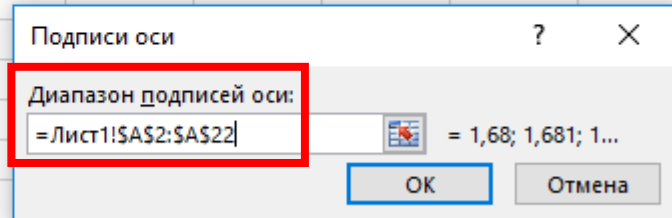
OK Отмена

12)

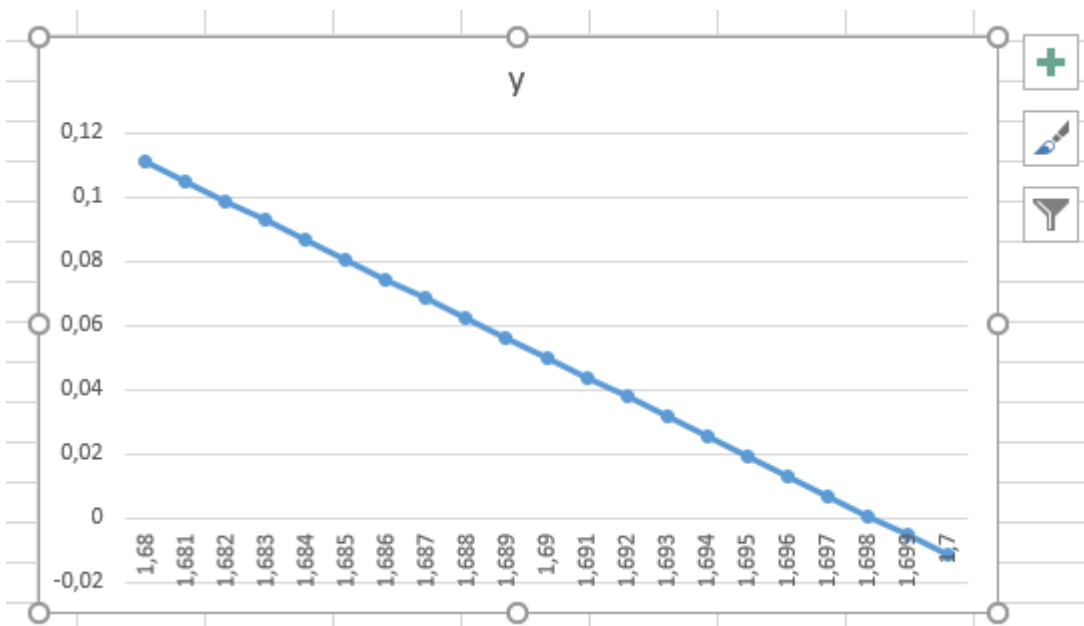


13)

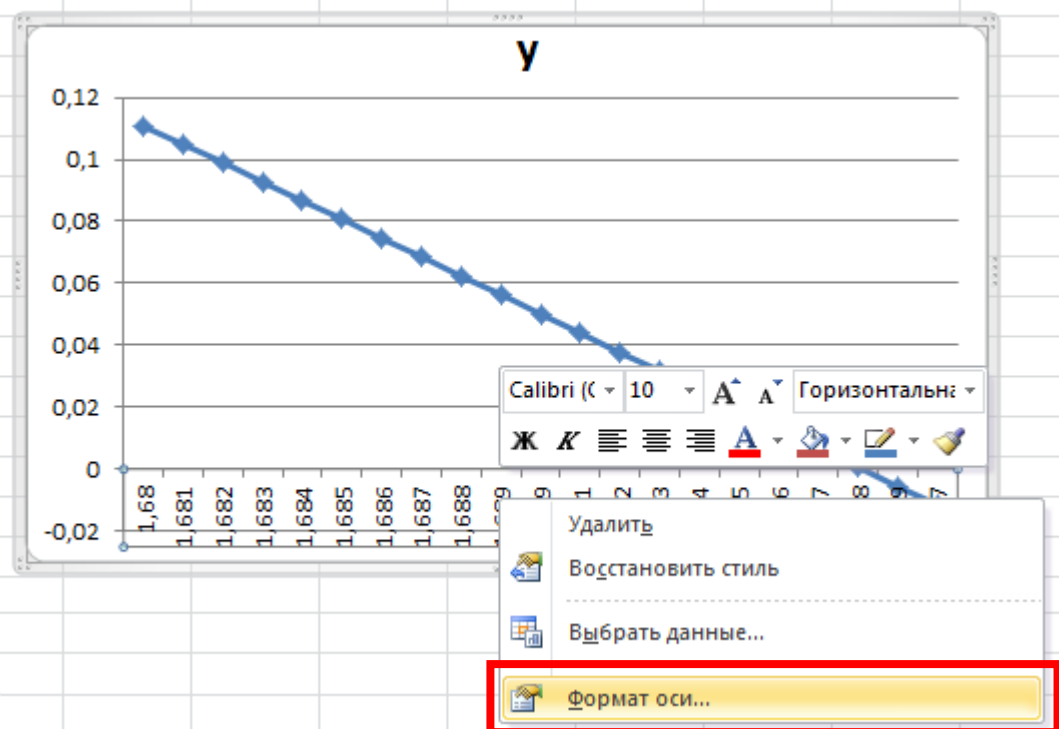
| | A | B | C | D | E | F | G | H |
|----|-------|--------------|---|--------|---|---|---|---|
| 1 | x | y | | x step | | | | |
| 2 | 1,68 | 0,11097827 | | 0,001 | | | | |
| 3 | 1,681 | 0,10493083 | | | | | | |
| 4 | 1,682 | 0,098873536 | | | | | | |
| 5 | 1,683 | 0,092806602 | | | | | | |
| 6 | 1,684 | 0,086730244 | | | | | | |
| 7 | 1,685 | 0,080644677 | | | | | | |
| 8 | 1,686 | 0,074550118 | | | | | | |
| 9 | 1,687 | 0,068446788 | | | | | | |
| 10 | 1,688 | 0,062334907 | | | | | | |
| 11 | 1,689 | 0,056214697 | | | | | | |
| 12 | 1,69 | 0,050086381 | | | | | | |
| 13 | 1,691 | 0,043950185 | | | | | | |
| 14 | 1,692 | 0,037806334 | | | | | | |
| 15 | 1,693 | 0,031655057 | | | | | | |
| 16 | 1,694 | 0,025496583 | | | | | | |
| 17 | 1,695 | 0,019331142 | | | | | | |
| 18 | 1,696 | 0,013158967 | | | | | | |
| 19 | 1,697 | 0,00698029 | | | | | | |
| 20 | 1,698 | 0,000795346 | | | | | | |
| 21 | 1,699 | -0,005395627 | | | | | | |
| 22 | 1,7 | -0,011592394 | | | | | | |



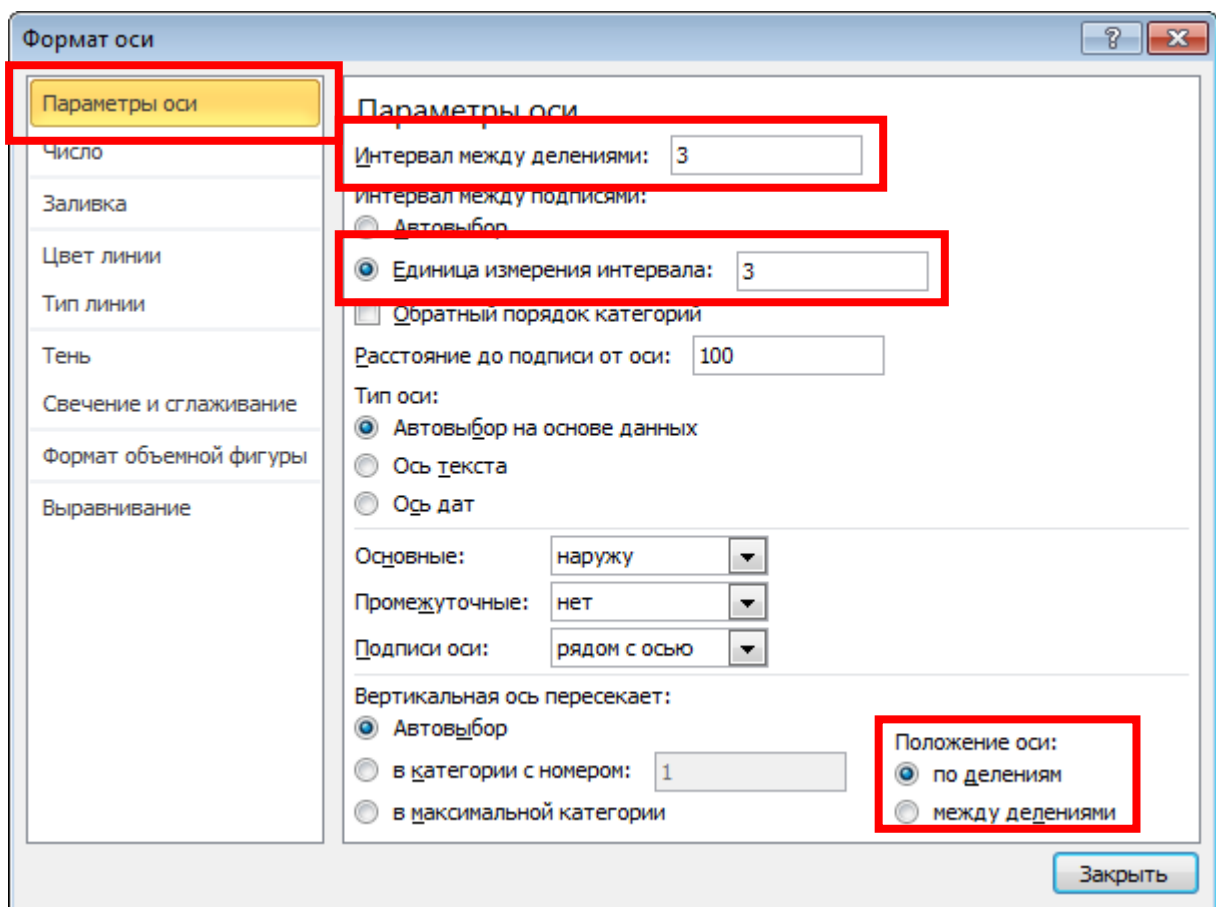
14)



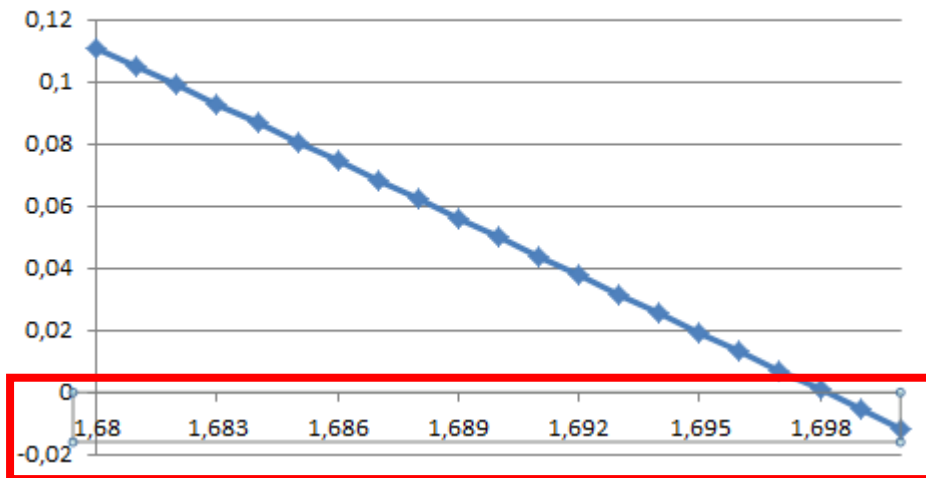
15)



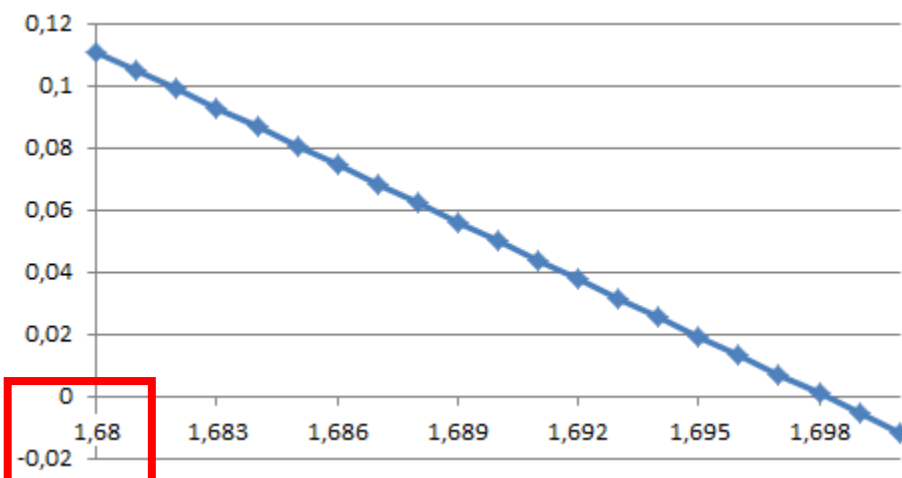
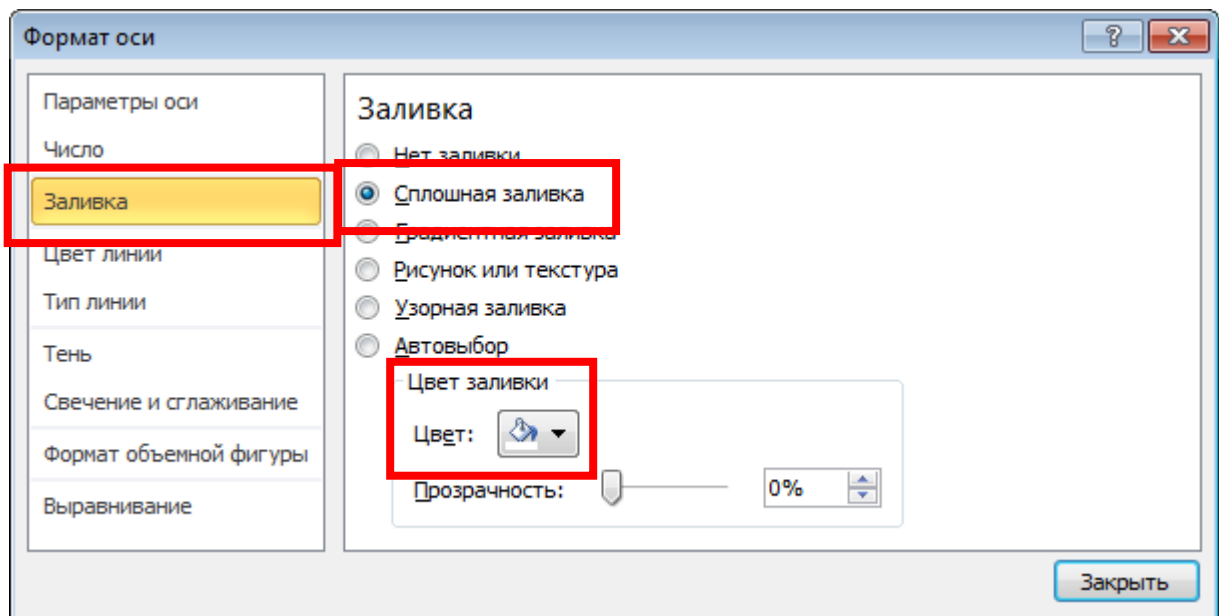
16)



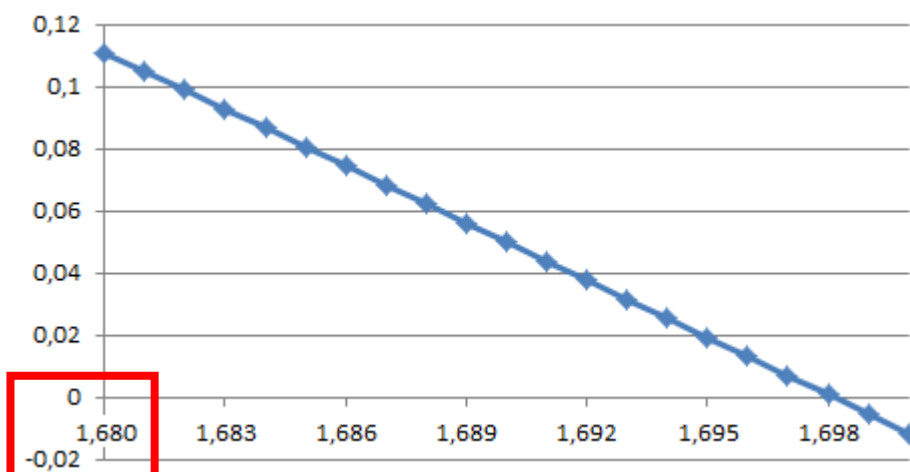
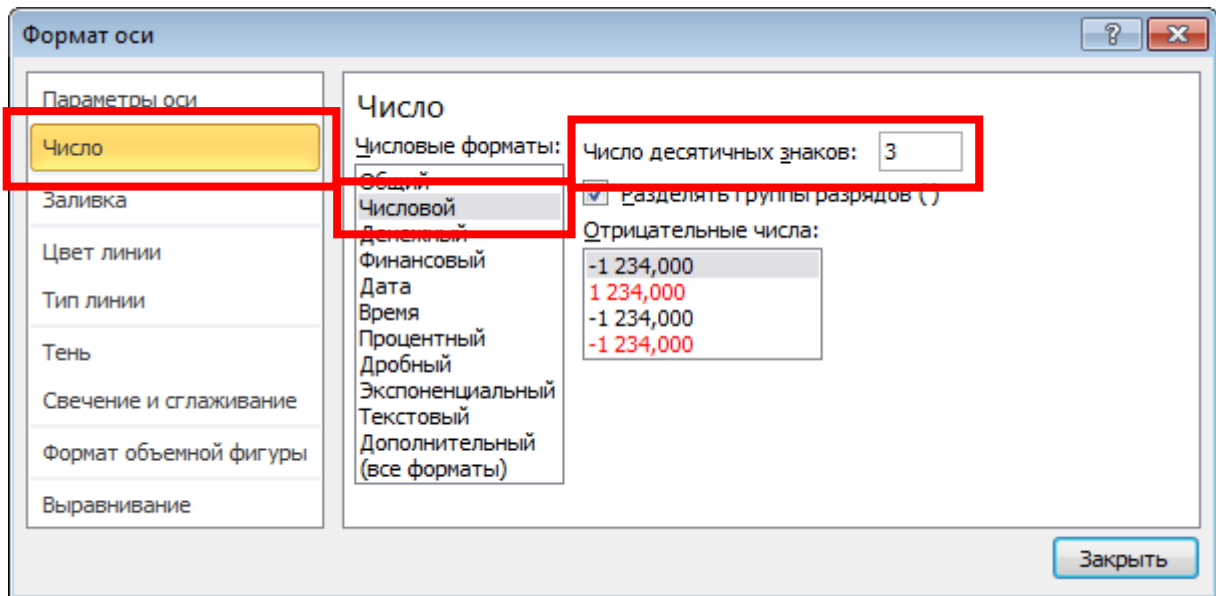
y



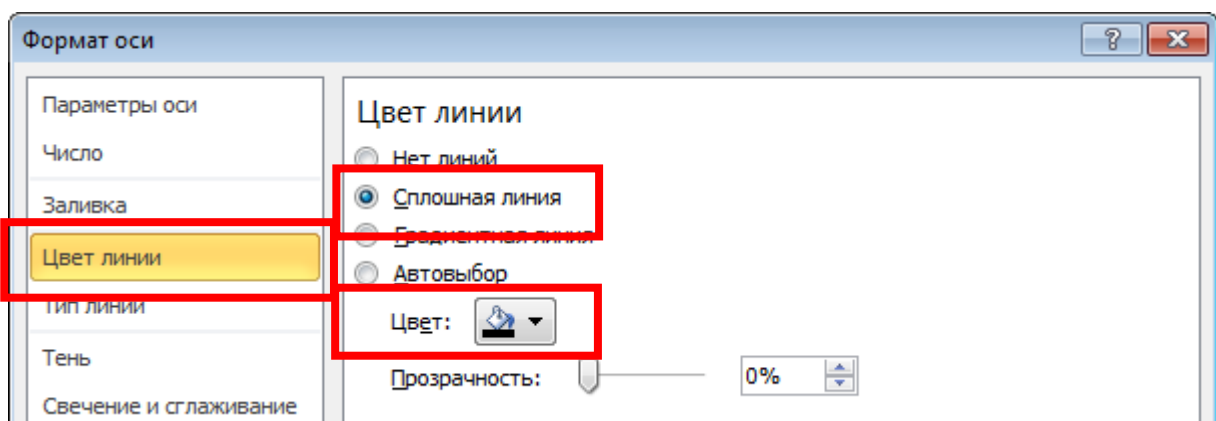
17)

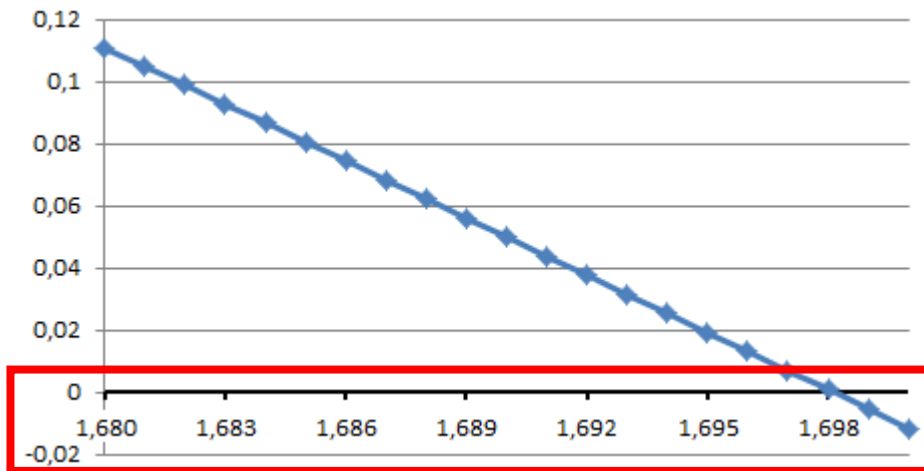
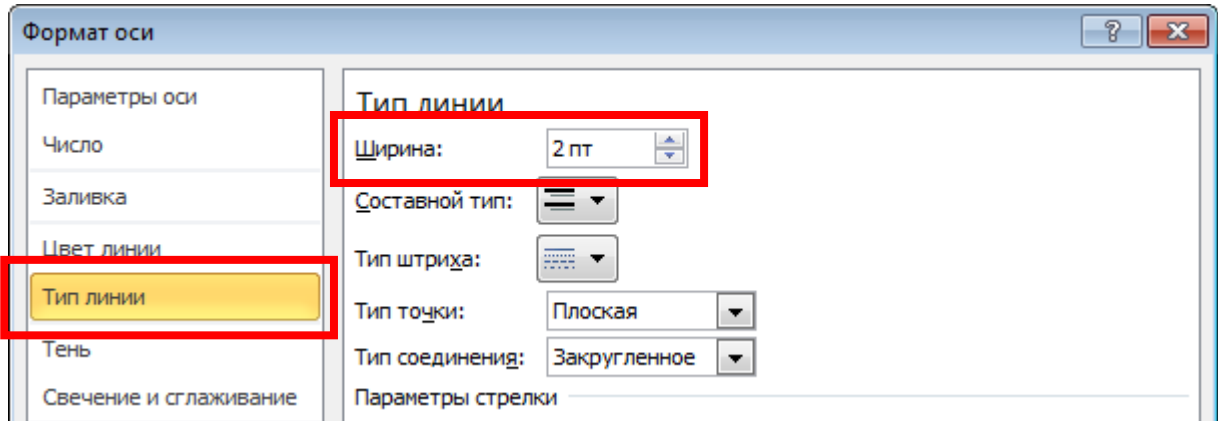


18)

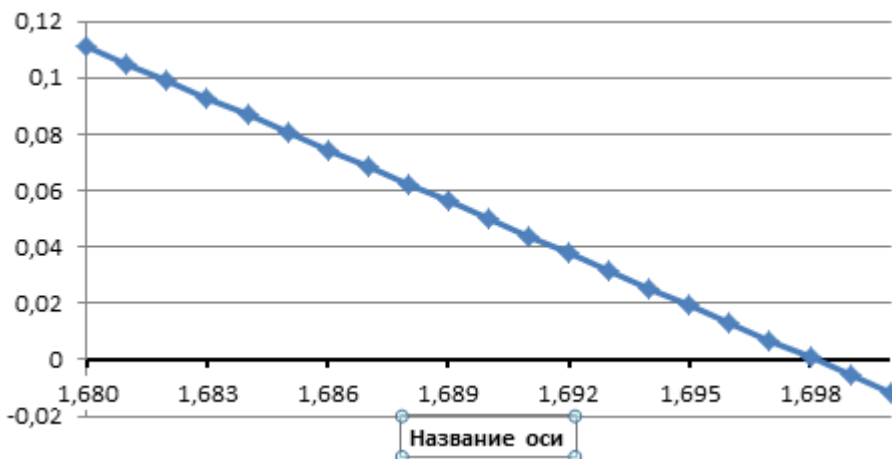
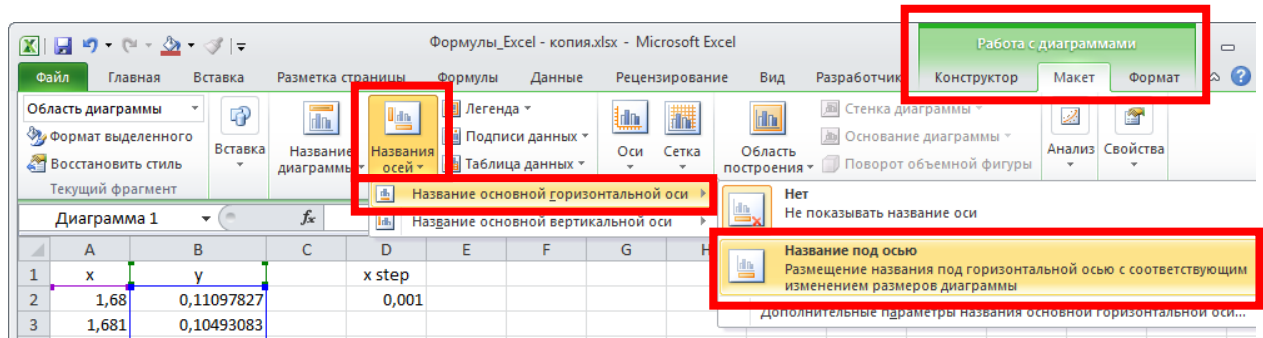


19)

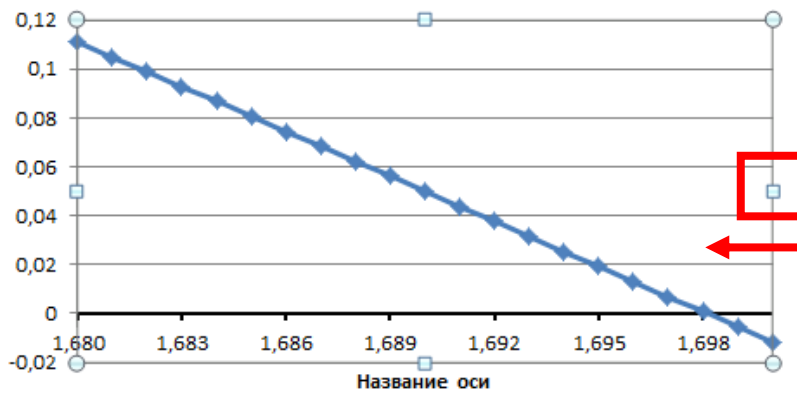




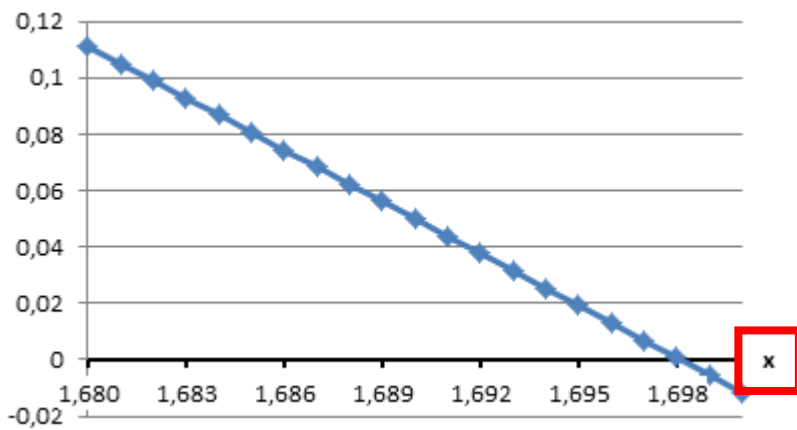
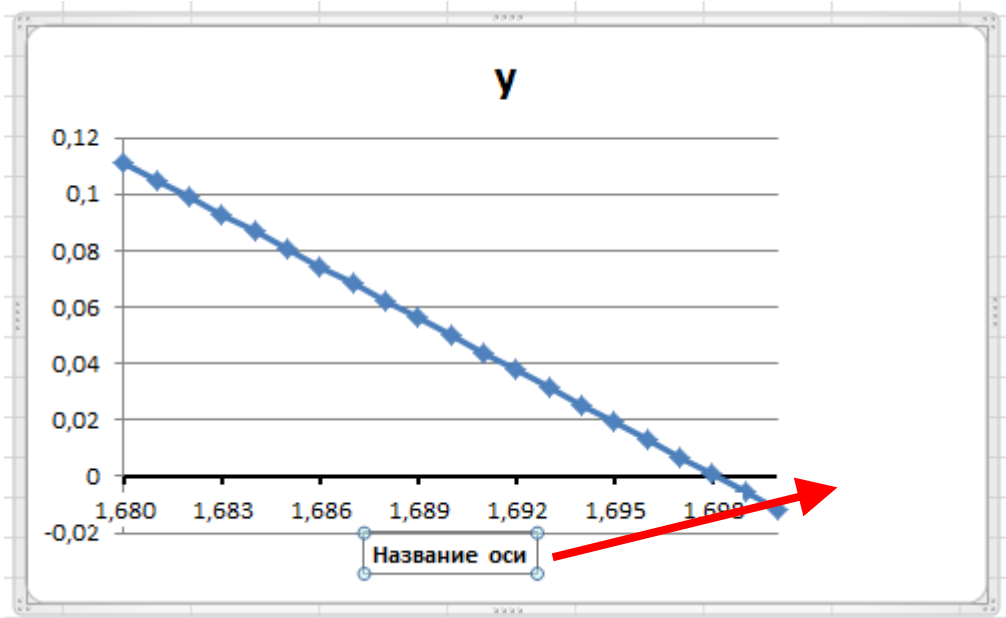
20)



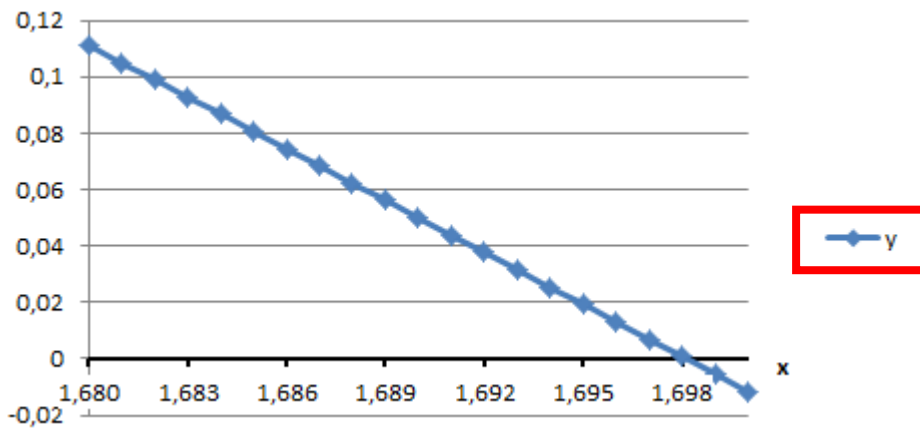
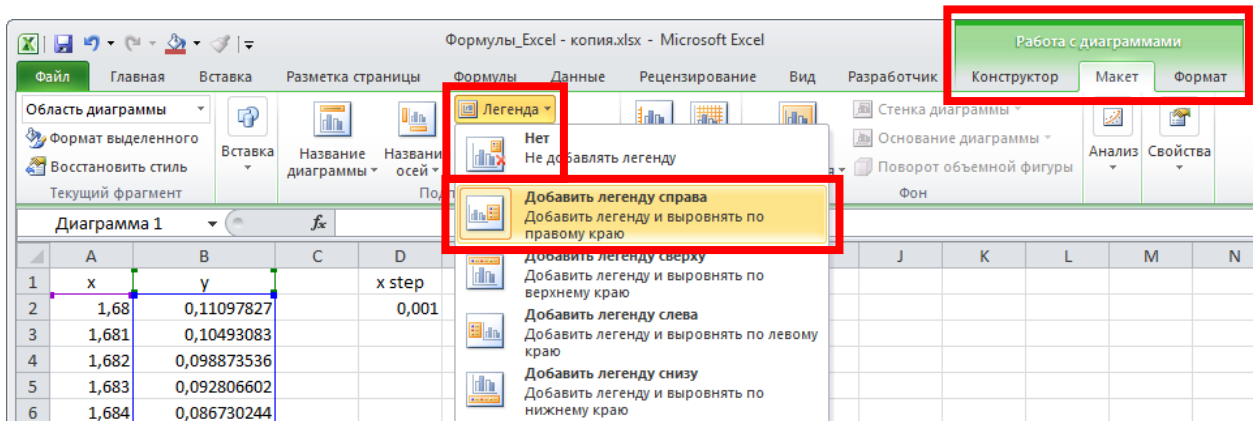
21)



22)



23)



Practice

Create a graphic for $f(x)$ -function (using MS Excel) according your variant by the following data:

| Variant | Task |
|---------|---|
| 1 | $f(x) = -x^3 - 11x^2 + 3x + 2$, $x \in [-2;0]$, step for $x=0,1$ |
| 2 | $f(x) = 1,5x^3 + 3x^2 + x - 1$, $x \in [0;1]$, step for $x=0,05$ |
| 3 | $f(x) = \cos(-3x^2 - 2x + 2)$, $x \in [1,1;1,33]$, step for $x=0,01$ |
| 4 | $f(x) = 7x^3 + 2x^2 - 2x - 2$, $x \in [0,4;0,9]$, step for $x=0,02$ |
| 5 | $f(x) = \sin(2x^2 - 5x + 7)$, $x \in [-0,9;-0,67]$, step for $x=0,01$ |
| 6 | $f(x) = -2x^3 + x^2 + 2x - 1$, $x \in [-1,1;-0,5]$, step for $x=0,05$ |

| | |
|----|--|
| 7 | $f(x) = \cos(2x^2 - 3x + 5)$, $x \in [-2; -1,7]$, step for $x=0,02$ |
| 8 | $f(x) = -4x^3 + 3x^2 - 2x + 3$, $x \in [0,5; 1,5]$, step for $x=0,05$ |
| 9 | $f(x) = \sin(3x^2 + x - 4)$, $x \in [1,92; 2]$, step for $x=0,005$ |
| 10 | $f(x) = 2x^3 - 3x^2 - 2x - 3$, $x \in [2; 2,5]$, step for $x=0,02$ |
| 11 | $f(x) = \cos(-3x^2 + 5x - 1)$, $x \in [-1,88; -1,76]$, step for $x=0,01$ |
| 12 | $f(x) = -3x^3 + 2x^2 + x - 2$, $x \in [-1; -0,5]$, step for $x=0,02$ |
| 13 | $f(x) = \sin(-2x^2 + 3x + 2)$, $x \in [1,7; 2,1]$, step for $x=0,05$ |
| 14 | $f(x) = -2x^3 - 3x^2 - 4x - 1$, $x \in [-0,8; 0]$, step for $x=0,04$ |
| 15 | $f(x) = \cos(-3x^2 + 5x - 1)$, $x \in [-1,88; -1,76]$, step for $x=0,01$ |
| 16 | $f(x) = -x^3 + 3x^2 - 2x - 4$, $x \in [-1; 0]$, step for $x=0,05$ |

Report

1. Write work title with number, your name (first & last) and name of your group.
 2. Your task.
 3. Result table with x and $f(x)$ values.
 4. Equation for function-calculation (for one cell from result table).
 5. Result graphic.
- + Include result MS Excel file.

Control questions

1. How to create expression to calculate something in MS Excel?
2. Explain the principle of auto-filling abilities in MS Excel.
3. Explain the difference between simple and relative links in expressions.
4. Explain the sequence of actions to create graph in MS Excel.
5. How to adjust visible parameters of graph.

USEFUL LINKS

1. Construction of personal computer. Operation system

<https://support.microsoft.com/en-nz/products/windows?os=windows-7>

<https://www.wikihow.com/Category:Windows>

<https://www.lifewire.com/computer-hardware-2625895>

2. Calculator

https://en.wikipedia.org/wiki/Windows_Calculator

<https://operating-systems.wonderhowto.com/how-to/use-memory-windows-calculator-0134580/>

[http://microsoft.wikia.com/wiki/Calculator_\(Windows\)](http://microsoft.wikia.com/wiki/Calculator_(Windows))

3. Text and tables in MS Word

https://www.tutorialspoint.com/word/word_adjust_margins.htm

https://www.tutorialspoint.com/word/word_setting_text_fonts.htm

https://www.tutorialspoint.com/word/word_text_decoration.htm

https://www.tutorialspoint.com/word/word_indent_paragraphs.htm

https://www.tutorialspoint.com/word/word_set_line_spacing.htm

https://www.tutorialspoint.com/word/word_create_table.htm

https://www.tutorialspoint.com/word/word_rows_columns.htm

https://www.tutorialspoint.com/word/word_merging_cells.htm

https://www.tutorialspoint.com/word/table_borders_shades.htm

4. Graphics in MS Word

https://www.tutorialspoint.com/word/word_use_graphics.htm

<https://www.dummies.com/software/microsoft-office/word/adding-wordart-in-word-2007/>

https://wordribbon.tips.net/C0688_Graphics.html

<https://www.guidingtech.com/11253/group-multiple-shapes-move-diagram-ms-word/>

<https://www.techtricksworld.com/edit-images-using-ms-word/>

<https://support.office.com/en-ie/article/insert-wordart-c5070583-1ebe-4dc4-a41f-5e3729adce54>

<https://support.office.com/en-ie/article/add-shapes-0e492bb4-3f91-43b5-803f-dd0998e0eb89>

5. Additional features in MS Word

https://www.tutorialspoint.com/word/word_insert_page_breaks.htm

https://www.tutorialspoint.com/word/word_quick_styles.htm

<https://shaunakelly.com/word/numbering/tableofcontents.html>

https://www.tutorialspoint.com/word/word_header_footer.htm

https://www.tutorialspoint.com/word/word_add_page_numbers.htm

https://www.tutorialspoint.com/word/word_table_of_contents.htm

<https://www.dummies.com/software/microsoft-office/word/adding-footnotes-and-endnotes-in-word-2007/>

6. Basics of MS Excel

https://www.tutorialspoint.com/excel/excel_creating_formulas.htm

https://www.tutorialspoint.com/excel/excel_formula_reference.htm

https://www.tutorialspoint.com/excel/excel_using_functions.htm

<https://www.excel-easy.com/>

<https://www.ablebits.com/office-addins-blog/2017/06/14/basic-excel-formulas-functions-examples/>

https://www.tutorialspoint.com/excel/excel_simple_charts.htm

https://www.tutorialspoint.com/excel/excel_quick_guide.htm

<http://exceltable.com/en/charts-in-excel/draw-charts-in-excel>