Standards- Based Assessment Tools for Maths

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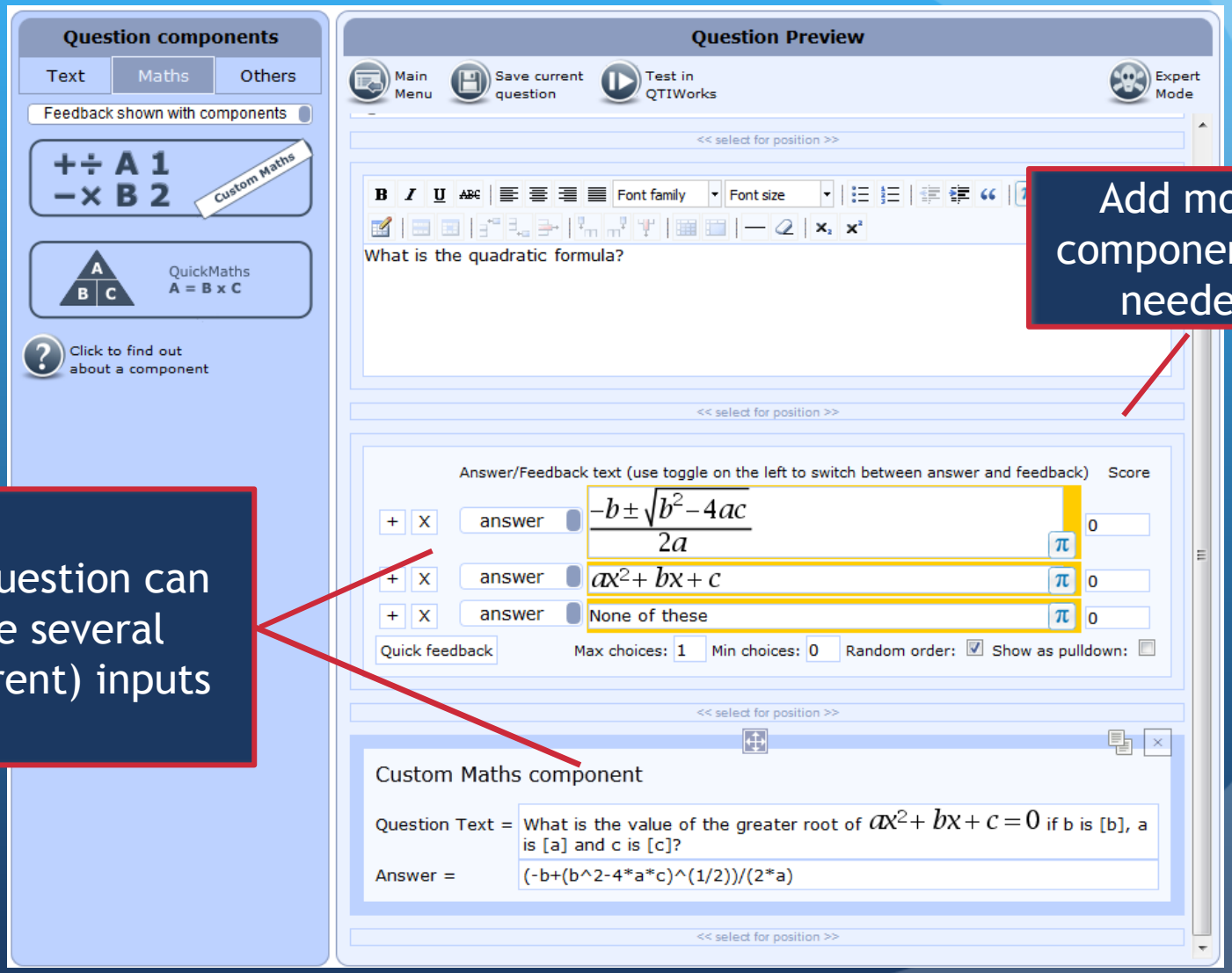
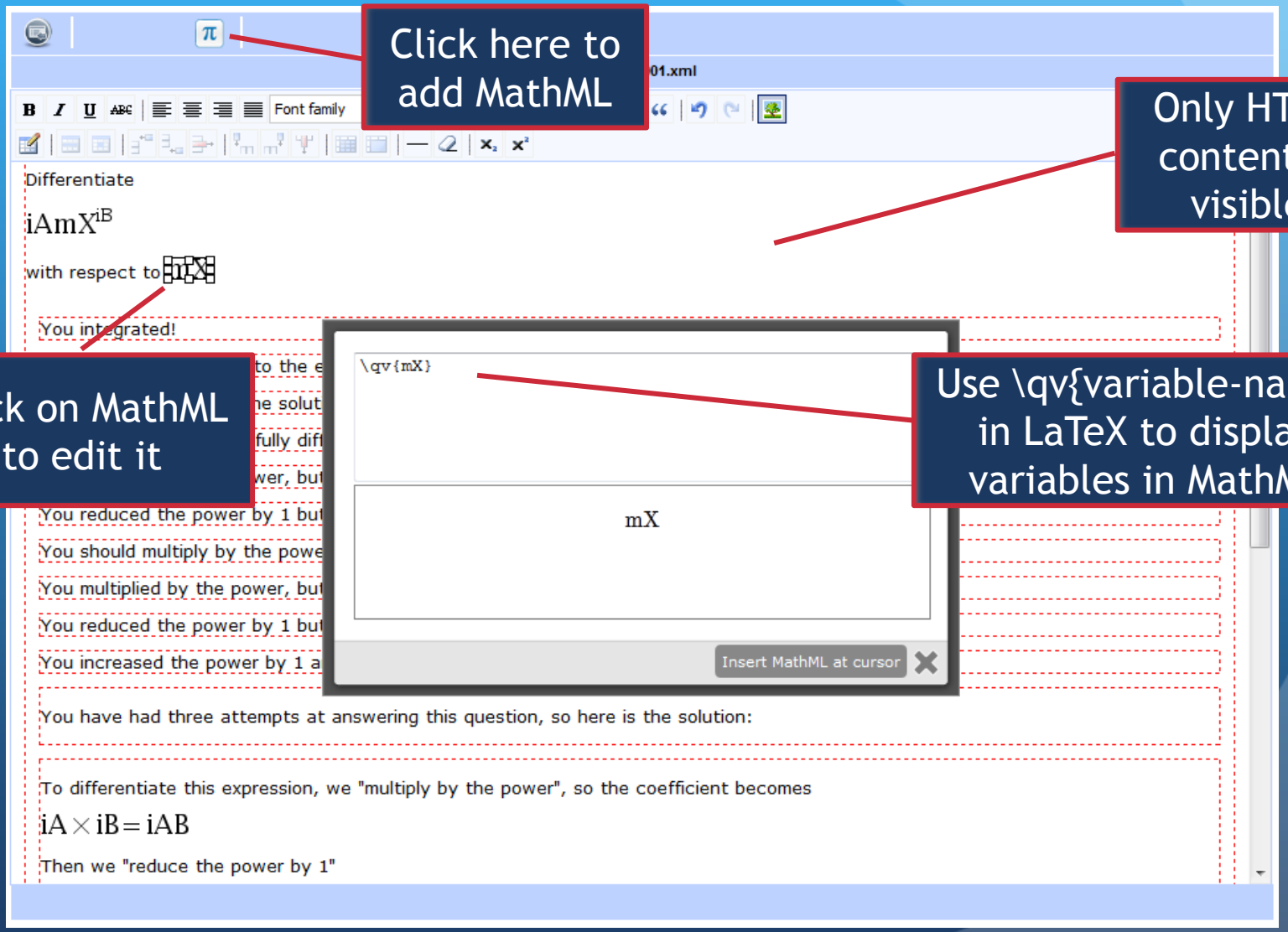
Assessment tools: Authoring

- To create these resources, I use
- **Uniqurate** – our free, open source, standards-compliant editor for
  - Packaging questions with media
  - Contextualising existing questions
  - Setting up and packaging tests
- Oxygen editor for
  - Using Maths extensions – Maxima CAS for manipulation
  - Organising marking and feedback logic
  - But **Uniqurate's** Expert Mode is good for this too, and free...
- Snuggletex for
  - Getting MathML from LaTeX
  - N.B. it's in **Uniqurate** already...

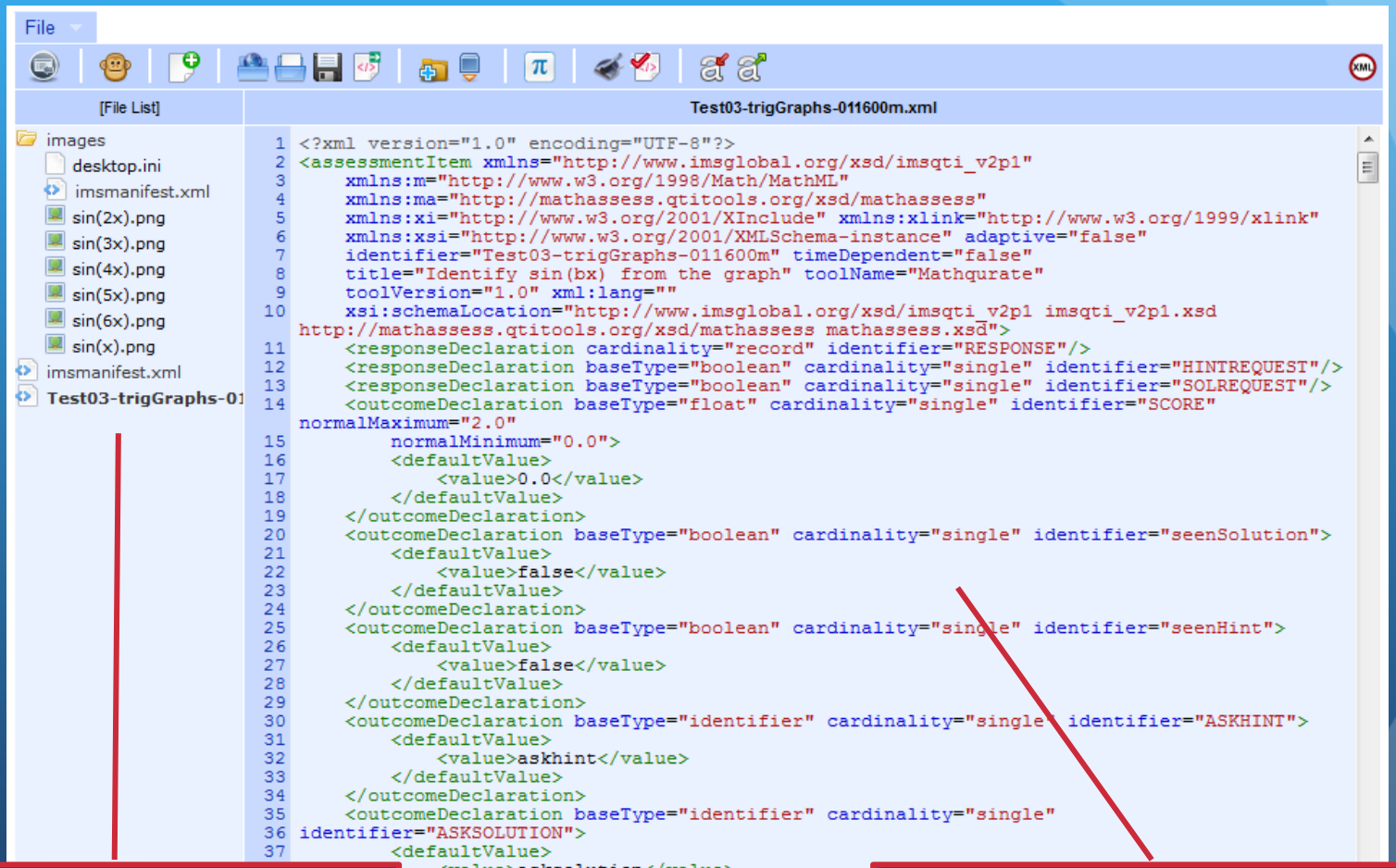
Uniqurate Questions 1: Friendly Mode



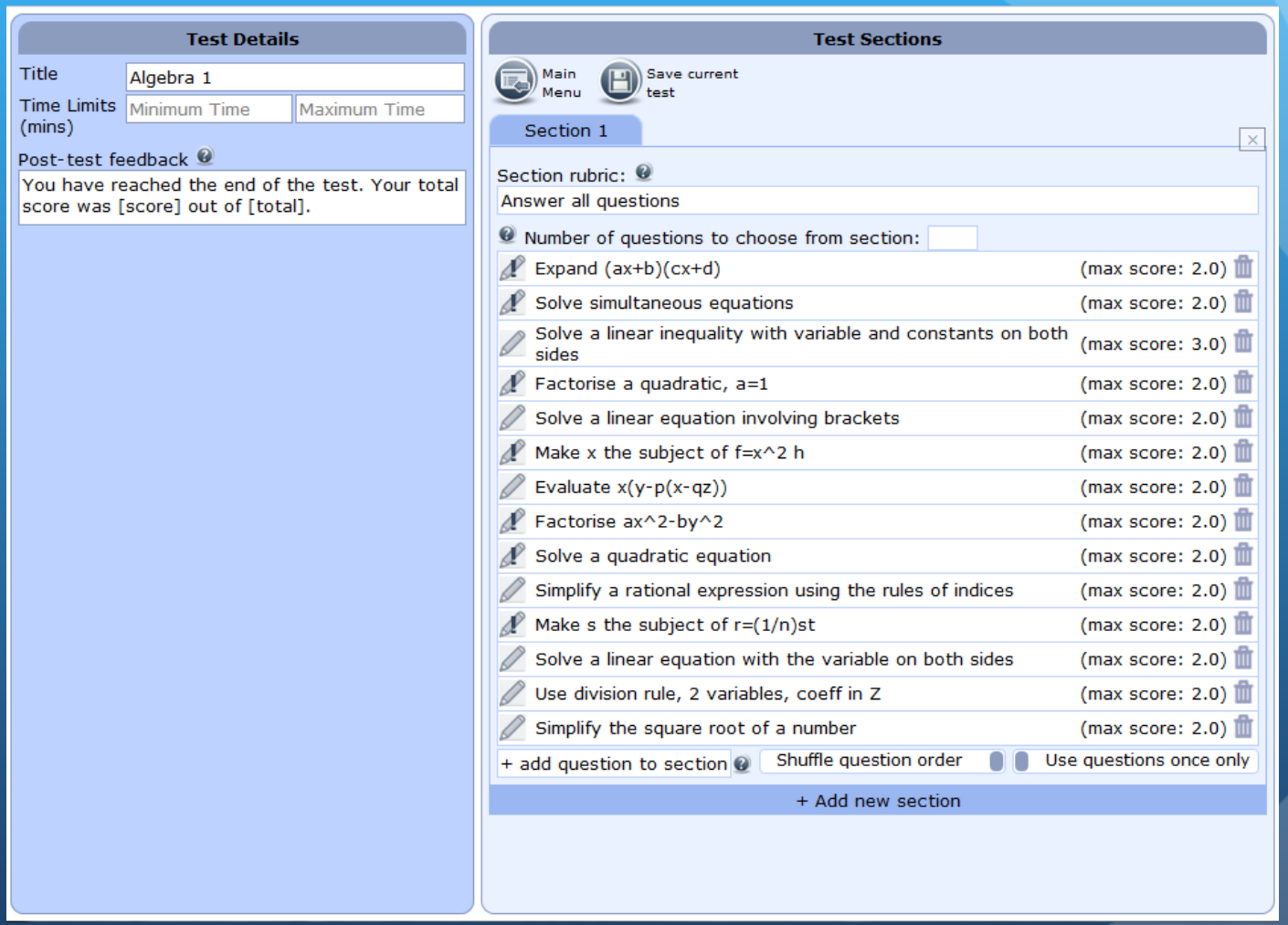
Uniqurate Questions 2: Intermediate Mode



Uniqurate Questions 2: Expert Mode



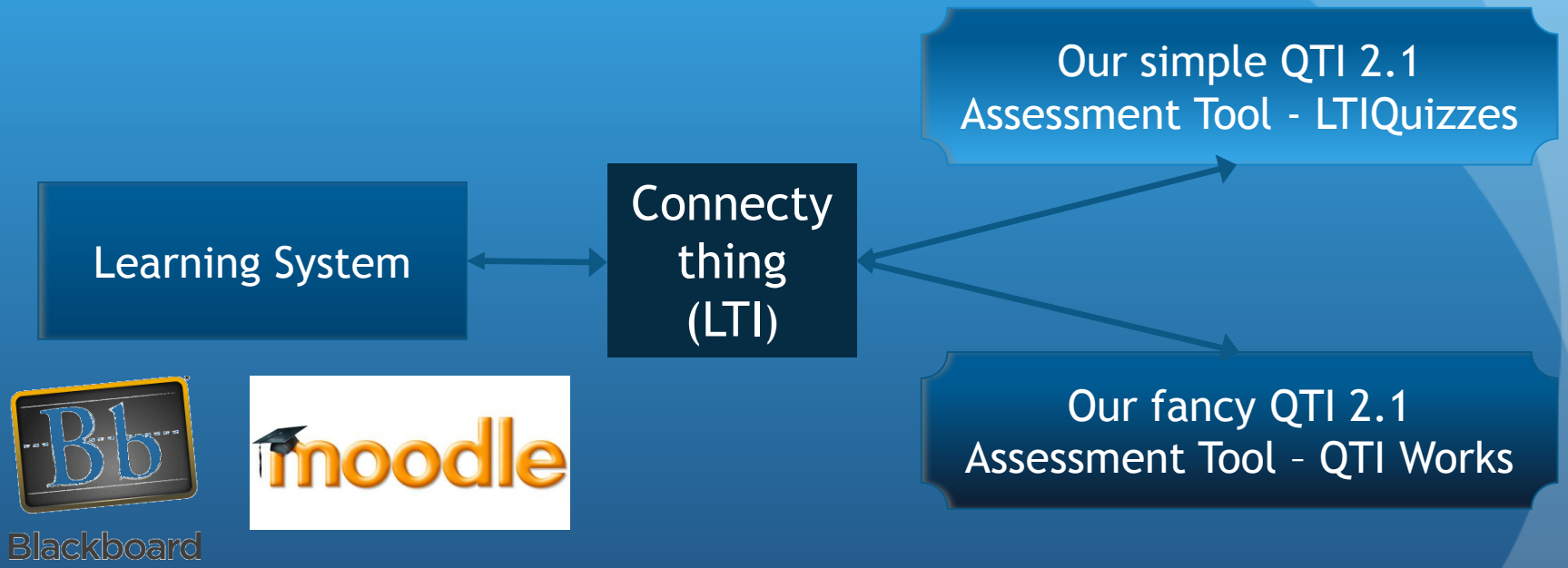
Packaging Tests (Uniqurate editor)



Assessment tools: Delivery

- QTIWorks
  - All of QTIv2.1 (apart from a couple of obscure input types and more ornate test setups)
  - Maths extensions
  - Links to Moodle & Blackboard (and others) via LTI
- Learning Tools Interoperability: LTI
  - Standard for joining external software into VLEs, etc
  - Built into Moodle 2 and latest Blackboard versions
- Combination works for
  - Single questions – formative assessment, quick check,...
  - Tests – fairly basic designs as yet, but more coming...

LTI Connector for VLEs

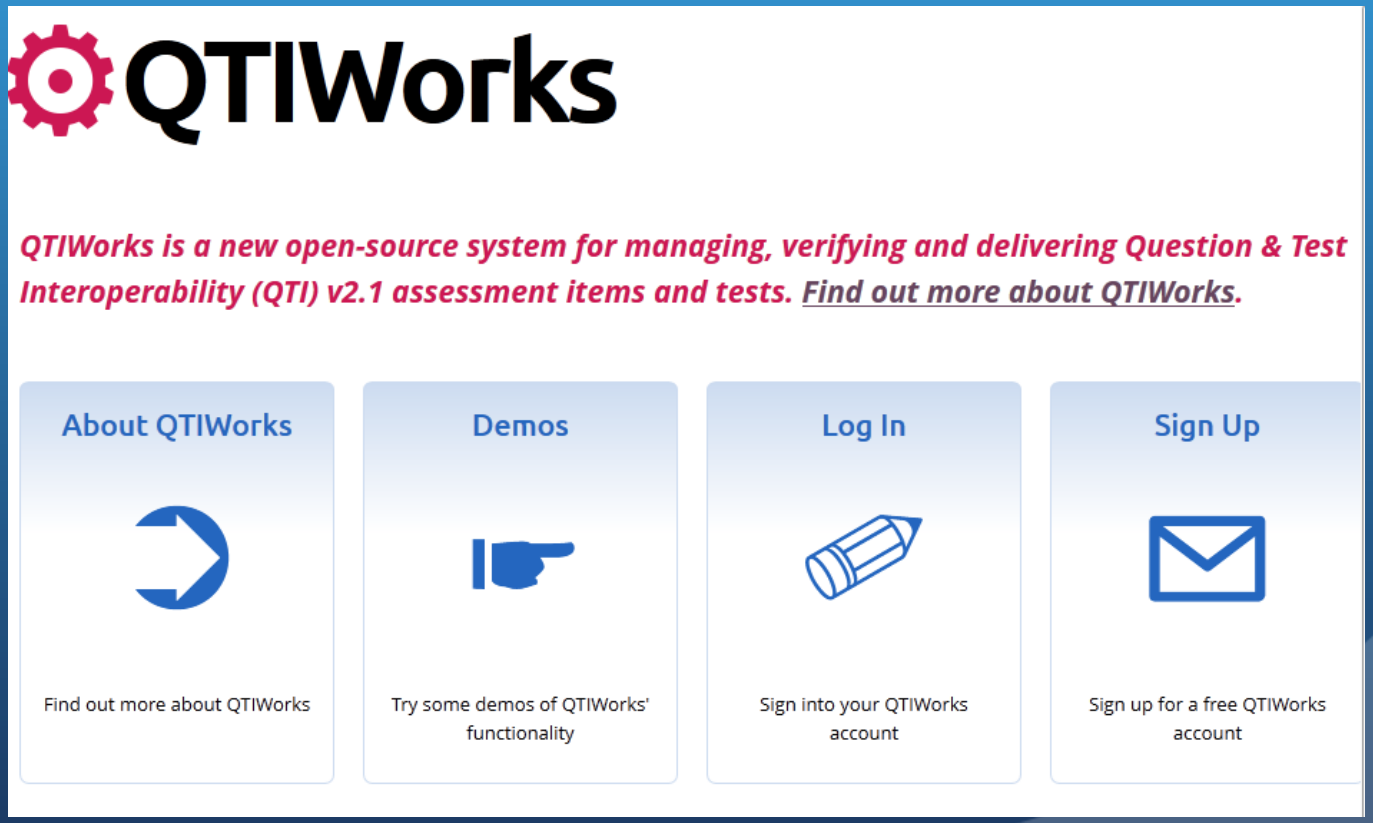


QTI Works

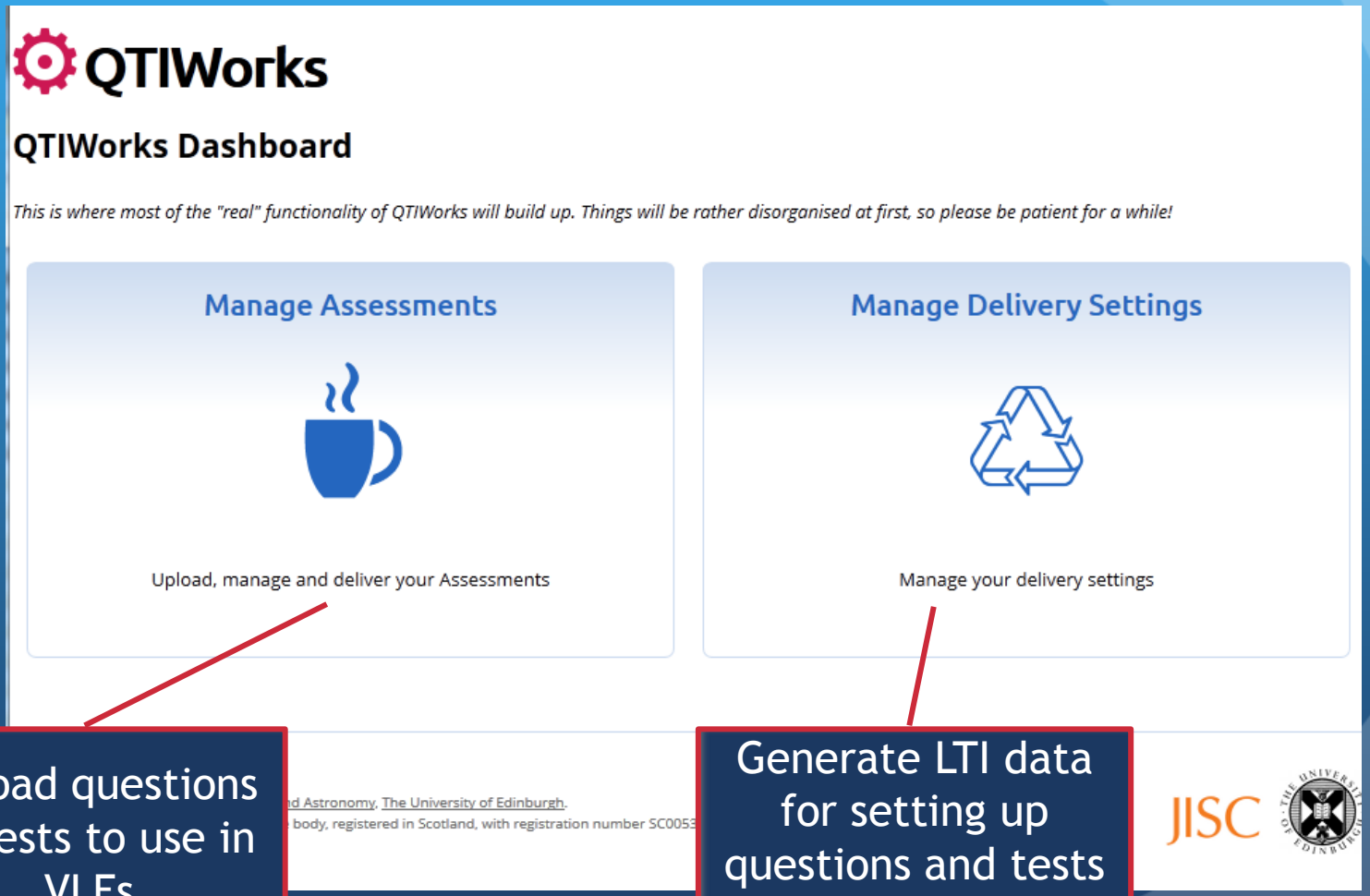
QTI Works https://www2.ph.ed.ac.uk/qtiworks/

Use the Demo section to try out questions and tests

Log in to set up LTI delivery data



QTI Works – VLE Setup

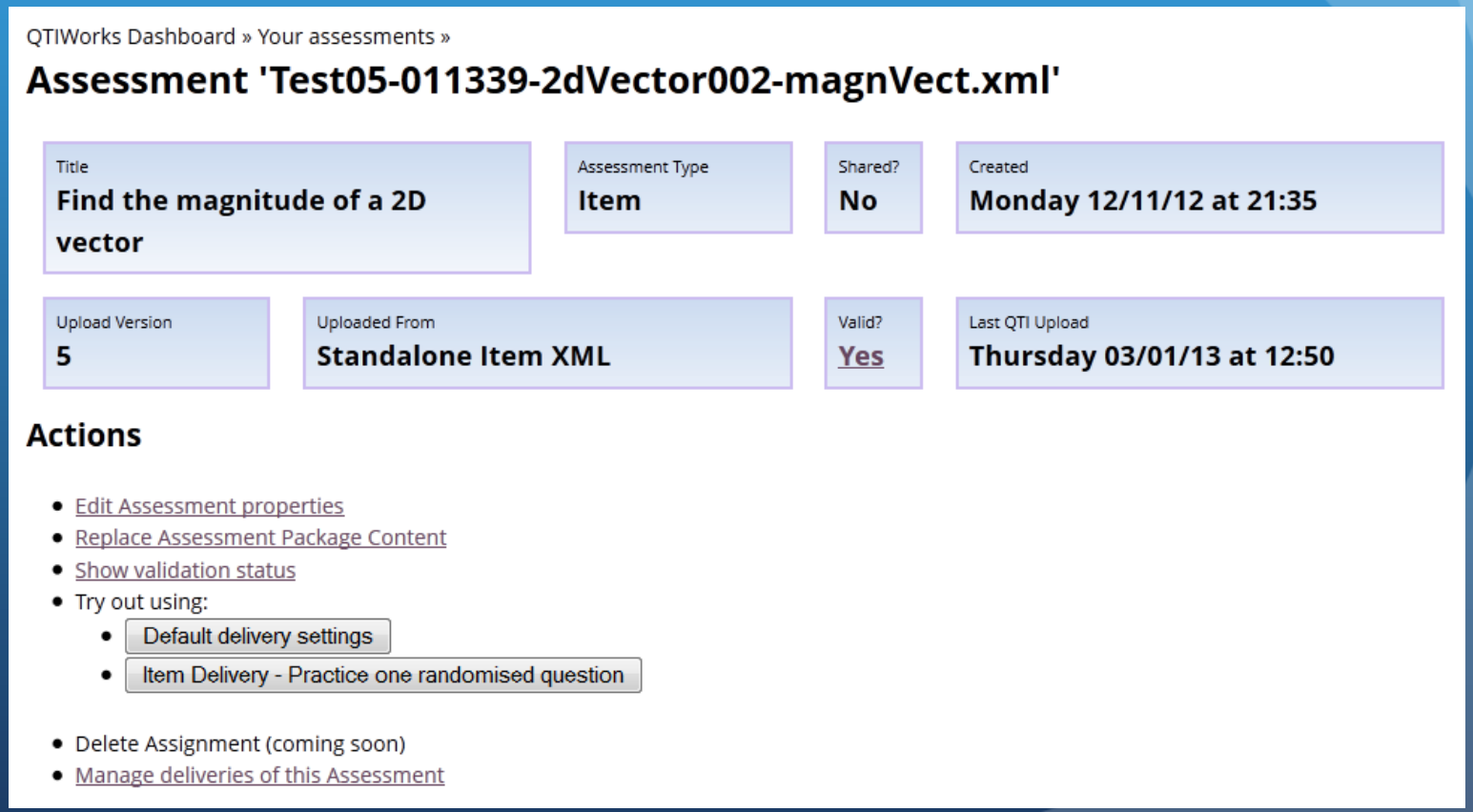


Upload questions or tests to use in VLEs

Generate LTI data for setting up questions and tests in VLEs

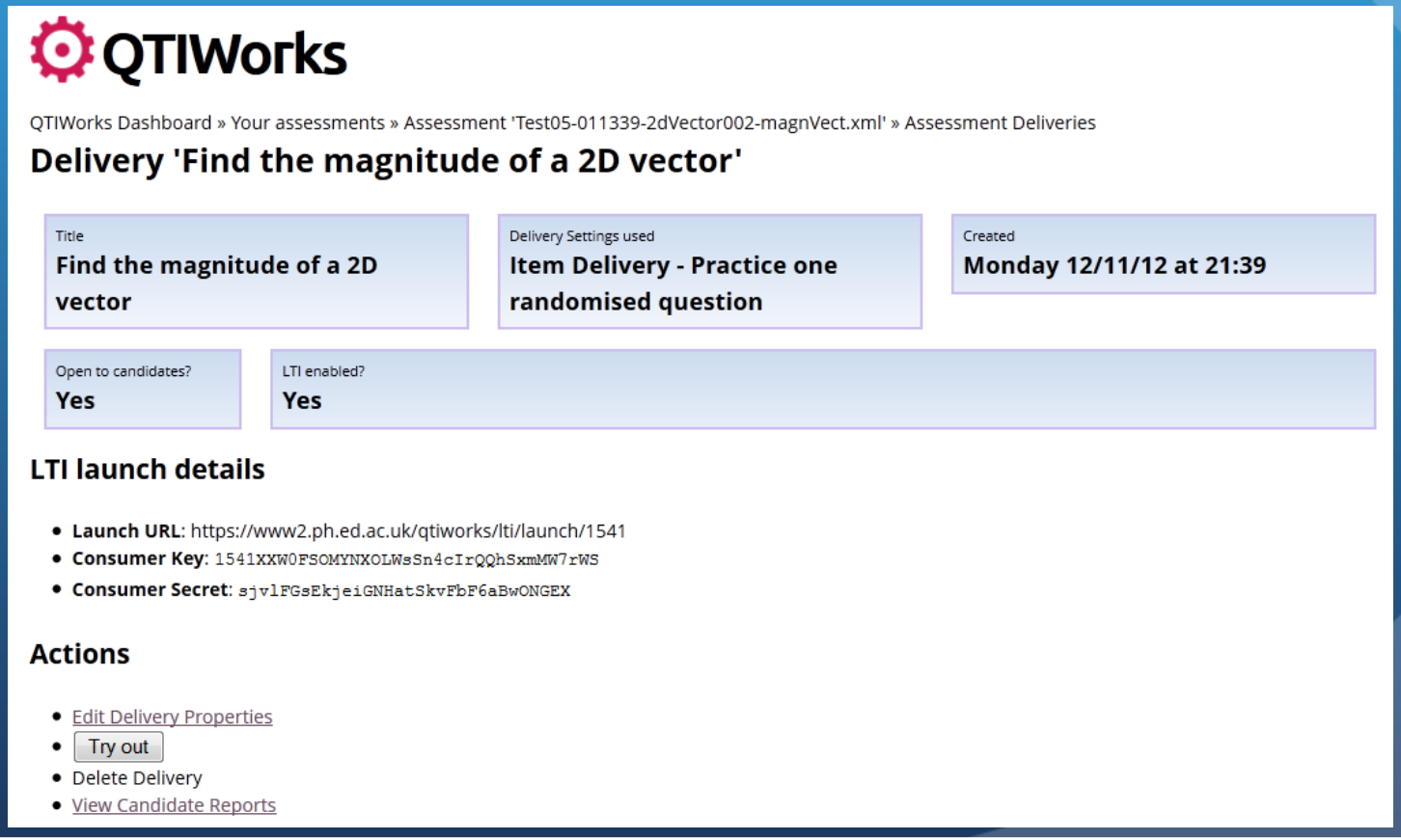
Uploading an Assessment

- Content of uploaded assessments –question or test – can be changed (e.g. fix a bug)
- Date of last change is displayed



Setting Up Assessment Launch Data

- Saving a delivery with LTI enabled creates launch data
- Data is pasted into Moodle 2 External Tool dialog or equivalent in other VLEs



QTI in Moodle 2 - Question

Maths T1

My home / My courses / MathsT1 / Trigonometry 1 / Use Pythagoras to find a side in a right angle triangle

Use Pythagoras to find side in right triangle

In triangle ABC, angle B is 90°, the length of AC is 22 and the length of AB is 7.

Find the length of BC.

You may find it helpful to draw a diagram.

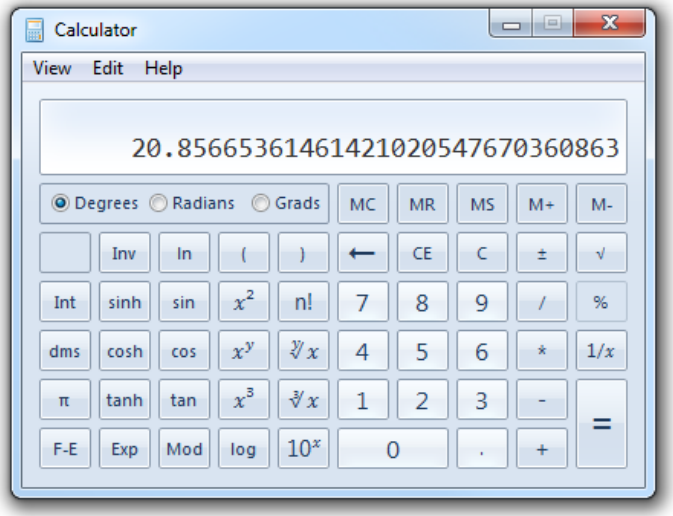
Give your answer correct to 2 decimal places.

20.86 Correct

Show Hint

Show Solution

SUBMIT ANSWER



Reinitialise Finish and review

Exit

QTI in Moodle 2 – Question with Solution

Maths T1

My home / My courses / MathsT1 / Trigonometry 1 / Find an angle in a scalene triangle, given the three sides

Find an angle in a scalene triangle, given the three sides

In triangle ABC, side a=50cm , side b =36cm and side c=38cm. Find angle C in degrees.

Enter your answer to 2 decimal places.

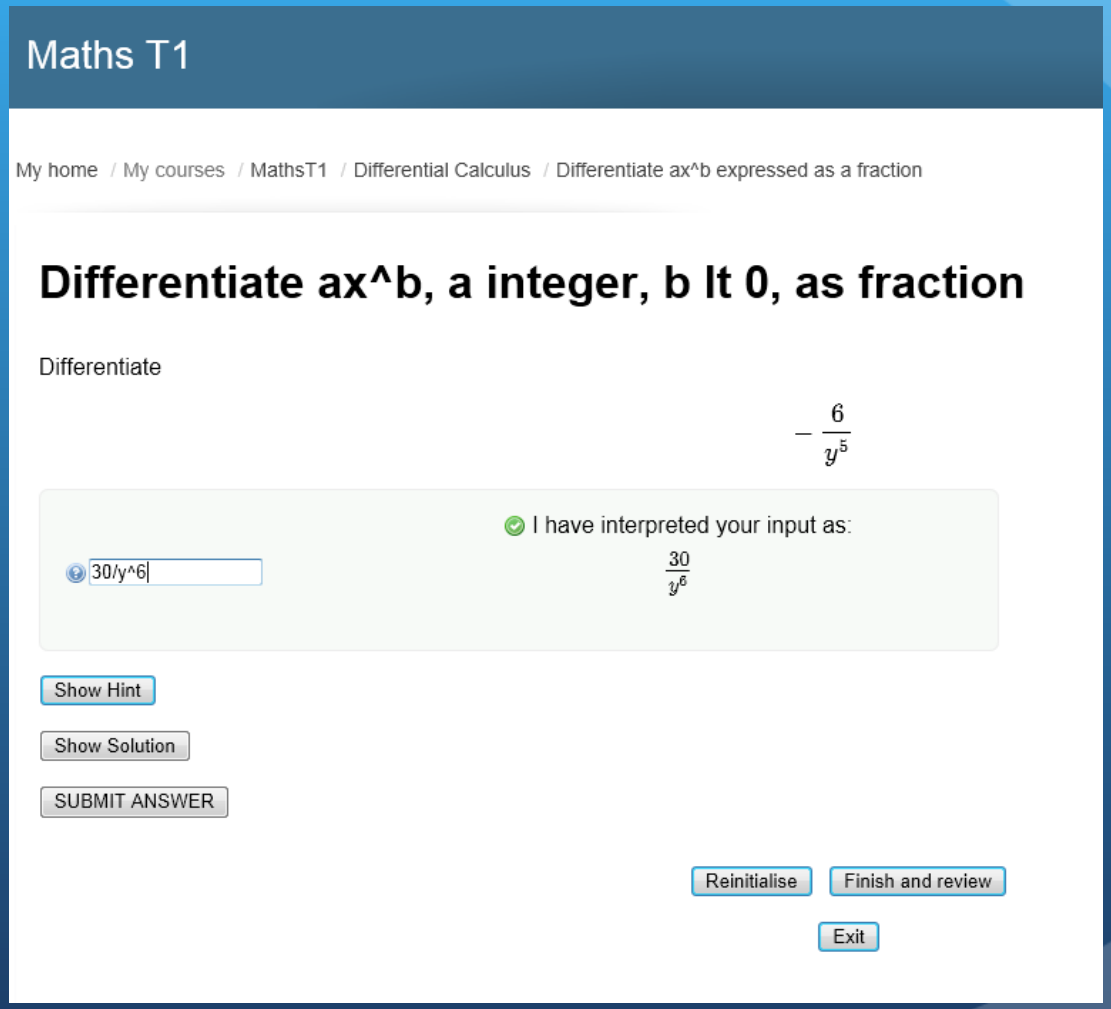
C = [ ]°

We apply the cosine rule

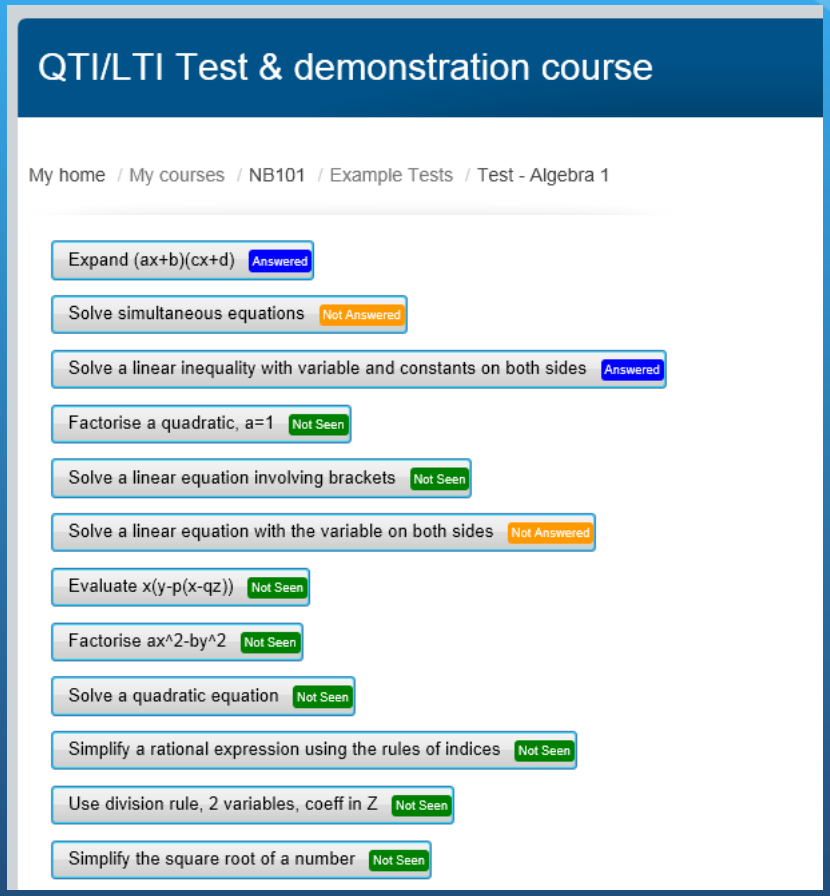
$$
\begin{aligned}
c^2 &= a^2 + b^2 - 2abcos(C) \\
2abcos(C) &= a^2 + b^2 - c^2 \\
cos(C) &= \frac{a^2 + b^2 - c^2}{2ab} \\
cos(C) &= \frac{50^2 + 36^2 - 38^2}{2 \times 50 \times 36} \\
cos(C) &= \frac{2500 + 1296 - 1444}{3600} \\
cos(C) &= 0.653333 \\
C &= \cos^{-1}(0.653333) \\
C &= 84.97^\circ
\end{aligned}
$$

Reinitialise and play again

QTI in Moodle 2 – Maths Input

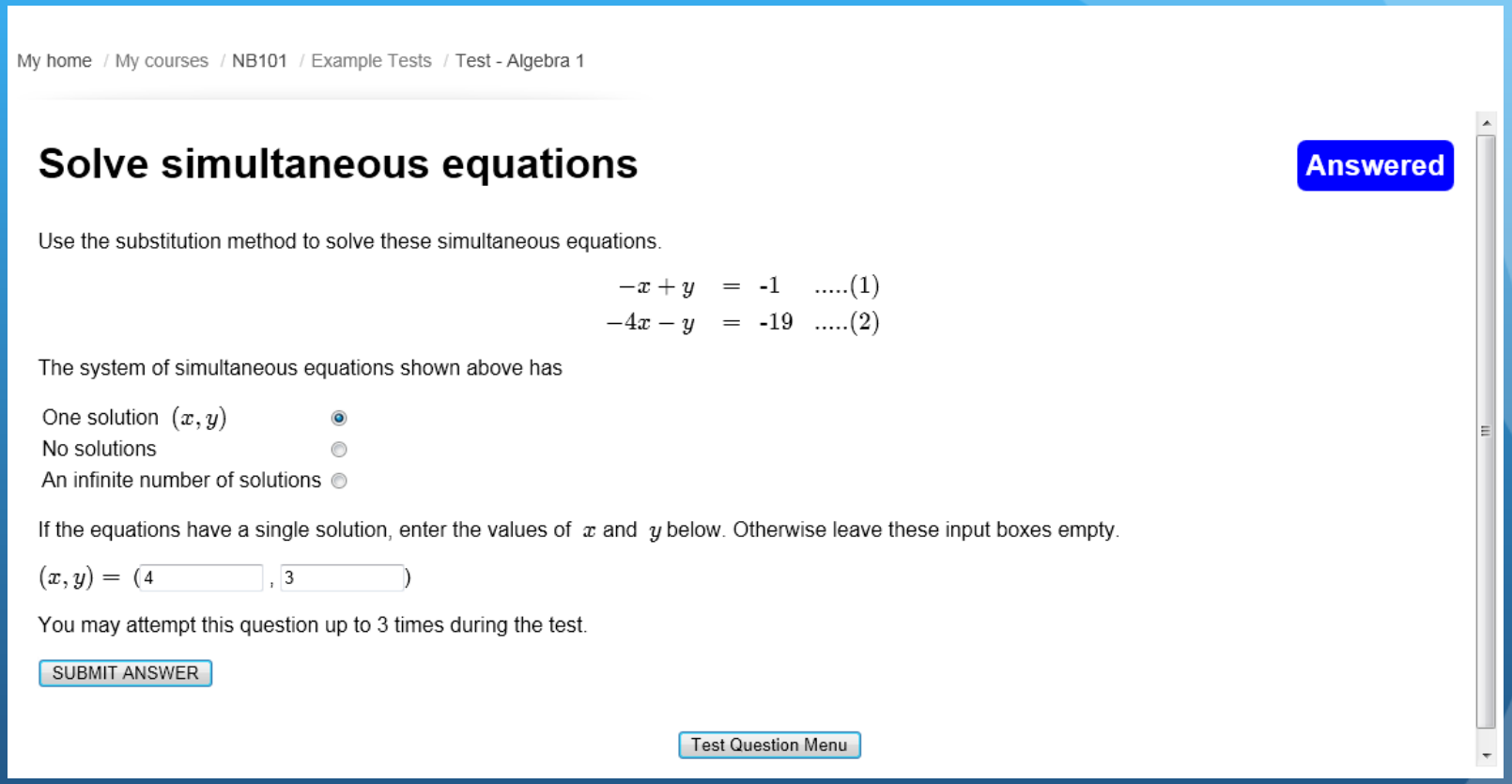


Test: Algebra 1



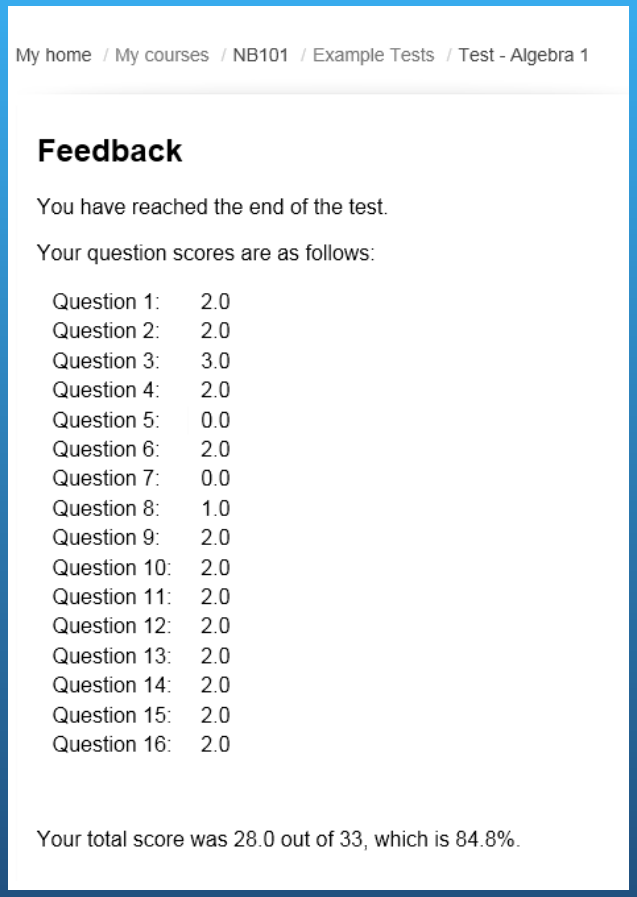
This test is the one used in the Maths T1 topic Algebra 1. It is also in the demo course.

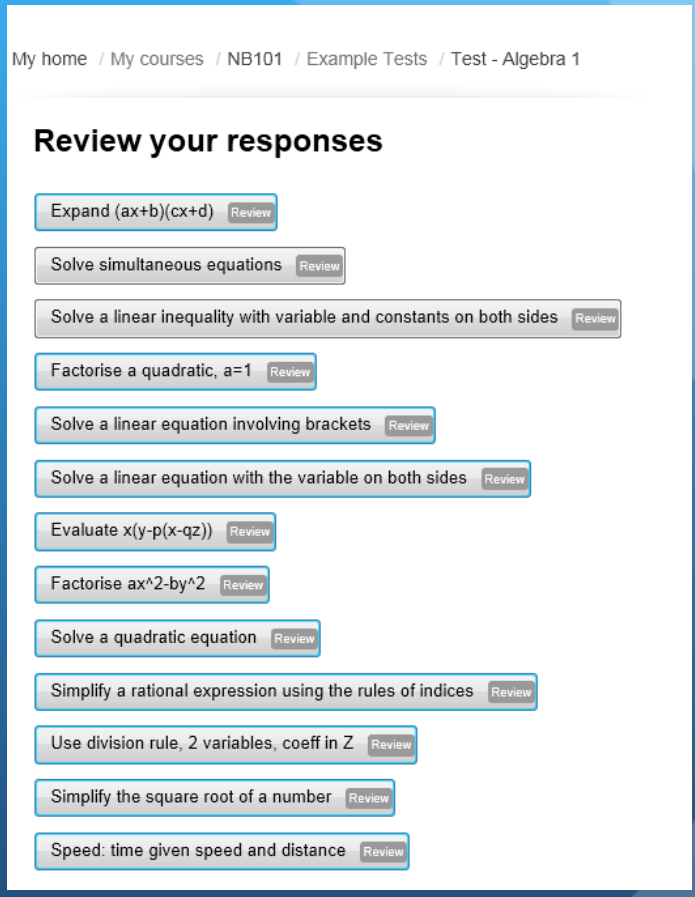
Question in a Test



The indicator at top right shows the question status. No feedback is visible during the test – students have been using these randomised questions in formative mode for several weeks. Candidates return to the list of questions to select another question.

Test feedback & review





These are the two parts of the feedback and review page; the scores for the questions are displayed and the candidate may return to see the questions and their input.

Links...

- Uniqurate question & test editor – web application – no installation, just go to http://uniqurate.kingston.ac.uk/Uniqurate/startup
- QTIWorks delivery & LTI preparation – online at https://www2.ph.ed.ac.uk/qtiworks/
- QTI Support Site (examples, tools, resources...) http://qti-support.gla.ac.uk
- QTI Moodle demo course http://moodle2.gla.ac.uk/course/view.php?id=136
- Emails:
  - sue.milne@glasgow.ac.uk
  - sarah.honeychurch@glasgow.ac.uk