

Help with on-line Assessment

A guide to assessment on www.MathsNetAlevel.com

Version 2.4. Check the site regularly for updates

A full formative assessment system, whereby students can attempt various kinds of tests and challenges, get instant feedback and have their scores recorded to view later. The teacher can also access this data and use it for assessment and feedback. In addition the teacher can set tasks on-line, leave comments and request repeats.



Student	Date	Score%	Questions	Redo
Alan J. Bennett	15 Dec, 2009	100	✓✓✓✓✓✓✓✓	
Wendy Smith	29 Dec, 2009	100	✓✓✓✓✓✓✓✓	
Jonathan Wong	5 Jan, 2010	100	✓✓✓✓✓✓✓✓	
Frank Frost	10 Dec, 2009	28	✓✓XXXXXX	R
James Thompson	16 Dec, 2009	71	✓X✓✓✓X✓	<input type="checkbox"/>
Julian Wong	4 Jan, 2010	71	✓✓✓X✓X✓	<input type="checkbox"/>
Eric Cook	13 Jan, 2010	71	✓✓✓X✓X✓	<input type="checkbox"/>

For students...

- re-do any test as often as you like
- work at a time that suits you best
- develop your personal initiative
- work through things by yourself
- gain confidence before undertaking formal examinations
- ideal for home-learners

For teachers...

- new tests are constantly being added
- every test marked and recorded immediately
- the assessment system is under constant review and development
- various data displays available to enable group comparisons
- send in suggestions, recommendations or criticisms

Background	2
Setting up	2
Types of tests	3
From the students' point of view	6
From the teachers' point of view	8
Creating tasks.....	11
Monitoring progress.....	13
Security and reliability	15
In development for version 3	15

Background

The definition of e-assessment according to The Joint Information Systems Committee (JISC) is: *the end-to-end electronic assessment processes where ICT is used for the presentation of assessment and the recording of responses.*

Formative assessment has been defined as a process between teacher and student to enhance, recognize and respond to the learning. An assessment can be considered 'formative' when the feedback from learning activities is actually used to adapt the teaching to meet the learner's needs. These processes can help students take control of their own learning.

MathsNetAlevel's assessment package has been designed to correspond to these definitions.

Setting up

For this system to work, students must log on using their own personal ID.

If the student has their own personal subscription then this is already set up. If the student is at school or college then they must log in using the school ID and then create their own personal ID (which requires confirmation by the teacher if the forum and conferencing are to be used). It is recommended that once all students at a school have created their own personal ID, then the teacher changes the school ID so that students can *only* log in using their personal ID.

Types of tests

Assessment involves any of the on-line test pages on the site called “**o-tests**”, of which there are over 500. You can find them by entering o-test in the search box. When a student is on such a page, and they have logged in using their personal ID, then a confirmation notice will appear at the top.

Your score for this page will be recorded and saved

There are currently 5 types of o-test available:

- Multiple choice (M) – see for example ID 6488
- True or false (T) – see ID 269
- User input (U) – see ID 6602
- Cloze procedure (C) - see ID 2730
- Drag and drop (D) – see ID 4539

An example of a multiple choice o-test is shown in Diagram 1.

1	The 7th term of the sequence 3, 6, 9, ... is	<input type="radio"/> 22	<input type="radio"/> 25	<input type="radio"/> 21	<input type="radio"/> 16	<input type="radio"/> 20
2	The 9th term of the sequence 6, 8, 10, ... is	<input type="radio"/> 24	<input type="radio"/> 25	<input type="radio"/> 22	<input type="radio"/> 18	<input type="radio"/> 23
3	The 7th term of the sequence $-1, -5, -9, \dots$ is	<input type="radio"/> -24	<input type="radio"/> -21	<input type="radio"/> -27	<input type="radio"/> -25	<input type="radio"/> -23
4	If 3 consecutive terms of an arithmetic series are $4x - 7, x - 3$ and $6 - x$, the next term is	<input type="radio"/> 26	<input type="radio"/> 30	<input type="radio"/> 28	<input type="radio"/> 27	<input type="radio"/> 29
5	The sum of the first 7 terms of the sequence 3, 5, 7, ... is	<input type="radio"/> 67	<input type="radio"/> 61	<input type="radio"/> 58	<input type="radio"/> 63	<input type="radio"/> 60
6	The sum of the first 13 terms of the sequence 1, 4, 7, ... is	<input type="radio"/> 131	<input type="radio"/> 130	<input type="radio"/> 132	<input type="radio"/> 133	<input type="radio"/> 135

Diagram 1: Multiple choice o-test

A user input o-test (Diagram 2) is simply a test requiring a numerical answer to be typed in. Some of these tests are based on actual past exam questions and are called therefore “exam o-tests”.

1	The first term of an arithmetic series is a and the common difference is d . Term 18 of the series is 101.5 and term 22 of the series is 129.5. Find the value of d .	<input type="text"/>
2	Find the value of a .	<input type="text"/>
3	The sum of the first n terms of the series is 9800. Given that n is a solution of the equation $n^2 - pn = q$, find p	<input type="text"/>
4	Find the value of q .	<input type="text"/>
5	Hence find the value of n .	<input type="text"/>

Diagram 2: User input o-test

A cloze procedure o-test (Diagram 3) presents a paragraph of text, with missing words or phrases that the student must identify from the context and type in.

Straight lines have equations of the form $y=mx+c$, where m represents the and c the y - of the line. The line $x+3y=4$ has gradient and crosses the x -axis at $x =$. Two lines with the same gradient are said to be , whereas two lines at right angles to each other are . The line $y=0$ is parallel to the -axis. =5 is a line perpendicular to the x -axis. Two lines cross at a point of . If they do not cross at all they are .

Diagram 3: Cloze o-test

A drag and drop o-test (Diagram 4) presents two lists of mathematical forms that must be dragged together to form appropriate pairs.

$(-2)^4$	<input type="text"/>	81
3^3	<input type="text"/>	16
$(-4)^3$	<input type="text"/>	
2^5	<input type="text"/>	-4
$(-2)^5$	<input type="text"/>	27
3^0	<input type="text" value="1"/>	-64
3^4	<input type="text"/>	-32
$(-4)^1$	<input type="text"/>	32

Diagram 4: Drag and Drop o-test

All the tests use one form or another of randomizing or encoding, so that no two tests are the same. They have also been designed to be difficult to "hack".

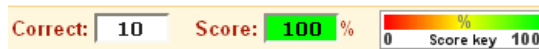
Each test has a "Difficulty level" between 1 and 10 which is intended as a guide to indicate its

Difficulty Level: Marks: = 1 = 0 = 0

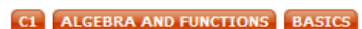
approximate degree of difficulty within the entire course. Some true or false o-tests or drag and drop o-tests may have low difficulty level, whereas exam o-tests will tend to be higher, based as they are on actual past exam questions. The scoring system will differ from test to test too, with positive marks given for correct answers and the possibility of negative marks given for wrong answers or unanswered questions. Scoring systems of this type can help to discourage guessing on multiple choice tests. All this information is displayed on the page.

From the students' point of view

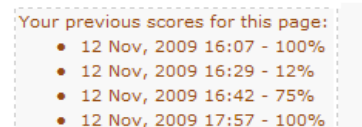
A student can do any of the o-tests when they like and as often as they like, noting that the tests do change each time requiring different answers. Each test is marked immediately upon completion and a percentage given. The percentage is colour coded to give a visual feedback of its rating using a more detailed version of the "traffic light" system ranging from red through yellow to green.



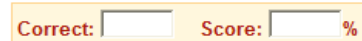
When a student has completed an o-test, their marks are stored and displayed whenever they return to that page. As shown in this example, the display indicates the student has attempted this matching task four times during the same day. A principle of formative assessment is that the student should learn from feedback presented to them to enable them to improve their problem solving skills the next time they tackle that problem. Thus, repetition is to be encouraged, remembering that the goal of formative assessment is to improve.



Matching O-test



Drag the terms on the right across



This information should help students when they return to topics for revision prior to exams by reminding them of how they did before. It might help to re-enforce the old adage "practice makes perfect". This "back-log" of information is also available to the teacher so they can see how many attempts it took the student to attain their current mark.


By clicking on their user name and selecting **Test Scores**, the student can view all their completed tests together (Diagram 5). Hovering the mouse over the score will reveal all previous scores. The column headed Questions shows how they did on each part of the test. Note that some tests will deduct marks for wrong answers. The final column headed Redo will indicate whether or not the teacher has requested that this task be repeated.

Your Test Scores

M	Section	Topic	L	ID	T	Date	Score%	Questions	Redo
3	Trigonometry	Radians	1	285	D	19 Nov, 2009	100	✓✓✓✓✓	
3	Trigonometry	Radians	3	6512	M	19 Nov, 2009	80	✓✓✓✓✓✓✓X✓	
3	Trigonometry	Radians	7	6577	M	19 Nov, 2009	75	✓✓✓X	
3	Trigonometry	Sine and cosine	3	6458	M	20 Nov, 2009	100	✓✓✓✓✓✓✓✓	
3	Trigonometry	Trig equations	4	6513	M	22 Nov, 2009	80	✓✓✓✓✓✓X✓✓	

Diagram 5: Student test scores display

Besides selecting **Test Scores** a school or college student can also select **Assigned Tasks**. This will take them to a page detailing any tasks that their teacher or tutor has requested that they do or repeat: see Diagram 6. If the

student does have work set by the teacher that is still to be done then they will see a **T** icon  displayed on their pages towards the top.

Assigned Tasks				
A Bunch of Questions (to be completed by 18 Dec, 2009)				
Do these questions before Christmas (and get good marks else I will fail the entire class!)				
ID	Module	Section	Topic	Done?
6490	C1	Summary	Overview	Yes
6574	C1	Algebra and Functions	Simultaneous equations	Yes
6483	C1	Differentiation	Curves	No
6513	C2	Trigonometry	Trig equations	No
6575	C2	Algebra and Functions	Remainder theorem	No
6576	C2	Coordinate geometry	Circles - geometry	No
6581	C2	Trigonometry	Trig equations	No

Please redo the following:

ID	Module	Section	Topic	Type	Score%	Questions
6507	C1	Differentiation	Rules	Multi Choice	30	XXXXX✓X✓XXXX✓
6568	C1	Algebra and Functions	Basics	UserInput	0	✓✓✓✓XXXXXX
6579	C2	Differentiation	Stationary points	UserInput	10	XXXXX✓XXXXXX
6583	C3	Algebra and Functions	Rational expressions	UserInput	0	XXXXX

Diagram 6: Student Assigned Tasks display

Finally, students can also view a profile of their progress. By clicking on one of the modules in a link like this one: [D Module Profiles: C1 M1](#) they will be taken to a display like Diagram 7








Section	Topic	E	Progress
Differentiation	Curves	Green	
Integration	Rules	Green	
Algebra and Functions	Surds	Green	
	Completing the square	Yellow	
	Quadratic solving	Green	
Coordinate geometry	Simultaneous equations	Yellow	
	Coordinates	White	

Diagram 7: Student Profile

Each progress bar shows the overall average mark attained by the student concerned, colour coded red to green, together with an indication of the average and variation in marks of all the students in the same class. The purple box shows the average and 1 standard deviation down and up from the average. Statistical theory says that about 68% of the marks should be in this range, so this display should enable some comparison to be made of the individual's performance with the class. The colour in the column labelled **E**, is an indication, on a red to green scale, of the effort the student has made to achieve 100% in their O-tests. Green can be achieved in this column either by getting 100% in the test, or by repeating the O-test a number of times to improve the mark.

From the teachers' point of view

Student Log-ons	
Date	Qty
January 2010	5
December 2009	21
November 2009	0
October 2009	0
September 2009	0
August 2009	0

Students By Class	
Class	Qty
12M1	3
12M2	5
13M1	4

Modules		
Module	Students	O-tests
C1	4	100
C2	1	68
C3	2	61
C4	-	51
D1	-	2
M1	1	35
M2	-	15
M3	-	16
S1	1	40
S2	-	22
S3	-	21
FP1	-	37
FP2	-	27
FP3	-	26

All the information available to the students is also available to you as the teacher. By clicking on your user name you can view the management area which includes many options for viewing student test results and setting new tasks. You will see displayed current statistics about student use, organised by month, or by class or by module.

The **Student Log-ons** table shows all recorded log-ons by your students over the last six months. There is also another page called **Student log-ons** obtainable from the menu which will display all log-ons since you have had a subscription (starting from April 2009). The **Students by Class** table simply shows the classes that are set up and how many students are in each. The **Modules** table shows how many students have recorded test results and incidentally how many o-tests are available in each module. All data is "clickable", ie, click on Module C1 and you will see all the scores attained on that module by the 14 students. Click on class 13/5 and you see all marks attained by that class.

By selecting **Manage Student Accounts** you can view a list of all registered students. See diagram 8. Here you can edit the name of the class they are in, which is important when setting tasks – see later. Any names that appear in bold will have test data recorded and clicking on that name will take you to a display of those scores.

Student List for The Demo School						
Class	Student / User Name	Email	Online	Approve(d)	Delete	
12M1	Jeff Beck	✉	No (0)	Yes	<input type="checkbox"/>	
13M1	Brian Eno	✉	No (0)	Yes	<input type="checkbox"/>	
13M1	Ella Fitzgerald / STUDENT8	✉	No (0)	No <input type="checkbox"/>	<input type="checkbox"/>	
13M1	Tord Gustavsen	✉	No (0)	Yes	<input type="checkbox"/>	
12M2	Billie Holiday	✉	No (0)	Yes	<input type="checkbox"/>	
12M2	John Mayer	✉	No (0)	Yes	<input type="checkbox"/>	
12M1	Joni Mitchell / STUDENT11	✉	No (0)	No <input type="checkbox"/>	<input type="checkbox"/>	
12M2	Otis Redding / STUDENT12	✉	No (0)	No <input type="checkbox"/>	<input type="checkbox"/>	
12M2	Rufus Wainwright / STUDENT10	✉	No (0)	No <input type="checkbox"/>	<input type="checkbox"/>	
12M1	Tom Waits	✉	No (3)	Yes	<input type="checkbox"/>	
13M1	Amy Winehouse	✉	No (0)	Yes	<input type="checkbox"/>	
12M2	Neil Young / STUDENT9	✉	No (0)	No <input type="checkbox"/>	<input type="checkbox"/>	
Update/Approve/Delete Selected Accounts				All		

Diagram 8: Student accounts display

You can view student scores in various ways: by class, by module, by task, by student or by ID number. Diagram 9 shows scores relating to the o-test with ID 6453.

Student Scores by Page ID

Page ID: **6453** Module: **2** Type: **Multi Choice** Level: **5**
 Section: **Algebra and Functions** Topic: **Factor Theorem**
 Score key: Download:

Student	Date	Score%	Questions	Redo
Ann	22 Nov, 2009	100	✓✓✓✓✓✓✓✓✓✓	<input type="checkbox"/>
Bill	21 Nov, 2009	80	✓✓✓✗✓✓✓✓✗	<input type="checkbox"/>
Charles	21 Nov, 2009	90	✓✓✗✓✓✓✓✓✓✓	<input type="checkbox"/>
Dianna	20 Nov, 2009	90	✓✓✓✓✓✗✓✓✓✓✓	<input type="checkbox"/>

Diagram 9: Teacher’s display of student scores

The **Score%** displayed is the most recently obtained one. Hovering the mouse over this score will reveal all previous scores and the dates they were attained. This information should enable you to judge not only the student’s progress but also the effort they are willing to put in. The column headed **Questions** shows how the student did on each individual part of the test. This should be useful for identifying common areas of misunderstanding or weakness. The final column **Redo** includes a box you can click if you want the student to repeat the task.



On this page, and all the other views, you can opt to download the data direct to your Excel spreadsheet and thus into your electronic record book.

In addition to viewing student marks you can also view a profile of student progress. This takes two forms: the class view and the individual view. Firstly if you select a class and view their results then you will see links at the top like this: [View profile](#) . This will take you to a display like Diagram 10.

Section	Topic	Progress
Exponentials and logs	Logarithms	
Algebra and Functions	Remainder theorem	
Trigonometry	Radians	
Algebra and Functions	Factor Theorem	
Coordinate geometry	Circles - geometry	
Algebra and Functions	Equating coefficients	

Diagram 10: A class profile

Each progress bar shows the overall average mark attained by all the students concerned, colour coded red to green, together with an indication in purple of the variation in their individual marks. To be precise, the purple box shows 1 standard deviation down from the average and one standard deviation up. In general, statistical theory says that about 68% of the marks should be in this range.

Secondly, when viewing a student's individual scores, you will see links at the top like this:  Module Profiles for : [C1](#) [C2](#) [C3](#) [C4](#) [M1](#). A click on one of the modules listed will take you to a display like Diagram 11.





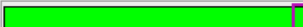


Section	Topic	<i>E</i>	Progress
Differentiation	Curves	Green	
Integration	Rules	Green	
Algebra and Functions	Surds	Green	
	Completing the square	Orange	
	Quadratic solving	Green	
	Simultaneous equations	Yellow	
Coordinate geometry	Coordinates		

Diagram 11: An individual student profile


See the description under Diagram 7 earlier.

The colour in the column labelled ***E***, is an indication, on a red to green scale, of the effort the student has made to achieve 100% in their O-tests. Green can be achieved in this column either by getting 100% in the test, or by repeating the O-test a number of times to improve the mark.


Creating tasks

By “task” we mean a collection of o-tests that are grouped together. The task can be allocated to a class along with a deadline and some explanatory comments. There are two methods to create student tasks and task templates.

Method 1

First locate the individual o-tests that you want to set by going to those pages. Then click on the **T** icon to the top right of that page: [Page ID: 6451](#) . The icon will then change colour, indicating it has been selected and a second click will take you to the **Manage Student Tasks** page. By this method you must go to each o-test page one at a time. Method 2 is quicker.

Method 2

At the top of every module page there is the icon , the number in brackets indicating how many o-tests there are available in that module. That link takes you to a page listing all those o-tests. Diagram 121 shows an extract.

Algebra and Functions			
Basics	Completing the square	Cubic curves	Fractions
<input type="checkbox"/> Equation or identity (4542)[1/M] <input type="checkbox"/> Matching O-test 1 (4539)[2/D] <input type="checkbox"/> Matching O-test 2 (5894)[1/D]	<input type="checkbox"/> Exam O-test (6571)[4/U] <input type="checkbox"/> Method O-test 1 (6664)[2/D] <input type="checkbox"/> Method O-test 2 (6663)[3/D]	<input type="checkbox"/> Exam O-test (6781)[3/U]	<input type="checkbox"/> 4 rules O-test (6772)[2/U] <input type="checkbox"/> Exam O-test (6803)[3/U] <input type="checkbox"/> Simplifying O-test (6773)[2/U]

Diagram 12: Selecting o-tests display

Alongside each o-test, the ID number is given and, in brackets, the difficulty level on a scale from 1 to 10 and the type of test. **M** means multiple choice, **D** means drag and drop, **U** means user input, **C** means cloze test and **T** means True or false. It is recommended where possible that your task uses a variety of these types. It is also recommended that you choose no more than 10 o-tests for one task, as this means all the resulting data will be displayed neatly on your screen.

Once your selection is made, click on **Add to task** at the bottom and your selection will be saved and you will be taken to the **Manage Student Tasks** page, which will now have an additional table at the top, as shown in Diagram 13.

Create New Task

The following Page IDs have been selected:

ID	Module	Section	Topic	Add To Task
6452	C2	Algebra and Functions	Equating coefficients	<input checked="" type="checkbox"/>
6605	C2	Algebra and Functions	Factor Theorem	<input checked="" type="checkbox"/>
6887	C2	Algebra and Functions	Factor Theorem	<input checked="" type="checkbox"/>
6453	C2	Algebra and Functions	Factor Theorem	<input checked="" type="checkbox"/>
6575	C2	Algebra and Functions	Remainder theorem	<input checked="" type="checkbox"/>
6892	C2	Algebra and Functions	Remainder theorem	<input checked="" type="checkbox"/>
269	C2	Algebra and Functions	Remainder theorem	<input checked="" type="checkbox"/>

You may either save the above Page IDs as a task for the specified classes or as a template for use later. A template does not require the finish date to be specified or any classes to be selected (saving as a template will ignore these if filled in).

Task Name:

Category:

Instructions:

Finish Date: - -

Classes:

Selected	Available
	12M1
	12M2
	13M1

Double click to move a class from one column to the other

Save as template: No Yes

Diagram 13: Create New Tasks display

This table allows you to allocate a task to a class or classes and to save that task as a template for later use. We do recommend that you save tasks as templates, as this makes it easier should a new student join the group after work has been set.

New students are not added automatically to set tasks. Should you wish a new student to be added one of these tasks, then the simplest method is to delete the task (**not** the template) then reassign the template to that class. When any task is deleted the marks attained by the students remain unaffected

When the student logs on they can go to their own **Assigned Tasks** page to see if any tasks have been set for them, or they can click on the **T** icon.

This assessment package is aimed at being of maximum benefit to you whilst requiring minimum effort on your part. For example, for the topic *Straight line geometry*, you could set homework involving a collection of IDs, give a deadline, and subsequently show the class their detailed results and request repeats, all with no marking involved. Of course, it would be up to you to decide on how to follow up on any areas of weakness.

Monitoring progress

One powerful aspect of this student data system is the ability to create and set tasks to students, and then monitor their progress. In order to achieve this you must log on using the school's teacher ID. Everything that follows will then be visible to all teachers logging on that way. If, however, you log on using your personal teacher ID, then the templates and tasks you create will only be visible to you. This means that a mathematics department can if they wish create departmental tasks centrally that are available to be used by all staff, whilst individual teachers can create their own.

By selecting **Manage Student tasks**, you will see the screen shown in Diagram 14, although note that, initially, before you have set up any tasks, this page will be blank. The top part shows all current tasks that you have set your students, along with the deadline date. The bottom half lists the tasks you have saved to use later for other classes, which we call task templates. It is recommended that you do save templates like this as it makes the process more efficient, particularly when new students join your group.

Student Tasks			
Task Name	Category	Finish Date	Classes
Basic algebra 1	C1	1 Jan, 2012	12M1
Quadratics 1	C1	1 Jan, 2012	13M1
(Methods of differentiation)	C3	1 Jan, 2012	13M1
Recurrence relations	C1	1 Jan, 2012	12M2
Correlation and Regression techniques	S1	1 Jan, 2012	12M1, 12M2
Straight lines and equations	C1	1 Jan, 2012	12M1, 12M2

Task Templates			
Task Name	Category	Page IDs	Delete
Basic algebra	C1	4170, 4539, 6488, 6672	<input type="button" value="Delete"/>
Correlation and Regression	S1	6615, 6616, 6701, 6738	<input type="button" value="Delete"/>
Methods of differentiation	C3	1105, 6496, 6595, 6596, 6598	<input type="button" value="Delete"/>
Quadratics	C1	6473, 6474, 6600, 6663	<input type="button" value="Delete"/>
Straight lines	C1	2730, 6482, 6602, 6686, 6783, 6805	<input type="button" value="Delete"/>

Diagram 14: Student tasks display

To view student progress, click on any one of the tasks in the top half of the table in Diagram 14. You will then see something like Diagram 15 which shows all students in the class and their progress on the task. The table will indicate either that **Yes** they have done it, or **No** they haven't, or possibly, **Redo**, to indicate that a teacher has requested they re-do the task. A name in bold indicates they have done part of it. Clicking on the ID number will show the actual marks for the class on that o-test.

Student Tasks							
Straight lines and equations (finish date = 1 Jan, 2012) <input type="button" value="delete"/>							
Category	C1						
Make sure you can use $y-y_1=m(x-x_1)$							
Student	Class	2730	6482	6602	6686	6783	6805
Tom Waits	12M1	Yes	No	No	No	No	No
Rufus Wainwright	12M2	No	No	No	No	No	No
Joni Mitchell	12M1	No	No	No	No	No	No
Otis Redding	12M2	No	No	No	No	No	No
Jeff Beck	12M1	No	No	No	No	No	No
John Mayer	12M2	No	No	No	No	No	No
Billie Holiday	12M2	No	No	No	No	No	No
Neil Young	12M2	No	No	No	No	No	No

Diagram 15: Student progress display

Note that the finish date is for the students' guidance. When the date has passed, all the tasks and data will remain and can still be worked on. The teacher can however choose to delete the task.

Deleting a task or task template does not delete any marks that students have collected. The only time a student's marks are deleted is when that student is deleted from the site. If a student has completed an o-test prior to it being set as part of a task, then it will show up in the above display and they therefore will not need to repeat it.

Security and reliability

The whole system depends on the usernames and passwords involved. Students should not know the master password to the site. It is strongly recommended that once all students have set up their own ID, then the general student password is changed.

Effort has been taken to ensure that all the individual o-test scores of the students are valid and a true measure of attainment. This has been achieved through a combination of techniques:

- It is difficult, and often impossible, for any student to pass answers on to another fellow student.
- When a specific o-test is repeated the questions and answers change.
- The system for displaying the questions on-screen involves coding.
- A student hacker may try to obtain answers by breaking into the code however, due to the nature of the mathematics required, the calculations they will then have to make are almost the same as those required to solve the problem legitimately!
- In true or false or cloze o-tests, where correct answers may be guessable, the scoring system has been adapted. In a true or false test, pure guessing alone could produce a score of around 50%. In our system, where incorrect answers incur a negative score, 5 correct answers out of ten will score zero!

In development for version 3

The assessment package is being developed to include these enhancements:

- Complete on-line examination papers
- A detailed revision program
- Time-limited o-tests
- O-tests based on clickable diagrams
- Further enhancement of the coding systems used
- Interconnections established between the student data pages and the forum and conferencing.