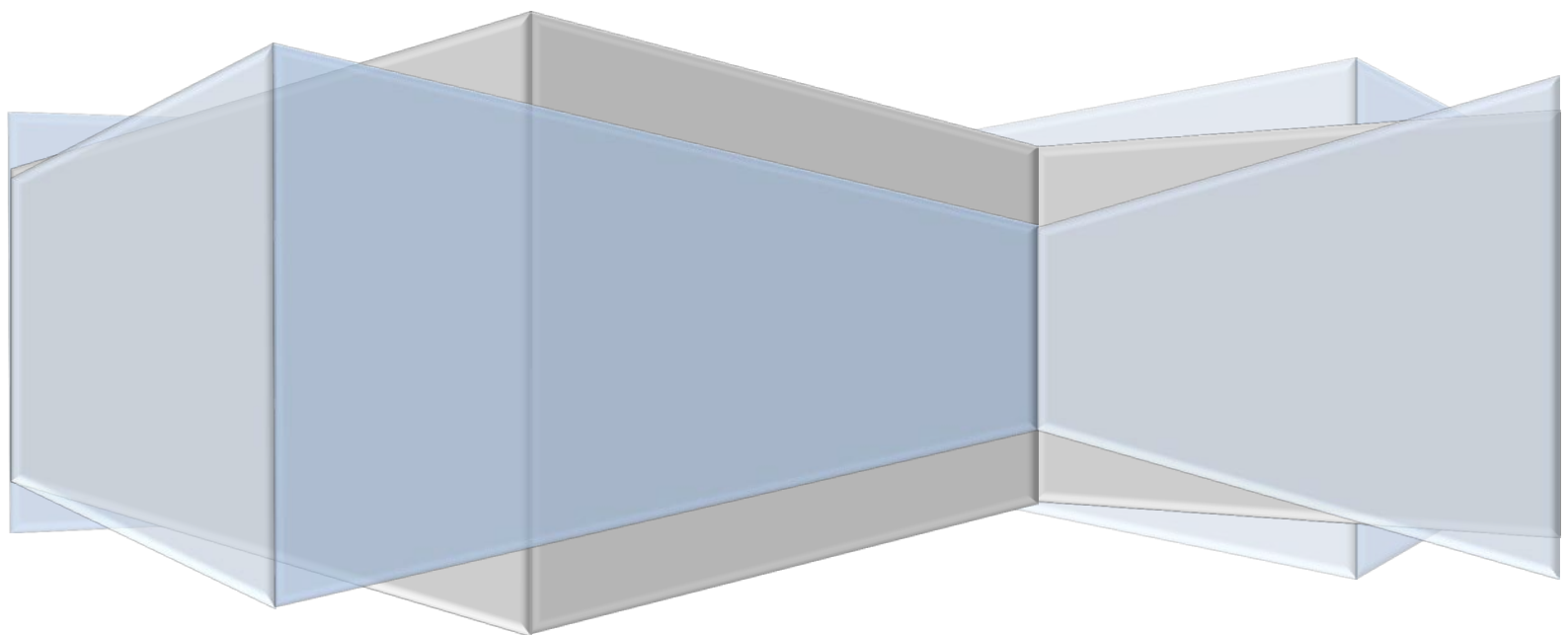


Maths Revision Tool

User Manual

Developed By Curtis Thompson



Contents

Introduction 2

Installation Instructions 3

Creating an Account and Logging In 4

Navigating the Menu..... 5

Selecting Topics to Revise 5

Printing Worksheets 6

Answering Questions and Receiving Feedback..... 6

Maths Codes for Answering Questions..... 8

Saving Questions 9

Viewing Saved Questions 9

Viewing Saved Feedback10

Deleting an Account and Changing a Password.....10

Moving Saved Data Files11

Common Errors.....11

Frequently Asked Questions.....15

Introduction

The Maths Revision Tool is a program designed to help with A-Level Maths revision, based on the 2014 Edexcel Specification. The units which can be revised on the program are Core 3 and Core 4 Mathematics, with the topics including:

- Algebra and Series
- Coordinate Geometry
- Differentiation
- Functions
- Integration
- Numerical Methods
- Trigonometry
- Vectors

The Maths Revision Tool is designed to make revision of these maths units simple. Users can choose to answer questions from any of the topics directly on the system, or choose to print off worksheets to be answered later. The Maths Revision Tool will give mark the users answers and give them feedback on questions they got wrong. This feedback can be saved on the system, and questions can also be saved to be answered at a later date. To allow the user to enter mathematical functions such as fractions, binomials and indices the Maths Revision Tool has a built-in code system that is simple to use – explained in the “Maths Codes for Answering Questions” section on page 8.

Developed by Curtis Thompson

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Installation Instructions

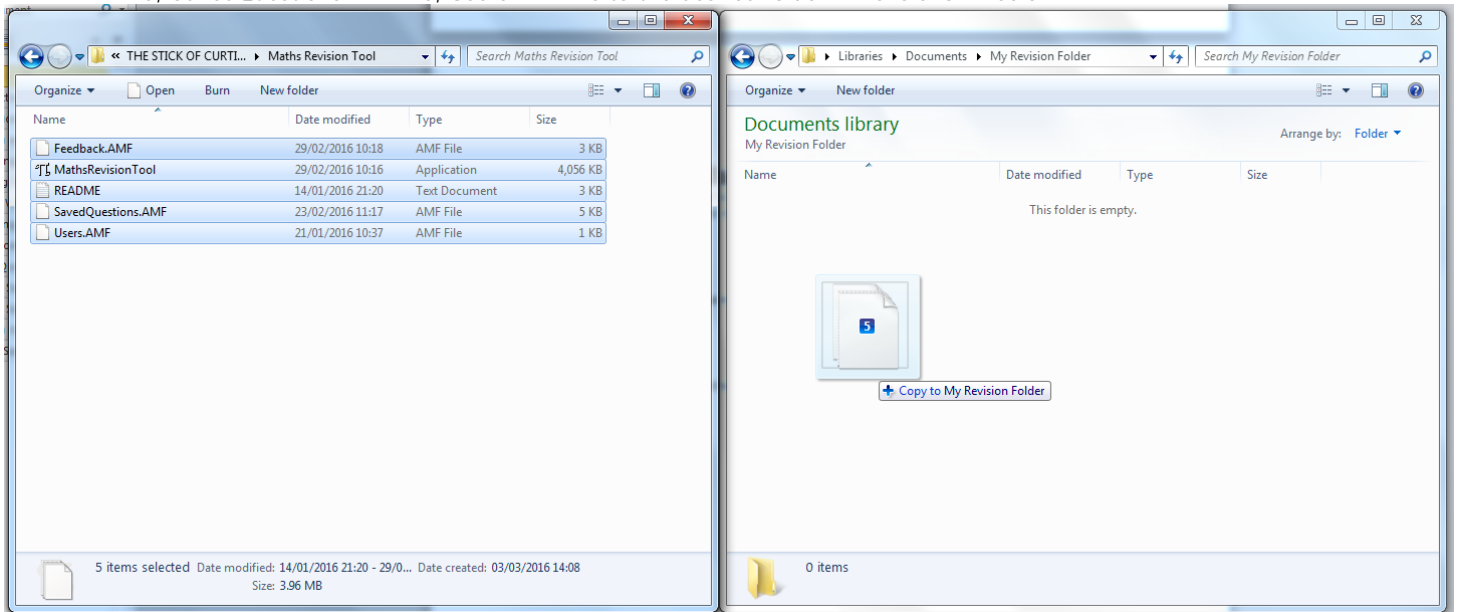
The Maths Revision Tool requires no installation process, and can be run straight from the .exe file. The required hardware and software to run the program are:

- Windows 7 operating system or greater
- 5 MB disk space

There is also non-essential hardware and software which allows the user to use all functions of the program, these are:

- Extra disk space (5 MB recommended)
- Black and white printer

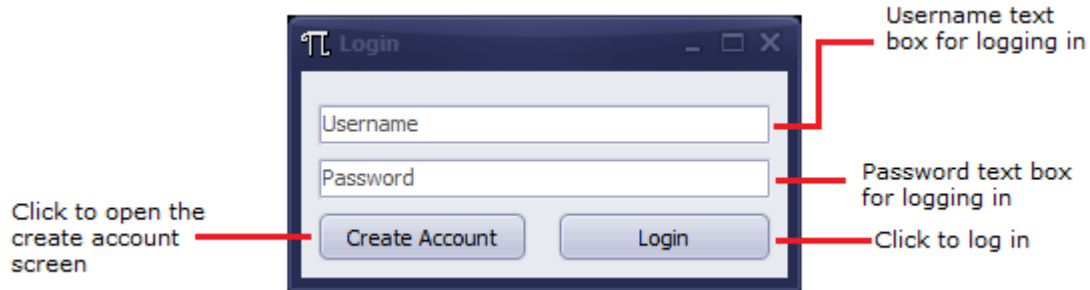
To then use and run the program, copy the MathsRevisionTool application file, README text file, Feedback.AMF file, SavedQuestions.AMF file, Users.AMF file to the desired folder. This is shown below:



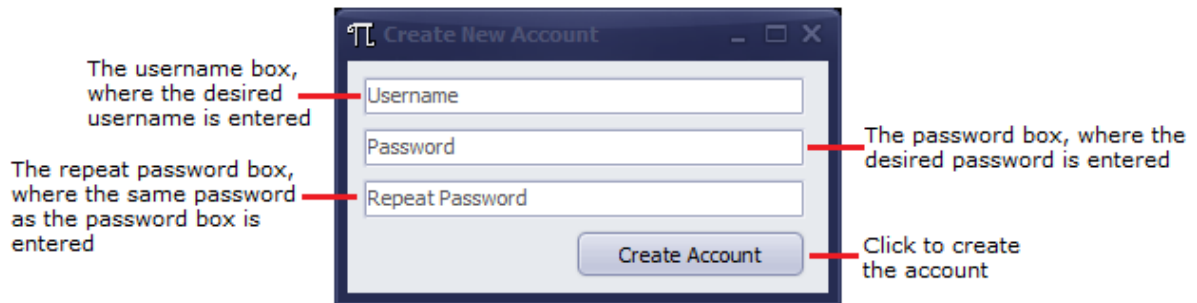
The Feedback.AMF, SavedQuestions.AMF and Users.AMF files are not required when the program is first used, and the program will create these files if they cannot be found.

Creating an Account and Logging In

There are no initial accounts that can be used when the program is first used. When the program is first opened, the following screen will appear:



To create an account, select the "Create Account" option. The following screen should now appear:

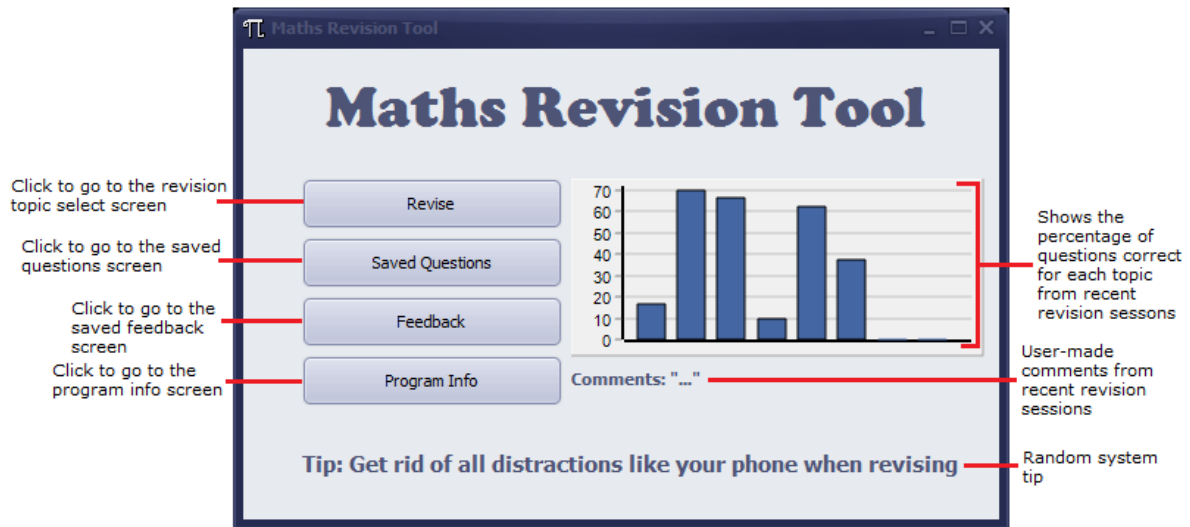


Type a username into the username box. The desired username must not already be in use, and must be between 6-15 characters. Type a password into the two password boxes; these passwords must match and be between 6-15 characters. If an account is created successfully, a confirmation box will appear and the login screen will be shown.

The user can then log in by typing the correct username and password in the corresponding boxes on the login screen. If login is successful, the main menu will be shown.

Navigating the Menu

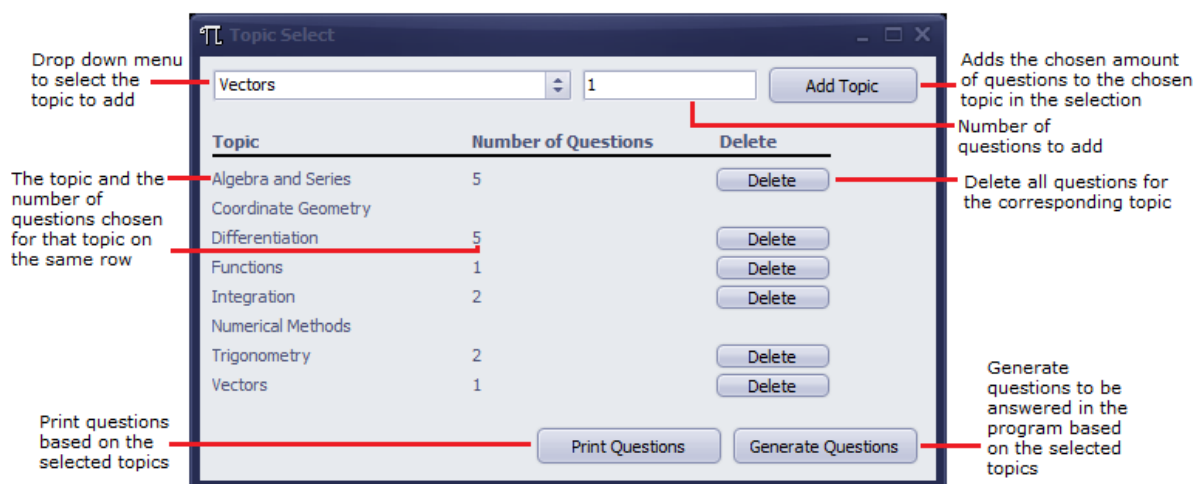
The menu looks like the following:



The bar chart shows the percentage of questions that the user got correct for each topic from the last 10 revision sessions on the system. The bars are ordered in alphabetical order of topic, but the topic that a bar represents can also be viewed by hovering over that bar.

Selecting Topics to Revise

To select a topic to revise, the topic can be chosen from the drop down list in the top left of the screen. The number of questions can also be selected, and this must be between 1 and 20. Clicking the "Add Topic" button will add the chosen amount of questions to the chosen topic, and the screen should look similar to the following:



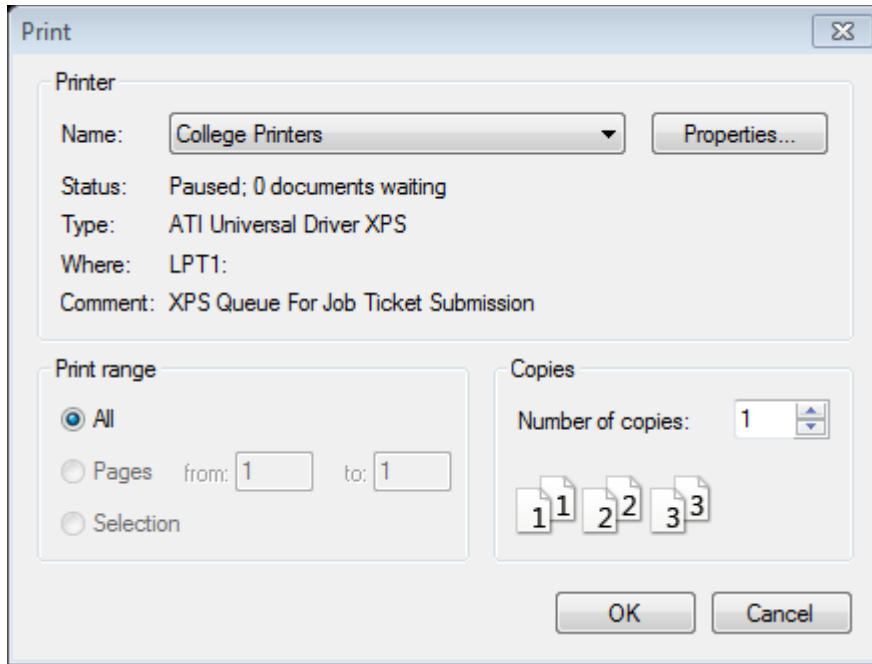
The following topics can be chosen; Algebra and Series, Coordinate Geometry, Differentiation, Functions, Integration, Numerical Methods, Trigonometry, Vectors. A maximum of 20 questions can be selected at once from any combination of topics.

Questions can be removed by clicking the "Delete" button on the same row as the topic for which questions should be deleted.

The questions can be answered on the system by selecting the "Generate Questions" option (more help is given in the "Answering Questions and Receiving Feedback" section on page 6), or can be printed off by selecting the "Print Questions" option (more help is given in the "Printing Worksheets" section on page 6). Topics must have been chosen to select either of these options.

Printing Worksheets

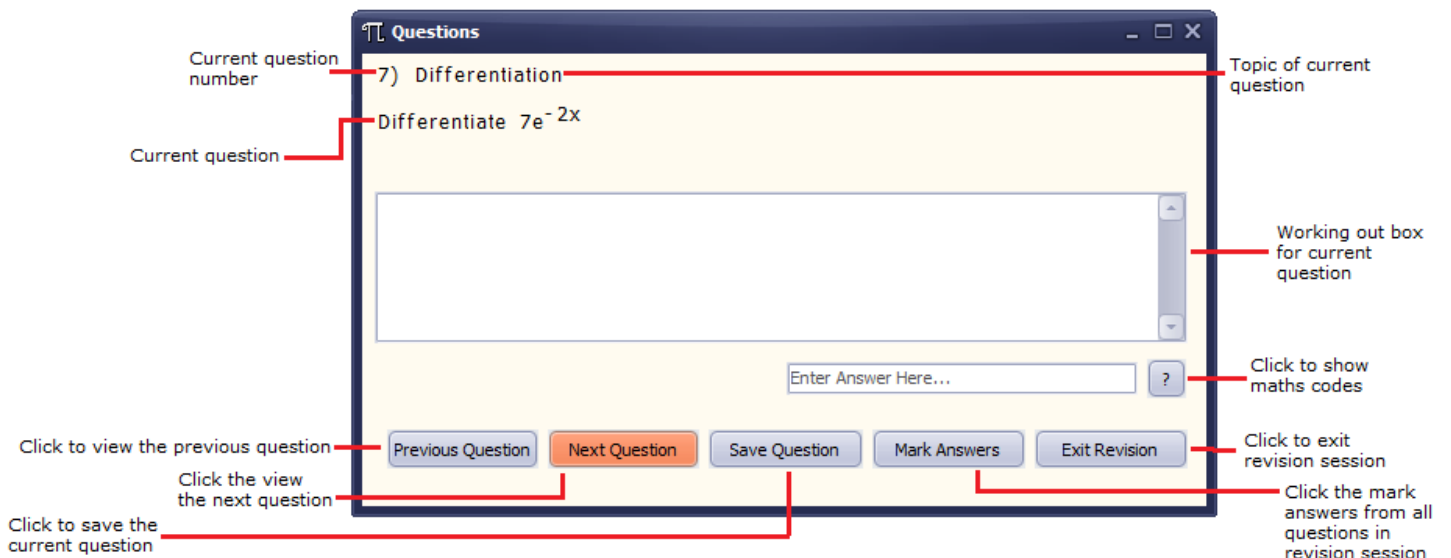
To print a worksheet, select the "Revise" option on the main menu and then select topics as shown in the "Selecting Topics to Revise" section on page 5. Selecting the "Print Questions" option once topics have been selected will allow the user to print off a worksheet with questions from the chosen topics, as a print dialog will appear like the following:



Once the user has pressed "OK" and chosen to print, an option will appear to also save the questions on the system. After an option is selected the main menu will be shown.

Answering Questions and Receiving Feedback

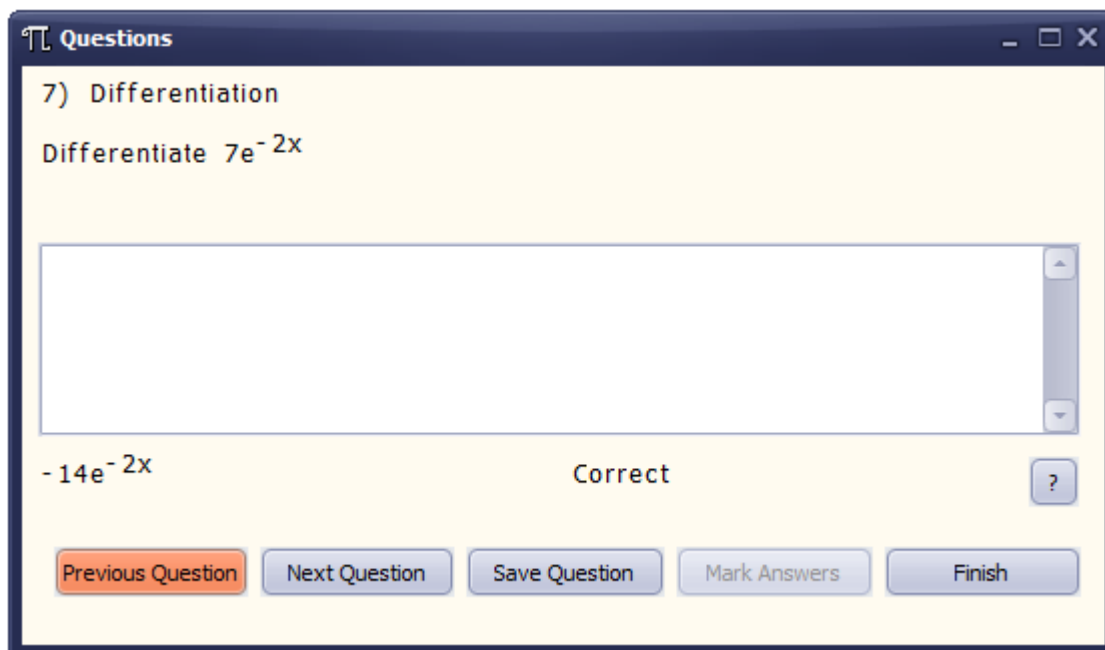
When topics have been chosen and the questions have been generated, the screen will look like the following:



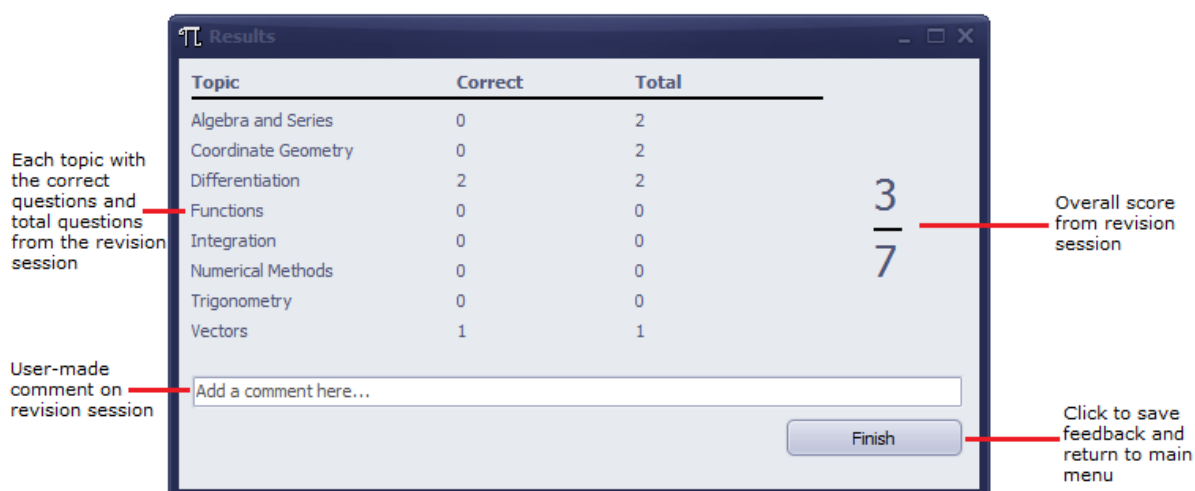
The large box in the centre is for working out the question. The working out will not be marked and is simply there to help with the calculations. The answers should be entered into the answer box, using the maths codes when required (more help in the "Maths Codes and Answering Questions" section on page 8).

The questions can be navigated by using the "Previous Question" and "Next Question" buttons. If on the first question the "Previous Question" button will be greyed out and cannot be used, if on the last question the "Next Question" button will be greyed out and cannot be used. Both will be greyed out if there is only one question.

When all questions have been answered, or when the user is finished, click the "Mark Answers" button to mark the answers given to all questions. They can then be viewed with the marking and correct answers in the same way as before, by using the "Previous Question" and "Next Question" buttons. The screen will look like the following:



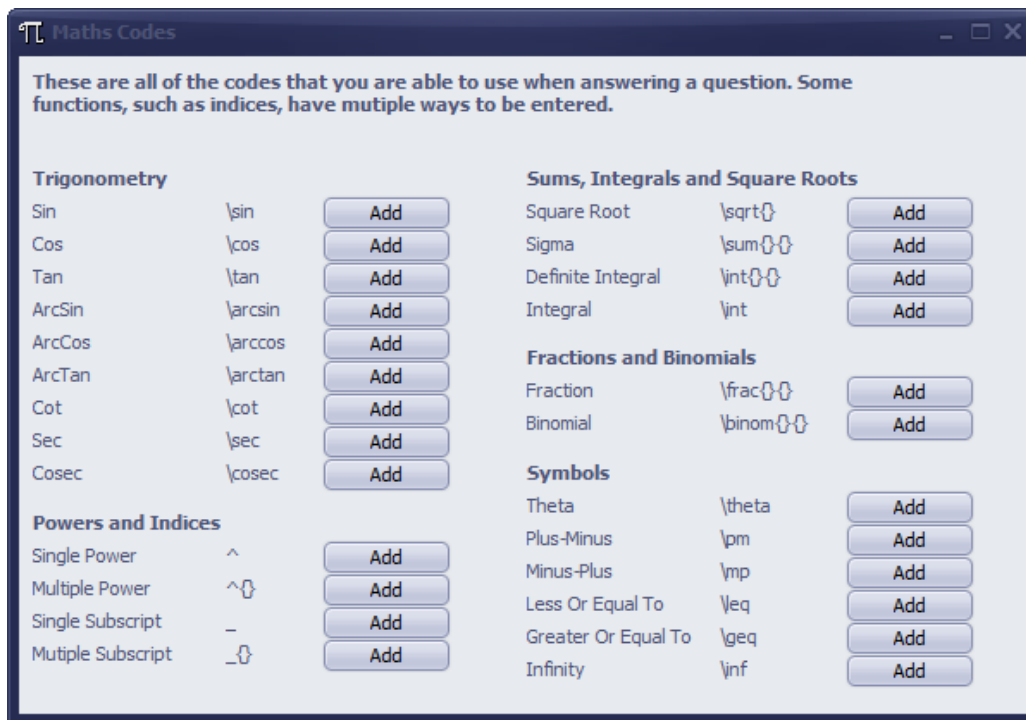
Either "Correct" or the correct answer will be written where the answer box was, while the users answer will be shown on the left. Clicking the "Finish" button will show an overview of the revision session, like the following:



Maths Codes for Answering Questions

The maths codes available in the Maths Revision Tool are there to allow users to use more characters and mathematical symbols than are available on the standard keyboard. They are entered into the answer box the same as any other characters. They can be accessed in two ways.

The first way is through the main menu and selecting the “Program Info” option. From there select the “View Maths Codes” option. The screen shown should look like the following:



The alternative method is to click the question mark button whilst answering a question and the same screen should appear. Opening the screen does not affect questions being answered.

Clicking the “Add” button next to each code will add the code to the answer box, and this is an alternative to typing the codes out. A complete list of codes is given below:

Code	Display	Purpose
<code>\sin</code>	Sin	Mathematical function Sine
<code>\cos</code>	Cos	Mathematical function Cosine
<code>\tan</code>	Tan	Mathematical function Tangent
<code>\arcsin</code>	Arcsin	Mathematical function ArcSine
<code>\arccos</code>	Arccos	Mathematical function ArcCosine
<code>\arctan</code>	Arctan	Mathematical function ArcTangent
<code>\cot</code>	Cot	Mathematical function Cotangent
<code>\sec</code>	Sec	Mathematical function Secant
<code>\csc</code>	Cosec	Mathematical function Cosecant
<code>^</code>	a^b	Single character index(power)
<code>^{}{}</code>	a^{bc}	Multiple character indices
<code>_</code>	a_b	Single character subscript
<code>_{}{}</code>	a_{bc}	Multiple character subscripts
<code>\sqrt{}{}</code>	\sqrt{a}	Square root function
<code>\sum{}{}</code>	\sum_b^a	Summation(sigma) function
<code>\int{}{}</code>	\int_b^a	Definite integral sign
<code>\int</code>	\int	Integral sign
<code>\frac{}{}</code>	$\frac{a}{b}$	Fraction
<code>\binom{}{}</code>	$\binom{a}{b}$	Binomial

θ	Θ	Greek letter theta
\pm	\pm	Plus-Minus symbol
\mp	\mp	Minus-Plus symbol
\leq	\leq	Less Or Equal To symbol
\geq	\geq	Greater Or Equal To symbol
∞	∞	Infinity symbol

Saving Questions

Questions can be saved whilst answering them. To save a question, click the "Save Question" button. The following confirmation screen will be shown:



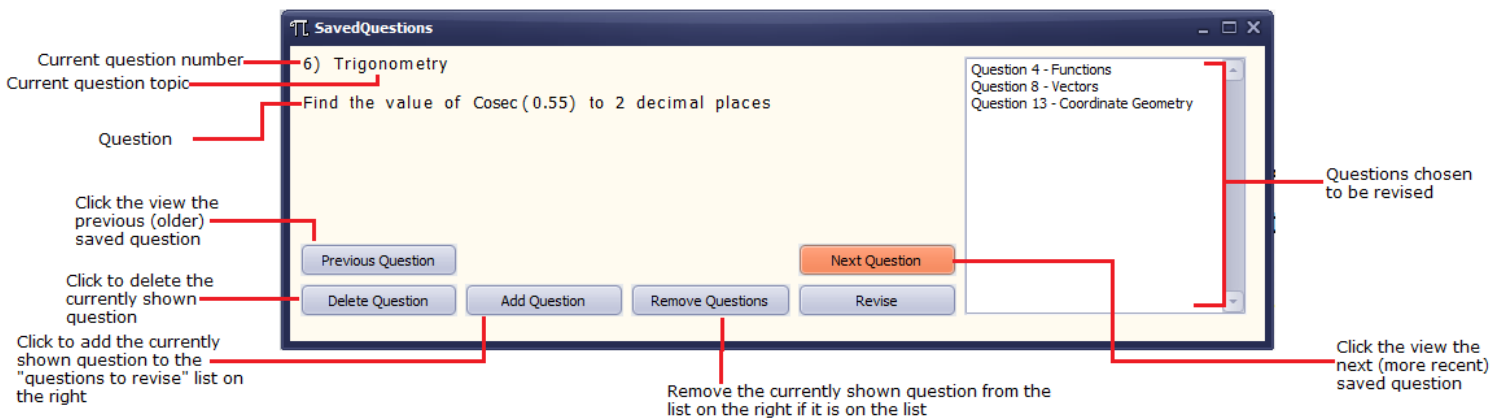
A question cannot be saved twice. If the question has been saved in the past, an error box will appear like the following:



Saved questions can be accessed from the main menu by selecting the "Saved Questions" option.

Viewing Saved Questions

To view saved questions, go to the main menu and select the "Saved Questions" option. The following screen should appear which allows the user to look at question saved on their account.



To revise some of the questions, they can be added to the list of questions to revise by clicking the "Add Question" button at the bottom of the screen. The question can later be removed by clicking the "Remove Questions" button, but the question must be on the screen to be removed. Once at least one question has been selected, click the "Revise" button to start revision. Up to 20 questions can be revised at once.

Viewing Saved Feedback

To view previous feedback from revision sessions, go to the main menu and select the “Feedback” option. The following screen should appear which allows the user to look at each piece of feedback received from the system.

Topic that was most revised during the revision session: Functions

Date feedback was received: 03/02/2016

Total score from revision session: 2 out of 20 (10%)

User-made comments when feedback was received: [Text input field]

Score received on each topic and total possible score for that topic: Bar chart showing scores for Functions and Algebra.

Click to view the previous (more recent) feedback: Back button

Delete currently shown feedback: Delete button

Click to view the next (older) feedback: Next button

The score for each topic is displayed on the bar chart, with the blue bars representing the users score for that topic and the orange bars representing the total possible score for that topic. Bars are ordered in alphabetical order for each topic, but also hovering over the bar will show which topic it represents.

Deleting an Account and Changing a Password

To delete an account or change an accounts password the user must be able to log into that account. When logged in, select the “Program Info” option from the main menu. The following screen will then appear:

Click to delete the currently logged in account: Delete Account button

Click to view the maths codes available when answering questions: View Maths Codes button

Click to see the change password options: Change Password button

To delete the account, click the “Delete Account” button. A dialog box will appear asking “Are you sure you want to delete your account?” and selecting “Yes” will delete the account and return to the login screen. Selecting “No” does nothing except close the dialog box.

To change the password of the account, click the "Change Password" button. Further options will appear; two text boxes and a "Confirm Change" button. In the text boxes, type the new password for the account. The passwords entered must match and be between 6-15 characters. A confirmation box will appear if passwords were changed successfully.

Moving Saved Data Files

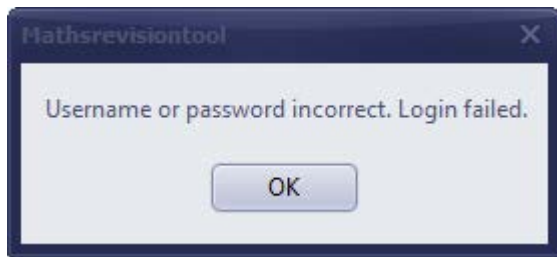
The three required saved data files are:

- Feedback.AMF (which holds feedback for all users)
- SavedQuestions.AMF (which holds saved questions for all users)
- Users.AMF (which holds all usernames and passwords)

These three files must be in the same folder as the program for the program to access them. When moving the program, if the user wants to keep the saved data they must also move the saved data files to the same location.

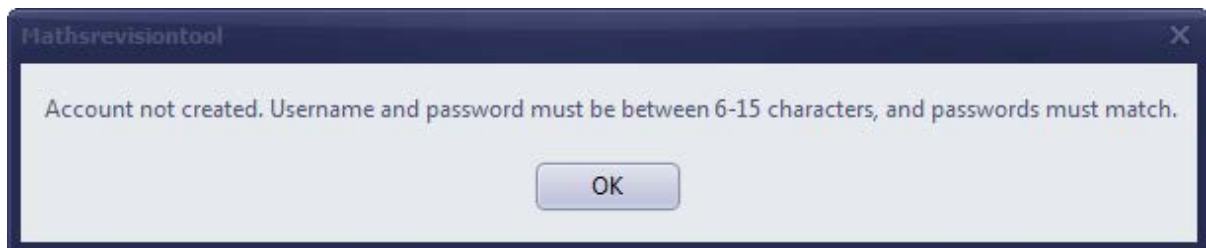
Common Errors

Incorrect Username or Password



This error occurs on the log in screen when trying to log in with incorrect details. If an account has been created, try logging in again. If not, create a new account (more help in the "Creating and Account and Logging In" section on page 4).

Account Not Created

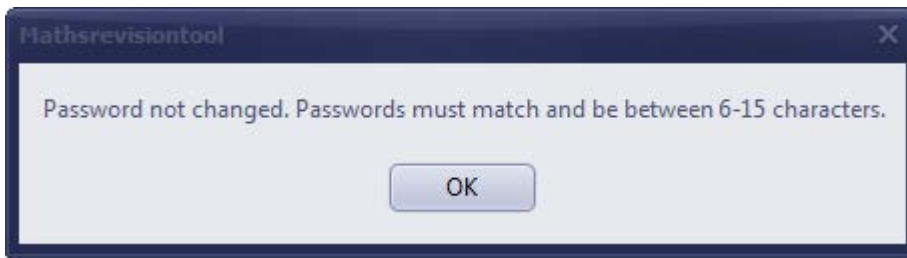


This error occurs when trying to create an account, but the entered details do not match the following criteria:

- User does not already exist
- Username is between 6-15 characters
- Password is between 6-15 characters
- Passwords entered match

Ensure all of the criteria are met and then try again.

Passwords Not Changed

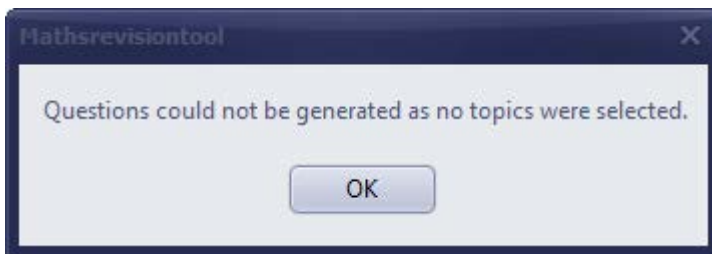


This error occurs on the program info screen when trying to change the password, however the passwords must match the following criteria for the change to occur:

- Passwords entered match
- Password is between 6-15 characters

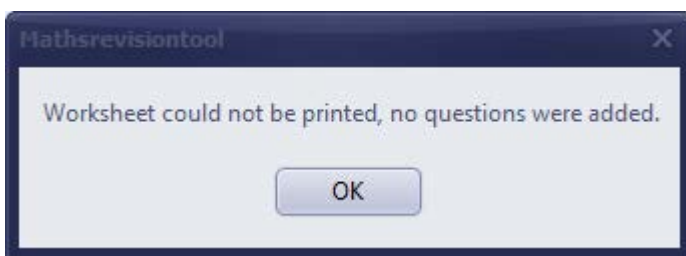
Ensure the criteria above are met and then try again.

Questions Could Not Be Generated



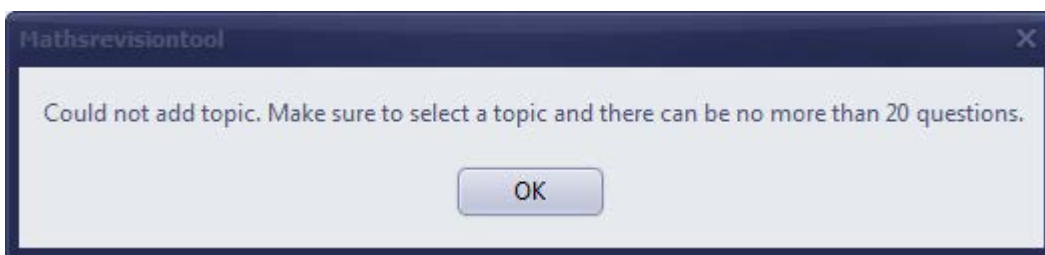
This error occurs on the topic select screen when selecting the "Generate Questions" option but no topics have been selected. 1-20 questions must be selected using the add topic feature on the screen and then questions can be generated. For more help view the "Selecting Topics to Revise" section on page 5.

Worksheet Could Not Be Printed



This error occurs on the topic select screen when selecting the "Print Questions" option but no topics have been selected. 1-20 questions must be selected using the add topic feature on the screen and then the worksheet can be printed. For more help view the "Selecting Topics to Revise" section on page 5 and the "Printing Worksheets" section on page 6.

Could Not Add Topic



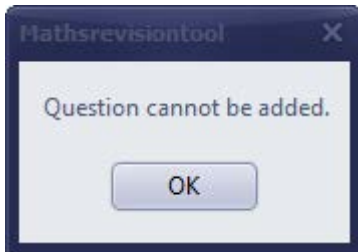
This error occurs on the topic select screen when attempting to add more than a total of 20 questions to the selection. No more questions can be added once the 20 question limit has been met, so to add questions of a different topic – the questions of one topic must be removed. For more help view the “Selecting Topics to Revise” section on page 5.

Question Cannot Be Saved



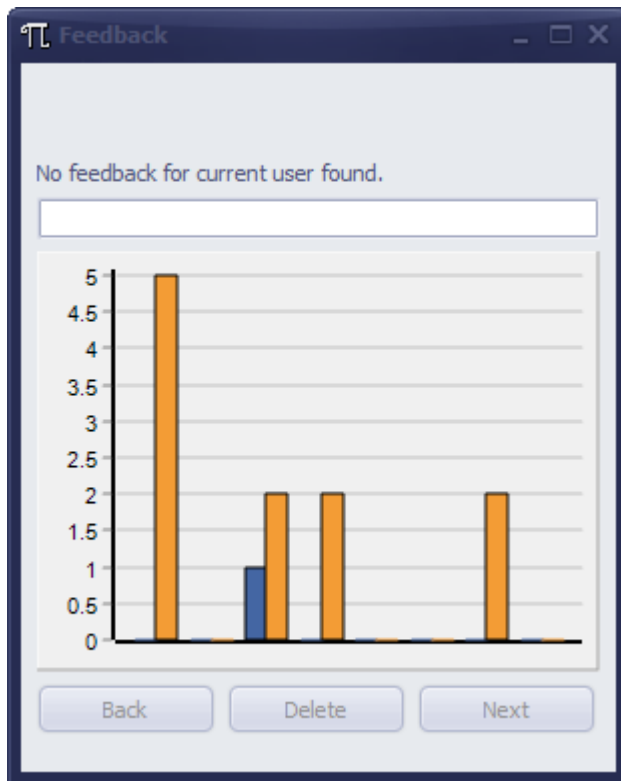
This error occurs on the question screen when trying to save a question that has already been saved. If this error appears it means the question has already been saved and can be viewed by selecting the “Saved Questions” option on the main menu. For more help view the “Saving Questions” section on page 9.

Question Cannot Be Added



This error occurs when trying to add a question to the selection list on the saved questions screen. This error is either caused by the question already being on the list, or there already being 20 questions on the list. The fix this error, check the list to see if the current question number is already on it, and if so the question does not need to be added. If the question is not on the list then there are already 20 questions on the list, and a question must be removed before the current question can be added. For more help view the “Viewing Saved Questions” section on page 9.

No Feedback for Current User



This error occurs when the user opens the feedback screen but the program cannot find any feedback saved for the current user. If feedback should exist, check to make sure a Feedback.AMF file is in the same folder as the program, and move the file if they are not in the same folder. If no Feedback.AMF file exists there is no saved feedback, and it must be created by completing a revision session.

Frequently Asked Questions

I cannot log in, what should I do?

Both the username and password are case-sensitive so make sure that caps lock is not on and you are not holding shift, then try again.

I cannot find a certain type of question, where will it be?

Questions for all topics can be found by choosing the correct topic in the topic select screen, but unique questions cannot be found as the program generates the unique questions randomly. If the correct topic cannot be found then it is not part of the 2014 Edexcel specification for Core 3 and Core 4.

Why has the program marked my answer as incorrect even though it is correct?

For certain questions the answers must be given in a specific format, or to a certain degree of accuracy (for example, to two significant figures). Make sure the format matches what is asked in the question, or try entering the answer in a different format. If the problem still persists, see the format given in the correct answer by the program and then copy that format for future answers.

I was typing my answer in the answer box, then the question disappeared, how do I get it back?

This error can sometimes occur when using the maths codes. Just click to view the next or previous question and then return to the question. If you are in a revision session with only one question, save the question, exit the revision session and then load in back through the saved questions screen.