

The KBruch Handbook

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The KBruch Handbook

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Abstract

KBruch is a small program to practice calculating with fractions. Different exercises are provided for this purpose. The program checks user's input and gives feedback.

Chapter 1

Introduction

KBruch is a small program to practice calculating with fractions. Therefore 4 different exercises are offered.

- Fraction Task - in this exercise you have to solve a given fraction task. You have to enter numerator and denominator. This is the main exercise.
- Comparison - in this exercise you have to compare the size of 2 given fractions.
- Conversion - in this exercise you have to convert a given number into a fraction.
- Factorization - in this exercise you have to factorize a given number into its prime factors.

In all different exercises KBruch will generate a task and the user has to solve it. The program checks the input and gives a feedback about it.

KBruch counts how many tasks were solved at all and how many tasks were solved correctly. The statistics are shown to the user, but this part of the main window can be hidden. The user can reset the statistics at any point.

KBruch is very compact and focuses on the core idea of a task generator. An online help system provides context-sensitive help for the different situations.

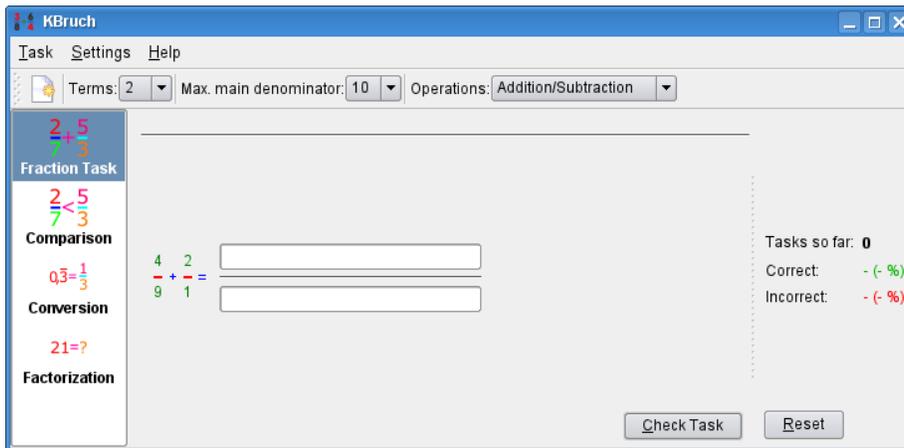
KBruch is free and licensed under the GNU Public License.

Chapter 2

Using KBruch

2.1 Main screen

Here is a screenshot of KBruch's main screen:



All action takes place in this screen. This ensures that KBruch is easy to use even for young users! The main screen is separated into 5 parts:

- the menubar with the 3 menus Task, Settings and Help
- the toolbar, where you can set the difficulty for the tasks given in the Fraction Task exercise
- the exercise chooser, where you can switch between the different exercises
- the task part, where you have to enter the result of the given task
- the statistical part, where you can see how many tasks have been solved correctly or attempted

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First you have to choose an exercise in the exercise chooser on the left side of the window. The task part will change according to the chosen task. The settings in the toolbar will be enabled, if you have chosen the exercise Fraction Task.

You will find an icon to generate a new task in the toolbar as well. This action is also available in the menu Task → New Task. This action is always enabled. If you have not solved the currently given task, a new task is generated and the given task is counted as not correctly solved.

You can hide the statistic part by dragging the vertical separator to the right.

If you terminate KBruch the currently chosen exercise will be saved and restored on next startup.

2.2 Statistical Part

In this part of the main screen you can see:

- how many tasks have been solved
- how many tasks have been solved correctly
- how many tasks have been solved incorrectly

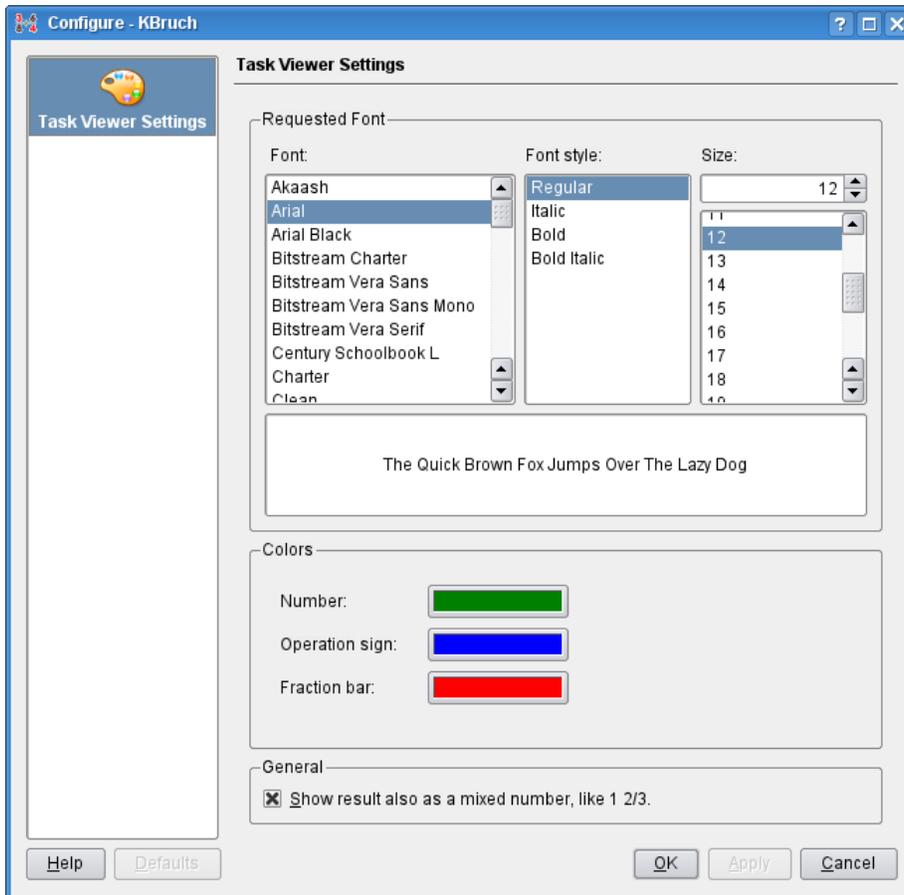
You can reset the statistics by clicking on the Reset button under the figures.

The statistics will be saved on KBruch's termination and restored on next startup.

2.3 Settings Window

In this part of the main screen you can adjust some general settings for task display. To open this dialog use Settings → Configure KBruch.

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In the top part of the dialog you can choose a font for displaying. In the lower part you can choose colors for the different parts of a mathematical expression. You can set whether to show the mixed number notation in the result. This notation is not known everywhere and can be disabled therefore.

The settings will be saved on KBruch's termination and restored on the next startup.

Chapter 3

Exercises

3.1 Exercise Fraction Task

In this exercise you have to solve a given task. Therefor you have to enter numerator and denominator. The difficulty of the generated task can be adjusted by the task parameters described below.

3.1.1 Task Parameters

There are 3 parameters which influence the difficulty of the generated tasks:

Terms The number of terms (separate fractions) given in each task. From 2 to 5, inclusive.

Max. main denominator The highest number KBruch will use as the main denominator in the tasks it sets. From a minimum of 10 to a maximum of 50.

Operations Operations which should be used in the task: Addition/Subtraction, Multiplication/Division or All Operations Mixed.

After you have changed the parameters you have to click on the New Task button in the toolbar to generate a task which uses the new parameters. You can also call this action from the menubar with Task → New Task.

NOTE

Your selection of the maximum main denominator will be reset to a default value every time you change the number of terms. So you should change the number of terms first and then select the maximum main denominator.

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If you have not solved the current task and call the New Task action, the task will be counted as not solved correctly. To prevent this you have to change the parameters after you solved the task but before generating a new one.

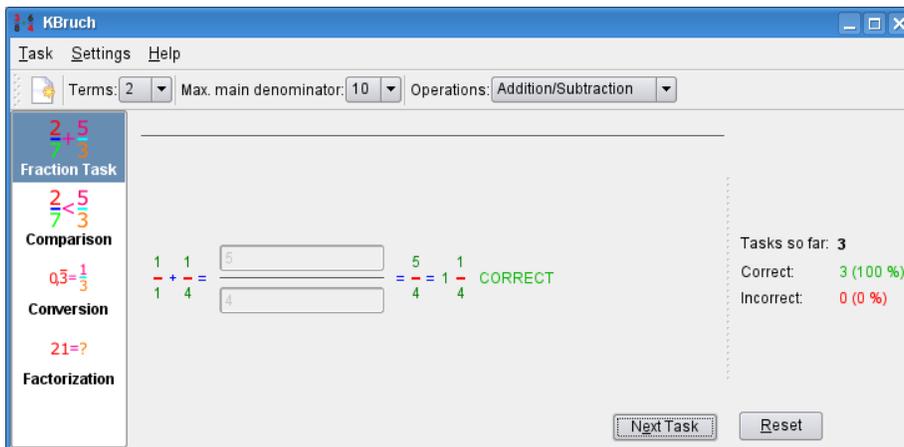
The chosen parameters will be saved on KBruch's termination and restored on next startup.

3.1.2 Solving Tasks

After you have solved a given task, you need to enter the result into the two input boxes. In the upper box you enter the numerator and in the lower box the denominator.

If the result is negative, you can enter a minus sign in front of the numerator or denominator. If the result is 0, just type a 0 in the numerator input field. If the result has a denominator of 1, you can leave the lower box empty.

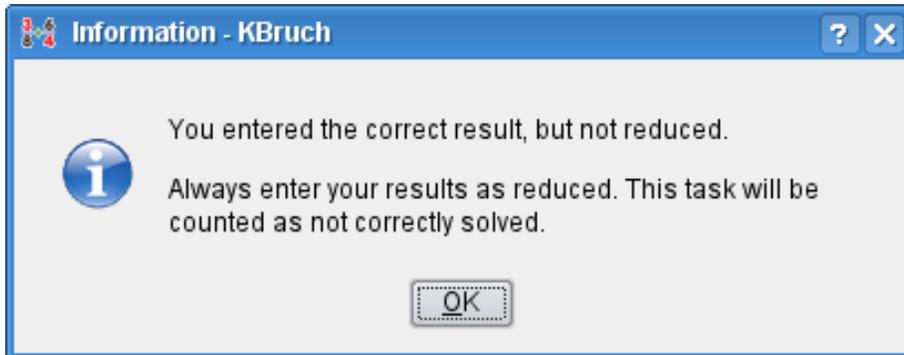
After you have entered the result you should click the Check Task button below the input boxes. KBruch will check your input and present the correct result. Therefore the screen changes a little, as you can see in the screenshot:



This task was solved correctly. The correct value is shown in 2 different forms. The second form just in front of the word CORRECT is only used in some countries and must be read as $2 + \frac{1}{5}$ in the given case.

NOTE

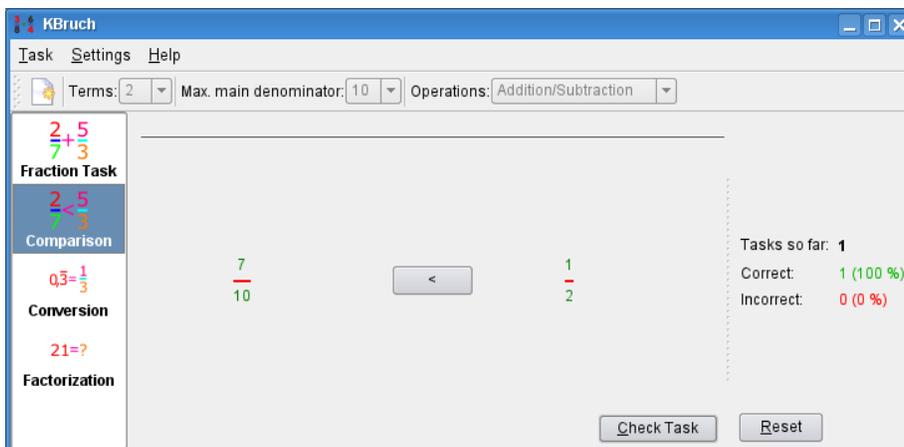
You always have to enter the result reduced, because most teachers only give all points to reduced results. KBruch will show you a short message like the one in the screenshot below, if you enter the correct result unreduced.



To continue with the next task, click on the Next Task button. If you want to change the parameters for the next task please do this before clicking on the Next Task button.

3.2 Exercise Comparison

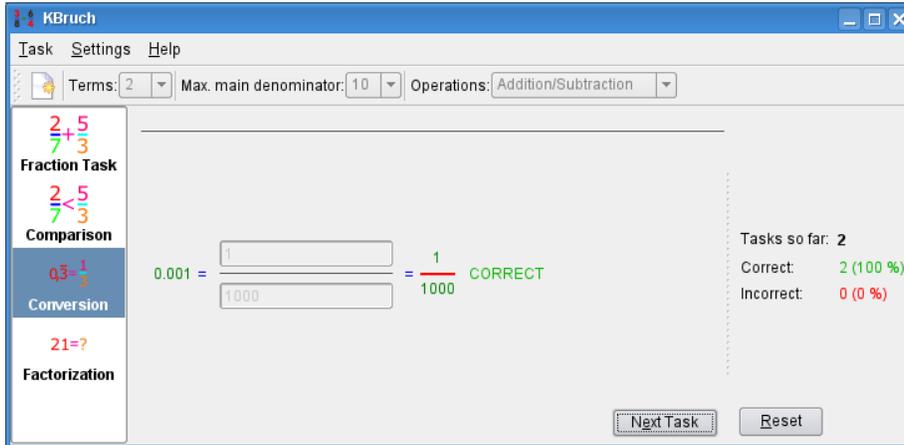
In this exercise you have to compare 2 given fractions. You have to choose the bigger fraction of both by selecting the correct comparison sign.



First choose the correct comparison sign. To toggle the comparison sign, you have to click on the button showing the comparison sign. After you have chosen the comparison sign click on the Check Task button. KBruch will check your input and present the correct result. After this step you will get to the next task by clicking on the Next Task button.

3.3 Exercise Conversion

In this exercise you have to convert a given number into a fraction. You have to enter numerator and denominator.



On the left side of the equal sign in the screenshot above you can see a recurring decimal. This means, that the fraction shown as a decimal has a repeating part. The repeating part is marked with the small bar above the numbers. Those numbers repeat ad infinitum.

After you have entered the numerator and denominator click on the Check Task button. KBruch will check your input and present the correct result. After this step you will get to the next task by clicking on the Next Task button.

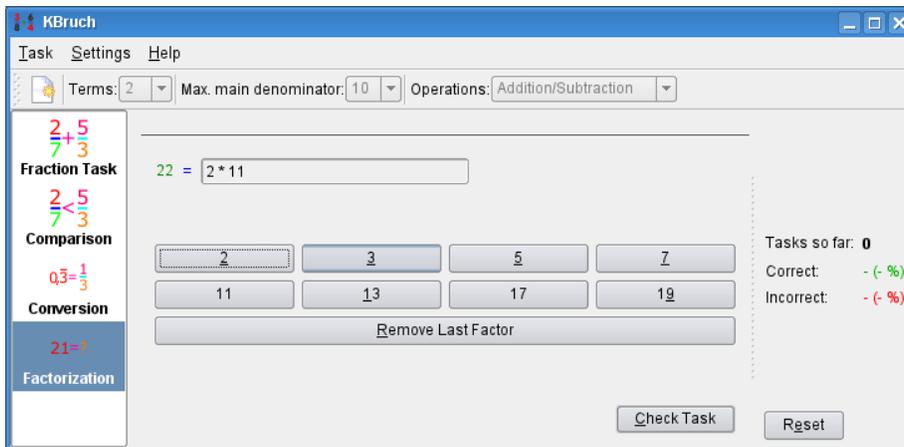
NOTE

Do not forget to enter the result reduced. Unreduced results will be counted as solved not correctly.

3.4 Exercise Factorization

In this exercise you have to factorize a given number into its prime factors. You have to enter all prime factors of the number.

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You can enter a factor by clicking on the prime factor buttons. The currently entered prime factors will be shown in the field next to the number to be factorized. You can remove the last entered prime factor by clicking on the Remove Last Factor button.

After you have entered all prime factors click on the Check Task button. KBruch will check your input and present the correct result. After this step you will get to the next task by clicking on the Next Task button.

In the screenshot at the top of this page you can see a '*' between the prime factors. This is the multiplication sign. The product of all prime factors must be the number you try to factorize.

NOTE

You have to enter all prime factors even when a prime factor repeats several times. Example: As prime factors of number 18 you have to enter 2, 3 and 3.

Chapter 4

Credits and License

KBruch

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Appendix A

Installation

A.1 How to obtain KBruch

KBruch is part of the KDE project <http://www.kde.org/> .

KBruch can be found in the kdedu package on <ftp://ftp.kde.org/pub/kde/> , the main FTP site of the KDE project.

A.2 Requirements

In order to successfully use KBruch, you need KDE > 3.1 .

KBruch itself can be found on [the KBruch home page](#) and it is part of the KDE Edu project

You can find a list of changes in the SVN commit messages.

A.3 Compilation and Installation

In order to compile and install KBruch on your system, type the following in the base directory of the KBruch distribution:

```
% ./configure
% make
% make install
```

Since KBruch uses **autoconf** and **automake** you should have no trouble compiling it. Should you run into problems please report them to the KDE mailing lists.