User's Manual

CFZZ

Version 1.25.1

Worksheet Generator for Physics

Windows 7® - Windows 8® - Windows 10®

VAXA SOFTWARE

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Introduction

Worksheet Generator for Physics is a Windows® software to create, save, load and print worksheets of Physics for educational purposes.

Please, read this manual carefully to learn all the capabilities of the software.

Terms of use

In no event shall VaxaSoftware be liable to anyone for direct, indirect, special, collateral, incidental, or consequential damages by the use or impossibility of use of the software, nor by the effects in the operation of other software or the operating system.

Before the installation we recommended to make backup of your data and create a restoration point.

You will be able freely to evaluate the software during the time that considers necessary. Passed this period of evaluation you would have or to register it or uninstall it.

To register the software, please see the option "REGISTER APPLICATION" in the help menu of the software.

After paying the registry fee you will receive by email the REGISTRATION KEY of the software.
Once registered the software, it will be able to use the options that were disabled until that moment.

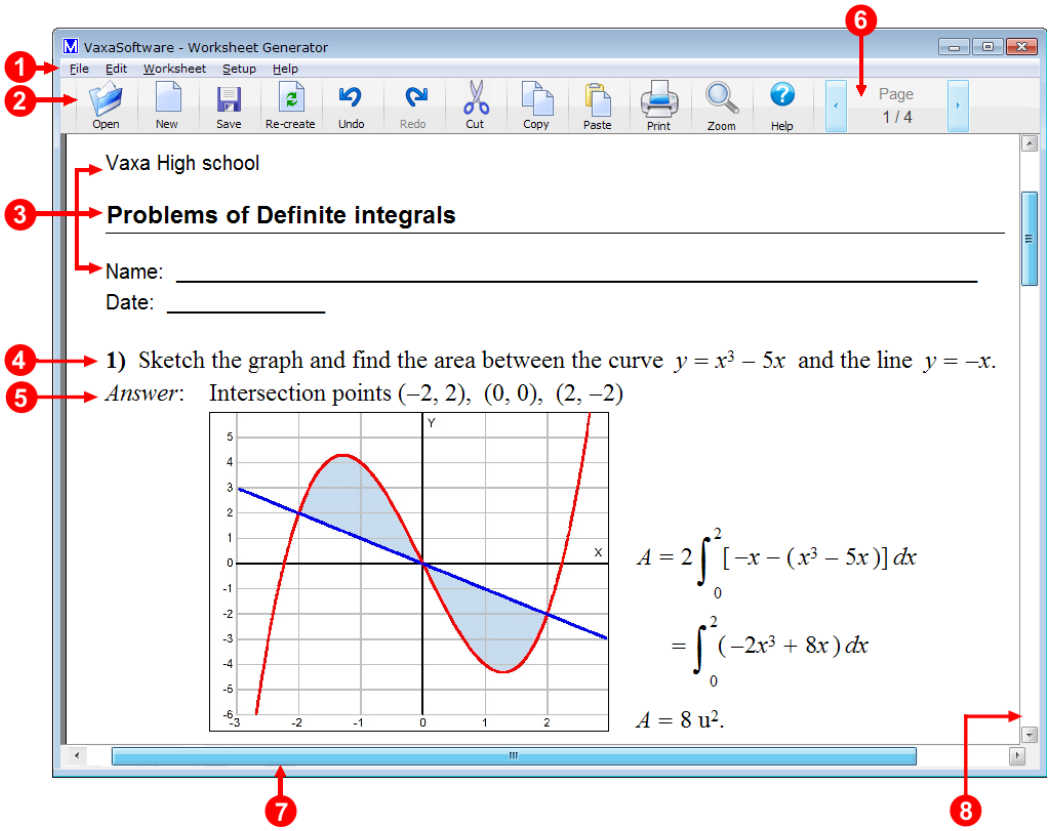
The REGISTRATION KEY is UNIQUE for EACH COMPUTER.

You cannot use the same REGISTRATION KEY for multiple computers.

You can freely distribute unaltered copies of the installation system of the software to other users.
You cannot decompile the software nor use no type of reverse engineer for its analysis or modification.
You cannot use part or the totality of the software to create a new software.

Design, products, specifications, and prices are for information purposes only. VaxaSoftware reserves the right to change or modify design, products, specifications, and prices at any time without prior notice.

Main window



1 Menu bar

It contains the menus: **File**, **Edit**, **Worksheet**, **Setup** and **Help**.

File menu

New worksheet... menu
Opens the **Wizard** window that will help us create a new worksheet.

Open... menu
Opens the dialog window to select and open a worksheet file (*. col).

Create custom worksheets for a group of students... menu
Allows us create custom worksheets for a group of students based on the current document. The list of students must be a text file with one name per line.

Save menu
Saves the current worksheet. If the worksheet is new or has been re-created, will be saved as a new file and we asked for a file name and a path to save it.

Save as... menu
Shows the dialog window to select a path and a filename (*. col) to save the current worksheet.

Print... menu
Opens the **Print** window. In it we can select the printer destination and specify the pages we want to print and the number of copies.

Print all worksheets from a folder... menu
Allows us print the worksheets from a folder.

<**List of recent files>** menu
Lists recent files opened or saved. To open a file click on its name.

Exit menu
Closes the application.

Edit menu

Undo menu
Undoes last action.

Redo menu
Returns to the state before last Undo.

Cut menu
Copies selected problem into the clipboard and deletes it.

Copy menu
Copies selected problem into the clipboard.

Paste menu
Inserts the problem from the clipboard into the worksheet.

Delete menu
Erases the selected problem.

Move to menu
Moves the selected problem to another position.

Move to the beginning menu
Moves to the top the selected problem.

Move to the end menu
Moves to the end the selected problem.

Move up menu
Moves up one position the selected problem.

Move down menu
Moves down one position the selected problem.

Activate extra spacing menu
Shows additional space after the statement of the selected problem or shows additional space between the items of the selected exercise that has this option.

Disable extra spacing menu
Hide the additional space after the statement of the selected problem or hide the additional space between the items of the selected exercise that has this option.

◆ **Note**
The extra spacing only applies to problems or exercises that have this option.

Re-create problem menu
Re-creates the selected problem.
The created problem will be of the same type but with other data and/or statement.
The new problem replaces the selected one.

Insert another similar problem menu
Creates another problem of the same type that the selected one.
The created problem will be of the same type but with other data and/or statement.
The new problem will be inserted in the position of the selected one.

Edit... menu
Opens the **Edit** window. In it we can modify the current exercise and insert new exercises.

Worksheet menu

Re-create worksheet menu
Creates another worksheet and replaces the current worksheet.
The new re-created worksheet will be of the same type of problems but with other data and/or statements.

◆ **Note**
This new re-created worksheet is assumed as a new file.

No answers menu
Hides the answers of the problems.

Answers after each problem menu
Puts the answers of each problem after the statement of each one.

Answers together at the end menu
Puts the answers of problems all together at the end of the worksheet.

Answers on a separate page menu
Puts the answers of problems together in new pages at the end of the worksheet.

Activate extra spacing globally menu
Shows additional space after the statement of each problem of the worksheet or shows additional space between the items of each exercise of the worksheet that has this option.

Disable extra spacing globally menu
Hide the additional space after the statement of each problem of the worksheet or hide the additional space between the items of each exercise of the worksheet that has this option.

◆ **Note**
The extra spacing only applies to problems or exercises that have this option.

Worksheet properties... menu
Opens the **Worksheet properties** window to change general properties of the current worksheet.
➔ See **Worksheet properties** window for further details.

Setup menu

Show Editing buttons menu
Shows / hides editing buttons: **Undo, Redo, Cut, Copy** and **Paste.**

Zoom menu
Allows us set size of the current worksheet.
The following settings are available:

- **Fit to window's width**
- **50%**
- **75%**
- **100%**
- **150%**
- **200%**.

Worksheet properties... menu
Opens the **Worksheet properties** window to change general properties of the current worksheet.
➔ See **Worksheet properties** window for further details.

Application setup... menu
Opens the **Application setup** window to change properties of the software.
➔ See **Application setup** window for further details.

Help menu

User's Manual (PDF document)... menu
Shows this manual.

Application registration menu
Shows the **Registration form** window to register the application.

Disabled functions in the non-registered version menu
Shows the list of disabled functions when the application is not registered.

Home page: www.vaxasoftware.com... menu
Connects to **VaxaSoftware** home page.
An active Internet connection and a browser are required.

Contact us... menu
Connects to **VaxaSoftware** contact page.
An active Internet connection and a browser are required.

Updates menu

Check now... menu
The software connects to Internet to check for updates.
An active Internet connection is required.

Ckecking period... menu
Allows us to adjust the period between checks for updates.
The following settings are available:
- **Once a day.**
- **Once a week.**
- **Once a month.**

About... menu
Shows the **Splash** window with the version and description of the application.

2 Buttons bar

Open button
➔ See **File / Open** menu for further details.

New button
➔ See **File / New worksheet** menu for further details.

Save button
➔ See **File / Save** menu for further details.

Re-create button
This button can either re-creates a selected problem or the whole worksheet.

1) If nothing is selected the whole worksheet is re-created.
The new worksheet replaces the old one and is considered as a new file.
The new re-created worksheet has the same type of problems but with other data and/or statements.

2) If there is a selected problem a new problem is re-created.
This new problem replaces the old selected one. The new problem is similar type but with other data and/or statements.

Undo button
➔ See **Edit / Undo** menu for further details.

Redo button
➔ See **Edit / Redo** menu for further details.

Cut button
➔ See **Edit / Cut** menu for further details.

Copy button
➔ See **Edit / Copy** menu for further details.

Paste button
➔ See **Edit / Paste** menu for further details.

Print button
➔ See **File / Print** menu for further details.

Zoom button
➔ See **View / Zoom** menu for further details.

Help button
➔ See **Help** menu for further details.

3 Educational center, title, and additional text

Shows us the Educational Center, the title of the worksheet, and additional text
We can change these items clicking on the **Worksheet / Worksheet properties...** menu.

➔ See **Worksheet properties** window for further details.

4 Statement of the problem

Problem number and its statement.

➔ We can select a problem clicking on it with the main button of the mouse.
Then we can edit it using the **Edit** menu options.
Also we can access the **Edit** menu options clicking the secondary button of the mouse when a problem is selected.

➔ See **Edit** menu for further details.

We can change the style of the problems number (initial number, prefix, suffix and color).
To change the problem number properties we access the properties of the worksheet clicking on the **Worksheet / Worksheet properties...** menu.

5 Answer of the problem

Shows us the answer of the problem.
The answer of a problem can be hided / shown and changed of place.

➔ See **Worksheet** menu for further details.

6 Page scroll bar

Shows us the number of the current page and the total pages of the worksheet.

We can press buttons on the left and right side of the page number to access to the previous or next page. Also we can press **Page Up** and **Page Down** cursor keys.

To access to the first page we can press the **Home** cursor key, to access to the end one we press the **End** cursor key.

◆ **Note:**
Page numbers shown are ordinals numbers. If our pages are numbered and the first number isn't 1 then the page number that appears on the page does not match that shown in the bar.

Example:
If the first page of our worksheet is numbered from 15 to 18 the displayed numbers will be the following:
Page 15 is shown as **Pag. 1/4** .
Page 16 is shown as **Pag. 2/4** .
Page 17 is shown as **Pag. 3/4** .
Page 18 is shown as **Pag. 4/4** .

7 Horizontal scroll bar

Allows us move current page horizontally if that does not fit entirely in the window.
Also we can press **Left** ← and **Right** → cursor keys.

8 Vertical scroll bar

Allows us move current page vertically if that does not fit entirely in the window.
Also we can press **Up** ↑ and **Down** ↓ cursor keys.

Wizard window

The **Wizard window** allows us select the subject, topics, types and amount of problems we want create.

We have two ways to start the **Wizard** window:

1) Clicking on the **File / New worksheet** menu in the **Main** window.
2) Clicking on the **New** button in the **Main** window.

We can move through the **Wizard** window pressing **Back** and **Next** buttons.
To close the **Wizard** window click on **Cancel** button.

The **Wizard** window has the following panels:

- **Welcome** panel
- **Select the subject** panel
- **Types of documents** panel
- **Select topics, types and amount of problems** panel
- **Problem numbers / Page numbers** panel
- **Position of the answers / Sorting method** panel
- **Educational center, title, and additional text** panel

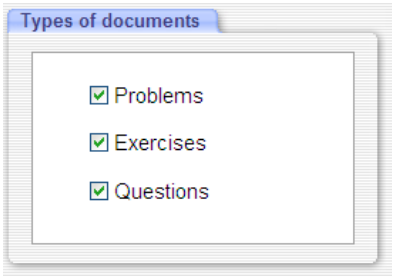
Welcome panel

Gives us a brief description of the Wizard.

Select the subject panel

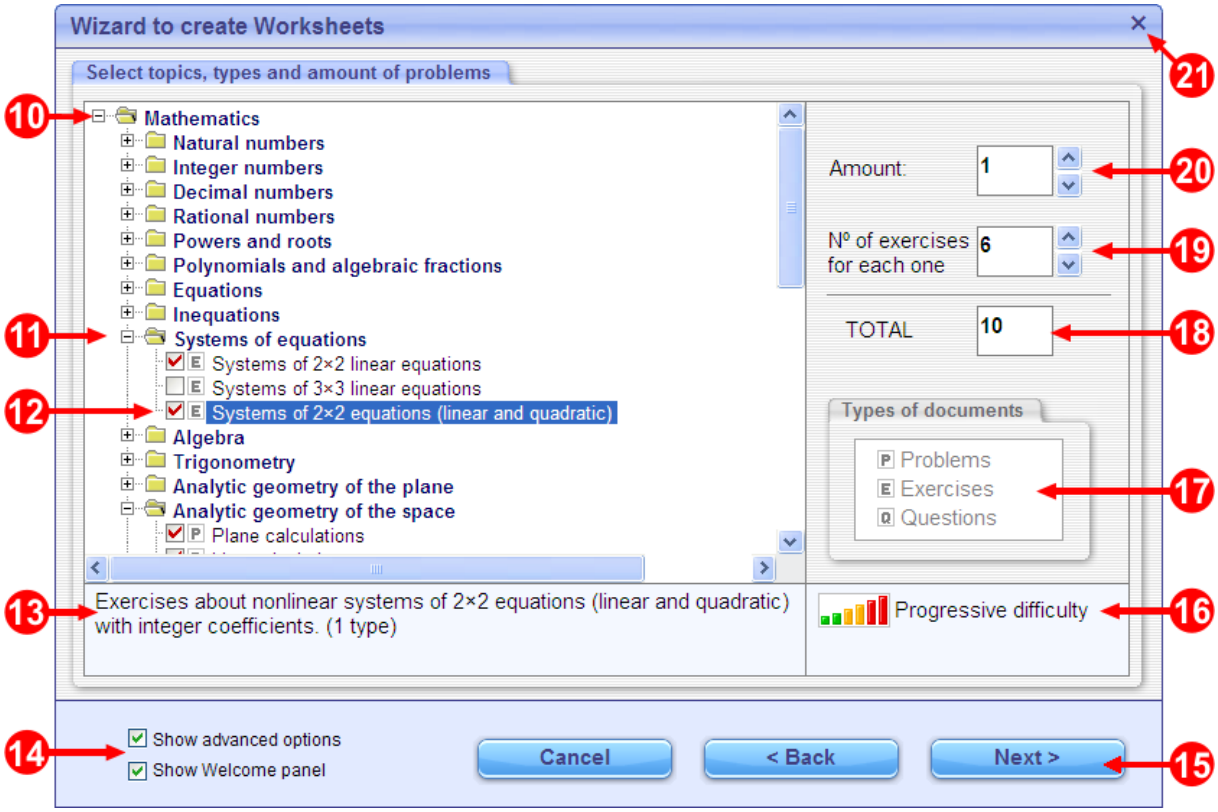
Allows us select the subject of the problems we want create.

Types of documents panel



Lets us filter the types of documents: **Problems, exercises** or **questions**.

Select topics, types and amount of problems panel



10 **Subject** folder

Displays the name of the subject previously selected.

11 **Topic** folder

Displays the name of the topic.

12 **Type of document mark: Problem, Exercise, Question**

Shows the name and type of document according to the mark to the left of each name:
[P] Problems, **[E]** Exercises, **[Q]** Questions.

13 **Description of the current problem**

Displays extended information about the problem, exercise or question selected.

14 **View options**

Allows us show or hide panels of the **Wizard** window:

Show advanced options
When this option is activated we can access the followings panels:
- **Types of documents** panel.
- **Problem numbers / Page numbers** panel.
- **Position of the answers / Sorting method** panel.

Show Welcome panel
When this option is activated the Welcome panel of the **Wizard** window is shown.

15 Buttons

Cancel button
Closes the **Wizard** window.

Back button
Shows previous panel of the **Wizard** window.

Next button
Shows next panel of the **Wizard** window.

16 **Difficulty level** mark

Indicates the difficulty level of the selected problem. The difficulty level may be:
Progressive difficulty:

★☆☆ **Low difficulty**

★★☆ **Medium difficulty**

★★★ **High difficulty**

◆ **Note**
The **Difficulty Progressive** function does not work if the worksheet is created when the **Unsorted** option is activated in the ➔ **Sorting method** panel.

17 Legend about **Types of documents**

Shows the type of document according to the mark to the left of each:
[P] Problems, **[E]** Exercises, **[Q]** Questions.

18 **Total amount of documents (problems)**

Shows the total number of documents (problems, exercises and questions) selected.

◆ **Note**
We cannot create more than 500 problems in a single worksheet.
If we need more than 500 problems, we have to distribute them in various worksheets with 500 or less problems in each one.

19 **Amount of elements in each exercise or question**

If the document type is exercise or question, we can specify the number of items we want to create within each.
The elements are sorted alphabetically from **a** to **z** (26 elements is the maximum amount).
The default amount is 6.
The minimum amount is 2.
The maximum amount is generally 26.

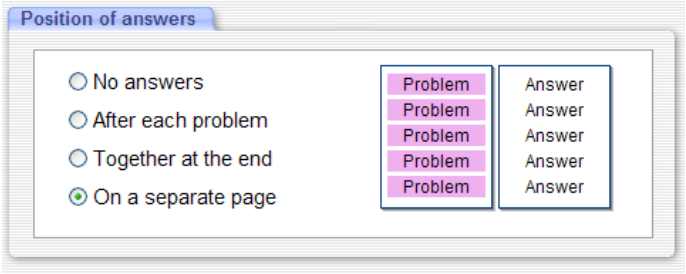
20 **Amount of problems (exercise or question)**

It allows us specify the amount of problems we want to create of the selected type.
The default amount is 1.
The maximum amount is 99.

21 **Close** button

Closes the **Wizard** window.

Position of answers / Sorting method panel



Position of answers
Specifies four options for the position of the answers:

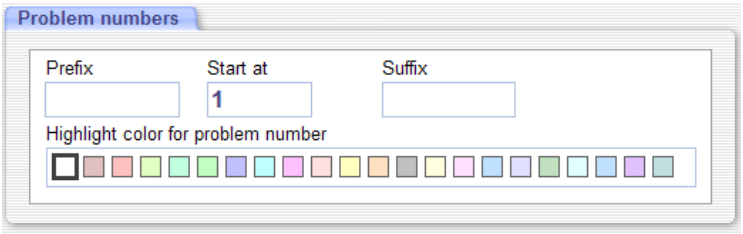
- **No answers**
- **Answers after each problem**
- **Answers together at the end**
- **Answers on a separate page**

➔ See **Worksheet** menu for further details.

Sorting method
Allows us sort the problems by topics or randomly (unsorted).

◆ **Note**
The **Difficulty Progressive** function does not work if **Unsorted** option is activated.

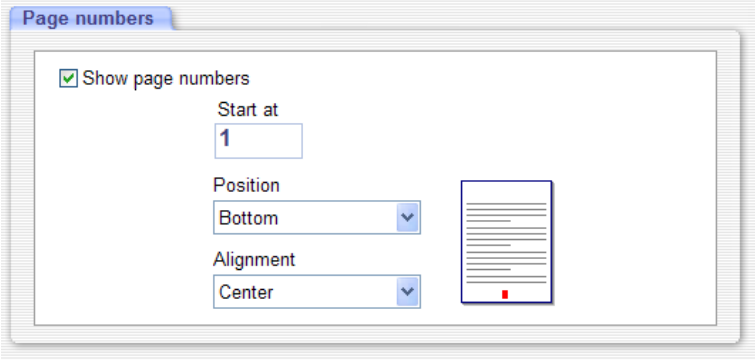
Problem numbers / Page numbers panel



Problem numbers
Sets the following four properties for the number of the problems:

Prefix:	Text that appears to the left of the number of each problem. Default is empty.
Suffix:	Text that appears to the right of the number of each problem. Default is a close parenthesis.
Start at:	Initial problem number (default is 1).
Highlight color:	Background color of the problem number text (default is white).

◆ **Note**
The initial number must be less than 2000.



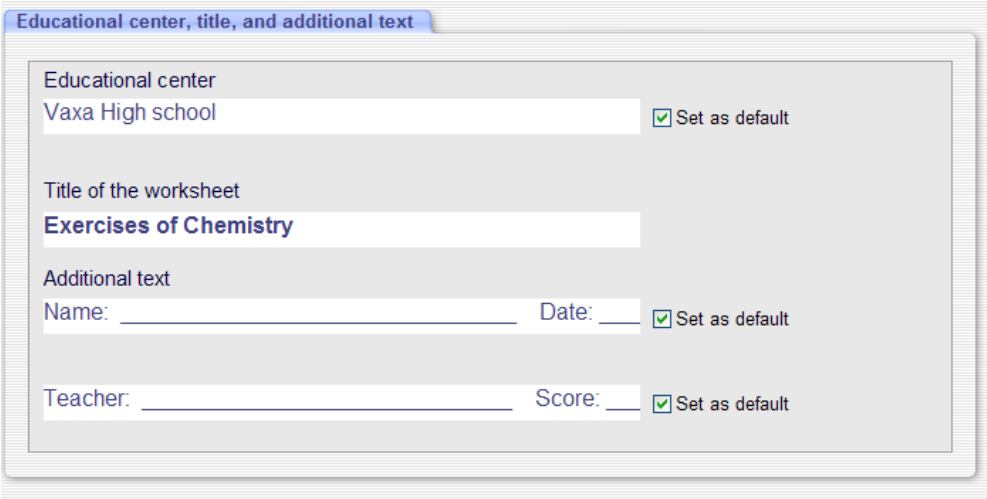
Page numbers
Sets the position of page number and its initial value:

Show page numbers: Click on this option to turn on/off page numbering.
Start at: Specifies the initial number (default is 1).
Position: Sets the placement of the page number:
- **Up**
- **Down**.

Alignment: Specifies the alignment of the page number:
- **Left**
- **Center**
- **Right**
- **Inside**
- **Outside**

◆ **Note**
The initial number must be less than 2000.

Educational center, title, and additional text panel



Allows us specify the text that leads all the pages of the worksheet.

Allows us specify **Educational Center**, **Title of the Worksheet**, and **Additional text**.
These lines of text will appear in the header of each page of the worksheet.

Set as default option:
Sets as default the corresponding text so that it is automatically included in the subsequent worksheets without the need to rewrite it.

Worksheet properties window

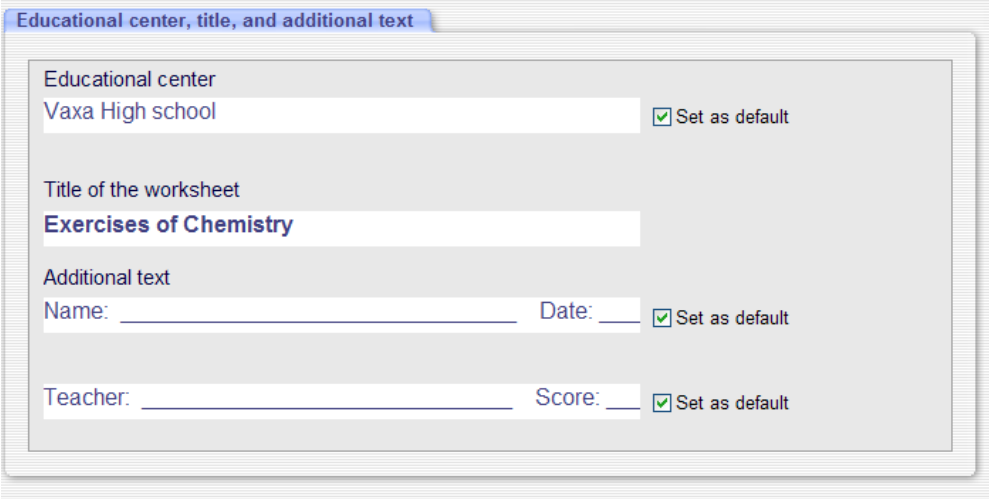
The **Worksheet properties** window allows us modify the properties of the current worksheet.

To access the **Worksheet properties** window click on **Worksheet / Worksheet properties...** menu in the **Main** window.

This window has the following panels:

- **Educational center, title, and additional text** panel
- **Sorting method** panel
- **Position of answers** panel
- **Problem numbers** panel
- **Page numbers** panel

Educational center, title, and additional text panel



Allows us specify the text that leads all the pages of the worksheet.

Allows us specify **Educational Center**, **Title of the Worksheet**, and **Additional text**.
These lines of text will appear in the header of each page of the worksheet.

Set as default option:
Sets as default the corresponding text so that it is automatically included in the subsequent worksheets without the need to rewrite it.

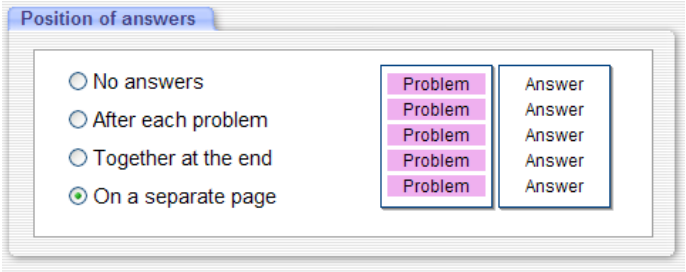
Sorting method panel

Allows us sort the problems by topics or randomly (unsorted).

◆ **Note 1**
We cannot re-sort a worksheet that was created with the **Unsorted** option activated.

◆ **Note 2**
The **Difficulty Progressive** function does not work if **Unsorted** option is activated.

Position of answers panel

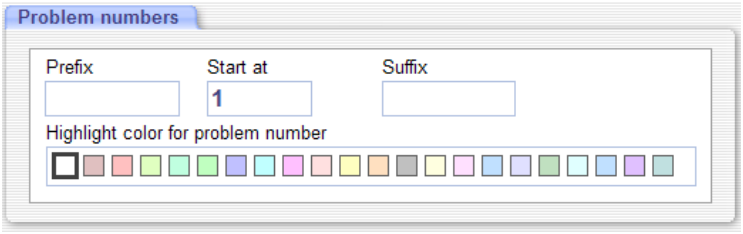


Specifies four options for the position of the answers:

- **No answers**
- **Answers after each problem**
- **Answers together at the end**
- **Answers on a separate page**

➔ See **Worksheet** menu in **Main** windows for further details.

Problem numbers option

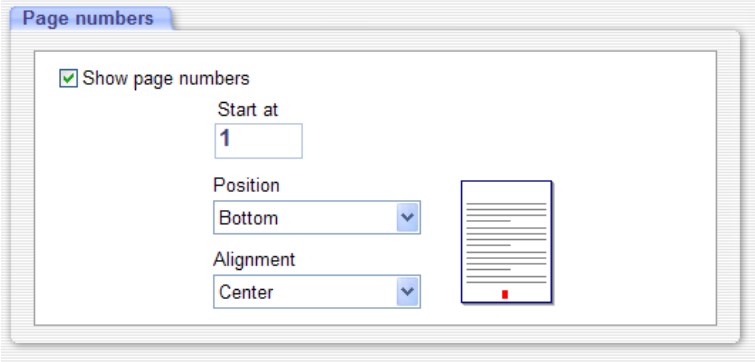


Sets the following four properties for the number of the problems:

Prefix: Text that appears to the left of the number of each problem. Default is empty.
Suffix: Text that appears to the right of the number of each problem. Default is a close parenthesis.
Start at: Initial problem number (default is 1).
Highlight color: Background color of the problem number text (default is white).

◆ **Note**
The initial number must be less than 2000.

Page numbers panel



Sets the position of page number and its initial value:

Show page numbers: Click on this option to turn on/off page numbering.
Start at: Specifies the initial number (default is 1).
Position: Sets the placement of the page number:
- **Up**
- **Down**.

Alignment: Specifies the alignment of the page number:
- **Left**
- **Center**
- **Right**
- **Inside**
- **Outside**

◆ **Note**
The initial number must be less than 2000.

Application setup window

The **Application setup** window allows you to modify various parameters of the application.

To access this window click on the **Setup / Application setup...** menu in the **Main** window.

This window has the following panels:
- **Educational Center, title, and additional text.**
- **Educational system.**
- **Problems numbers.**
- **Page Numbers.**
- **Position of answers.**
- **Sorting method.**
- **Decimal and list separators.**
- **Multiplication and division signs.**
- **Scientific notation.**
- **Notation for intervals.**
- **Notation for statistics.**
- **Currency.**
- **Geometrical optics: Sign convention for mirrors.**
- **Geometrical optics: Sign convention for lenses.**
- **Wizard window options.**
- **Editing buttons.**

Shortcut keys

List of keyboard shortcuts available in the **Main** window.

Ctrl + N	New worksheet
Ctrl + O	Open
Ctrl + S	Save
Ctrl + P	Print
Ctrl + F4	Exit
Alt + F4	Exit
Ctrl + R	Re-create worksheet
Ctrl + Z	Undo
Ctrl + Y	Redo
Ctrl + X	Cut
Ctrl + C	Copy
Ctrl + V	Paste
Del	Delete
Ctrl + E	Re-create selected problem
Ctrl + I	Insert a similar problem to the selected one
F1	Help / User's Manual (PDF document...)
F2	Move up selected problem
F3	Move down selected problem
F4	Open **Worksheet Properties** window
Up arrow	Move down current page
Down arrow	Move up current page
Left arrow	Move right current page
Right arrow	Move left current page
Page Up	Access to previous page
Page Down	Access to next page
Home	Access to first page
End	Access to last page

List of subjects, topics and types of problems

◆ **Note**
<R> Only available in the registered version.
Blue text: New in this version.

Physics

Unit conversion
- Mass conversion (metric)
- Length conversion (metric)
- Time conversion
- Area conversion I (metric)

<R> Area conversion II: Square meter and hectare
<R> Volume conversion I: (metric)
<R> Volume conversion II (metric)
<R> Volume conversion III (metric)
- Temperature conversion I (Celsius - Fahrenheit)

<R> Temperature conversion II (Celsius - Fahrenheit - Kelvin)
<R> Length conversion (metric - imperial)
<R> Mass conversion (metric - imperial)
- Convert radians to degrees
- Convert degrees to radians

Vector calculus
<R> Gradient
<R> Divergence
<R> Curl

Kinematics: Motion in 1 dimension
- Velocity unit conversion
- Motion with constant velocity
- Motion with constant acceleration

<R> Meeting and pursuit

Kinematics: Motion in 2 dimensions
<R> Objects launched horizontally
<R> Objects launched obliquely
<R> Uniform circular motion
<R> Tangential and normal components of the acceleration

Dynamics
- Block on a horizontal surface

<R> Dynamics of two or three objects connected by cords
<R> Hooke's Law word problems
<R> Centripetal force

Pressure and hydrostatics
- Basic pressure calculations

<R> Static fluid pressure
<R> Pascal's principle (hydraulic lift)
<R> Archimedes' principle

Work, energy, power and momentum
<R> Momentum and collisions
<R> Work done by constant force
- Kinetic Energy and Potential Energy I

<R> Kinetic Energy and Potential Energy II
<R> Spring force and spring energy
<R> Specific heat
<R> Specific and latent heat

Gravitational field
- Basic calculations

<R> Gravitational field and force for multiple point masses
<R> Orbits I: Kepler's third law
<R> Orbits II: Kinematics and dynamics

Physics (*concluded*)

Electric field
- Basic calculations
- Electric force and field for multiple point charges
- <R> Electric potential and work

Electric circuits
- Basic calculations
- <R> Resistors in series and parallel combination
- <R> Capacitors in series and parallel combination
- <R> Power and energy consumed by resistors
- <R> Energy stored in capacitors
- <R> Kirchoff's Laws I
- <R> Kirchoff's Laws II
- <R> Kirchoff's Laws III
- <R> Diode current limiting resistor
- <R> Passive Low/High Pass Filters (RL and RC)
- Series RL, RC, RLC AC circuits (I)
- <R> Series RL, RC, RLC AC circuits (II)

Magnetic field
- <R> Magnetic field/force of straight wires
- <R> Motion of charges in magnetic fields
- <R> Magnetic induction
- <R> Transformers

Simple Harmonic Motion (S.H.M.)
- <R> Kinematics of Simple Harmonic Motion
- <R> Dynamics of Simple Harmonic Motion
- Energy of Simple Harmonic Motion

Mechanical waves
- <R> Wave equation in one dimension

Sound
- <R> Doppler Effect
- <R> Sound Intensity and Sound Level

Optics
- <R> Light and electromagnetic waves
- Refraction
- <R> Geometric optics: Spherical mirrors
- <R> Geometric optics: Thin lenses

Special relativity
- <R> Special relativity

Quantum mechanics
- <R> Photoelectric effect
- <R> Emission spectrum of hydrogen atom

Nuclear physics
- <R> Nuclear reactions
- Nuclear mass and binding energy
- <R> Nuclear disintegration

◆ **Note**
<R> Only available in the registered version.
Blue text: New in this version.

Specifications

Description	**Worksheet Generator for Physics** is a Windows® software to create, save, load and print worksheets of Physics for educational purposes.
Maximum amount of problems in a worksheet	500
Maximum amount of problems of the same type	99
Maximum amount of pages in a worksheet	199
Amount of elements in an exercise or question	Minimum 1 Maximum 26 (or less)
First problem number	Between 1 and 1999
First page number	Between 1 and 1999
Positions of the problems answers	4 positions: - No answers - Answers after each problem - Answers together at the end - Answers in a separate page
Positions of the page number	11 positions *: - No page numbering (1) - Up, down (2) - Left, center, right, inside, outside (5) (*) 1 + 2 x 5 = 11
Highlight colors for problem number	22 colors

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