

Maple T.A.TM is an easy-to-use web-based system for creating tests and assignments, and automatically assessing student responses and performance.

- **Designed especially for courses involving mathematics**

Maple T.A. provides everything you would expect in an assessment system plus features designed specifically for technical courses involving mathematics.

- **Powered by Maple**

Because Maple T.A. is powered by MapleTM, it offers features especially suited for assessment in technical courses.

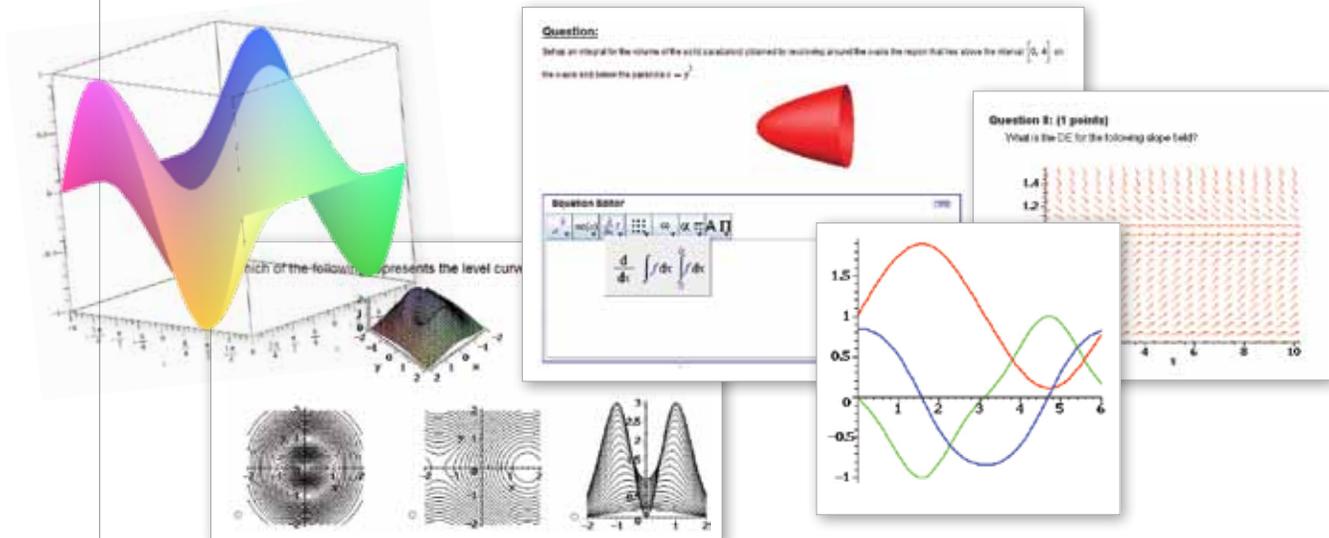
- **Easiest and most comprehensive content authoring tools available**

Whether you want to customize some of the thousands of available questions or create your own, Maple T.A. puts you in control of your testing content.

Full Support for Mathematics

Maple T.A. is designed especially for courses involving mathematics, and so it is your best choice for your mathematics, engineering, science, and other courses that use math. Maple T.A. lets you ask the questions you want, the way you want, and then grades the responses just like you would.

- **Natural math notation** is used in both the question text and student response.
- **Easy-to-use equation editor** makes it simple to enter mathematical expressions.
- **Free-response questions are graded for mathematical equivalence.** Where appropriate, responses do not need to be identical to the solution to be graded as correct; they just need to be equivalent. For example, if the correct answer is $x + y + \frac{1}{2}$, Maple T.A. will also accept $\frac{(2y + 2x + 1)}{2}$, and if the answer is $1 - \sin(x)^2$, Maple T.A. will also accept $\cos^2(x)$.
- **Open-ended questions can have infinitely many answers.** With Maple T.A. you can ask questions for which you cannot know in advance how the student will respond, and Maple T.A. can still grade their responses automatically. You can ask questions such as "Give an example of a function that has a maximum at $x = 0$," "List two composite numbers that have no factors in common," or "Give an example of an invertible matrix."
- **Powerful algorithmically generated questions** turn one question template into hundreds or thousands of similar questions, providing individual homework assignments and lots of practice questions for your students.
- **Sophisticated visualization tools** let you easily include plots in your questions by taking advantage of the over one hundred 2-D and 3-D plot types and customization options available from Maple. When appropriate, you can even allow students to see a plot of their response before they submit their work.
- **A wide variety of mathematical and scientific question types** support free response questions, questions that require a numeric answer to fall within given margin of error, chemical formula questions, questions that handle units, multi-part questions, and more.
- **Flexible partial grading** lets you give partial credit for mathematical responses that are not completely correct, and you can control how generous or rigorous the grading will be.
- **Extensive mathematical knowledge** coming from Maple means Maple T.A. can automatically grade questions from virtually any area of mathematics.



Easy Content Creation

Maple T.A. is the system of choice for those who want full control over their question content. Whether you want to customize the many available questions or write your own, Maple T.A. provides the most comprehensive, easiest-to-use authoring tools available for mathematics-based content.

- **Step-by-step Question Designer** walks you through the creation of a wide variety of questions.
- **Easy-to-use editor** lets you add formatting, images, plots, and special characters to questions.
- **International language support** allows questions to be written in any language.
- **Hints and feedback** for each question let you provide additional guidance to your students.
- **Thousands of built-in math commands** provide coverage of virtually all areas of mathematics, so you can create questions for any course, at any level.
- **Powerful algorithm design tools** make it easy to create sophisticated question templates which are used to generate hundreds of instances of a single question. You can vary more than one value in your question, set conditions on those variables, and even take advantage of sophisticated randomization tools found in Maple for generating mathematical objects, such as matrices, polynomials, and prime numbers.
- **Flexible content management tools** make it easy to organize, search, and share content and quickly assemble assignments.
- **The Maple T.A. Cloud enables easy content sharing**, so you can access questions created by other Maple T.A. users and share your own content with the community from within Maple T.A. Searching for and using publicly shared questions is as easy as working with content you wrote yourself. Questions from the Maple T.A. Cloud can be used immediately or modified to better suit your needs.
- **Thousands of questions**, many of which have been extensively field tested, are freely available for you to use and customize for your own classes.



Everything else you want in a testing and assessment system

Of course, Maple T.A. has all the features you would expect in any testing and assessment system, in addition to all the features that make it ideal for math-based testing, including lots of different question types, control over numerous aspects of the assignments, and a gradebook that is second to none in terms of its flexibility and analytical tools.

- **Over 15 question types**, including mathematical free response, multiple choice, fill-in-the-blank, matching, clickable image, and numeric with margins of error, cover all your needs for both technical and non-technical subjects.
- **A wide variety of assignment types** allow for practice, homework, mastery, high-stakes, and adaptive testing.
- **Flexible assignment properties** determine start and end times, how much feedback the student gets during the assignment, passing score, number of attempts, restrictions on where they can take the assignment, and more.
- **An intuitive assignment editor** makes it easy to construct assignments and set assignment properties.
- The **flexible gradebook** captures student results for individual assignments and questions within an assignment, and can perform statistical analyses of the results in a variety of ways.

Administration

Maple T.A. can be seamlessly integrated into all your institution's systems and routines, ensuring a smooth experience for students, instructors, and administrators alike.

- **Authentication via LDAP** allows you to integrate Maple T.A. with your campus database for user authentication, making class administration easy to manage.
- **Class roster import, manual registration, and student self-registration** are all available.
- **Content can easily be shared between instructors**, making multi-section courses simple to administer.
- Maple T.A. can be **incorporated into virtually any course management system**, making for a seamless experience for instructors and students.
- Distributed load balancing across multiple servers supports **large-scale installations**.
- The Maple T.A. interface can be **easily translated to other languages**.

“...In addition, after moving to Maple T.A., we’ve found that we can save approximately \$100,000/year on our marking budget, which we can use to support activities and programs we couldn’t otherwise offer.”

Carrie Howells
Instructional Support Coordinator
Mathematics Faculty Computing Facility, University of Waterloo

New in Maple T.A. 9

Easy Content Sharing

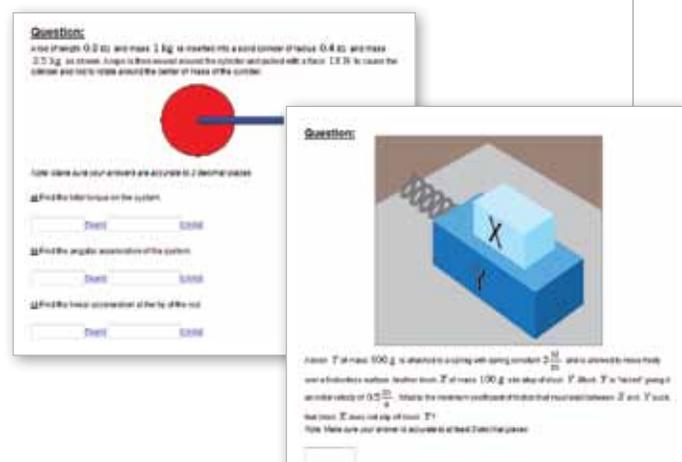
With the new Maple T.A. Cloud, which is integrated seamlessly into Maple T.A. 9, you can easily leverage questions created by others and share your own content with the community.

- **Content sharing between users worldwide is built directly into Maple T.A.**, so using a publicly shared question is as easy as using one you wrote yourself.
- **You can choose to share individual questions, a group of questions, or even a fully organized, multi-layered collection of questions to support a full course.** The full organizational hierarchy is preserved so others can navigate and understand your content in the same way you do.
- Any dependencies on local class resources, such as images and Maple repositories, are automatically bundled in so **questions work immediately on any system.**
- You can **search the Maple T.A. Cloud in the same ways you search your own question repository**, including searching the text of the shared question, so you can find exactly what you need.
- **Thousands of questions** are already available, ready to be used.

Adaptive Testing

Expanding on the adaptive question type introduced in Maple T.A. 8, Maple T.A. 9 now offers fully flexible adaptive testing at the assignment level. In adaptive assignments, the selection of the next question in an assignment depends on how the student has done on the previous questions. With adaptive assignments, you can sort students into different streams, provide extra reinforcement only when it is needed, allow more advanced students to truly show what they are capable of without discouraging less advanced students, and more. And with the power of Maple behind it, adaptive testing in Maple T.A. is more flexible than any other system.

- **Organize assignment questions into separate branches or difficulty levels.** When a student takes an adaptive test, each new question is selected from the appropriate branch, depending on their earlier responses.
- **Easily specify common conditions for moving between branches**, such as moving to a harder branch after five consecutive correct responses or moving to an easier branch after the third mistake occurs.
- **Fully customize the branching conditions** using the Maple language. The conditions can be based on a variety of factors, such as the number of correct and incorrect responses, the number of correct responses in a row, the start branch, the current branch, branch weight, and the number of branches in the assignment.
- **Easily set the stopping conditions** for the assignment based on the number of correct responses, incorrect responses, or total number of questions seen by the student, or further customize stopping conditions using an algorithm written in the Maple language.
- **View full grading information** for both the entire assignment and for each branch.
- **Include any type of Maple T.A. question**, including adaptive questions.
- Use adaptive assignments for **practice, graded tests and homework, and proctored tests.**



Questions and Assignments

With a wide variety of enhancements related to assignments and question types, Maple T.A. 9 provides more customization options and a streamlined user experience for both instructors and students.

- A **significantly enhanced question repository** offers more flexible ways to organize content and provides a streamlined experience when searching, organizing, and selecting questions.
 - See all the details of a question immediately in a single view, including a preview of the question itself.
 - Organize questions, question groups, and subjects by dragging-and-dropping.
 - Search for questions, groups, subjects, and assignments, and see the results as you type.
 - Choose to search the public collection, across your whole institution, across all the classes you teach, or just your current class.
 - View question statistics, such as how often a question has been attempted, the student success and failure rates, and the p- and d-values, from inside the repository.
 - Categorize questions with subjects for easier organization.
 - Specify difficulty and language for questions.
 - Attribute authorship of a question to a school and instructor or just the school.
 - Set privacy options at the question group level, so you can easily share all subgroups and individual questions with a single setting.
- **Hint deductions** let you apply a penalty each time a student uses a hint. Instructors can choose whether students see one hint at a time or all hints at once for a given question, control the amount of the deduction for each hint, and see which hints the student has viewed.
- **New options for reworking assignments** give more flexibility over what the student sees. When a student reworks an assignment, you can specify if you want the correct answers from the previous attempt to be filled in automatically, and for incorrect algorithmic questions, you can give the student the same question or a new variation of that question.
- A **new equation editor** is easier for students and instructors to use and produces better-looking results.
 - Expression palettes in the equation editor are now more accessible using new toolbar buttons instead of right-click menus.
 - The display of mathematical notation in questions uses MathJax to produce sharper, easier to read expressions that are properly resized on zooming.
 - When authoring questions, you can use the equation editor, MathML code, or LaTeX to create the mathematics.
 - When editing expressions in MathML or LaTeX, a live preview of the math is displayed as you type.
- Students can now **start more than one assignment** in a class.
- **Assignments can remain hidden** from students until eligibility conditions are met.
- **Quick Start Guides** help instructors and students become comfortable with the system quickly.
- **The tolerance in a numeric question can now be specified as a percentage** as well as a fixed amount.
- **Enhanced multiple choice questions** allow you to use algorithmic variables in the “Correct Answer” field for more precise feedback.
- The full-featured question editor is now available to instructors from more browsers, including **Safari®** and **Chrome™**.

Scalability

Maple T.A.9 is now capable of handling an order of magnitude more students than ever before.

- Distributed load balancing across multiple servers supports services **scalable to over 1,000,000 users per installation.**
- A **single login** seamlessly directs a student or instructor to one of multiple back-ends.

Administration

- New **customizable interface** options include the ability to display your institution's name on the login page and your institution's logo on every page, thus reassuring students that they are in the correct place.

- Maple T.A. is now fully compatible with **Java™ 7 and Apache Tomcat™ 7.**
- Administrators can **easily update Maple T.A. system settings** without having to restart Apache Tomcat.
- Users can now be **permanently deleted** from the system.
- Administrators can now **easily assign multiple instructors** for a single class from within Maple T.A.
- **Increased support for course management systems**, which includes connectors to Blackboard® and Moodle™, has been expanded to support Moodle 2.3. In addition, the API that allows you to integrate Maple T.A. into any other course management system has been improved.

Licensing and Hosting Options

Maplesoft offers a range of flexible pricing and licensing options to suit your budget, technology infrastructure, and the policies of your institution. Maple T.A. 9 is available now for customers whose classes are hosted by Maplesoft. For a self-hosted version, please contact Maplesoft.





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